

CBSG News

Inside...

- 1995 Annual CBSG Meeting: Regional, Species, and Working Group Reports

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1995 CBSG Activities and Annual Meeting

We are delighted to be able to bring you this issue of CBSG News, thanks to a generous contribution from Exxon Corporation.

1995 was another exciting, active year for CBSG. We now have over 700 members from 150 countries and we are supported by 152 donor institutions, organizations, and individuals comprising the CBSG Institutional Conservation Council. A total of 53 documents were produced by CBSG in 1995. We conducted and/or participated in 47 workshops/meetings between January and December 1995 including 11 Population and Habitat Viability Assessment (PHVA) workshops, eight Conservation Assessment and Management Plan (CAMP) workshops, seven Regional Zoo Association Meetings, and 21 Special Interest Meetings.

We continue to develop the concept of regional CBSG satellites. The CBSG, India has been a successful regional CBSG satellite for the past five years thanks to the tireless efforts of Sally Walker and her staff. Members of CBSG from several other regions have expressed interest in the development of similar satellite programs. Jansen Manansang in Indonesia, Yolanda Matamoros in Costa Rica, Amy Camacho in Mexico, and Atcf Kamel in Egypt have been invited to begin development of CBSG networks in their regions. A working group was convened at this year's CBSG Annual Meeting to discuss this exciting new expansion of CBSG throughout the world; their report can be found in this newsletter.

Another exciting project in 1995 has been the development of the CBSG World Wide Web site (<http://www.cbsg.org>). The CBSG Web site will provide information to its members and educate the general public about our global conservation efforts. The site will be divided into seven separate areas. The first area will be devoted to CBSG programs and publications. The CBSG produces a multitude of publications including PHVA, CAMP, and GCAR briefing books and reports, GRB documents, and workshop training manuals. Executive summaries of CAMPs, PHVAs, and GCARs and their cover photos will be available through the Web Site. In addition, the CAMP, PHVA, and GCAR reference manuals will be provided in their entirety. The second area will contain the CBSG newsletter. This is an excellent, cost-effective way to provide information about current CBSG projects to interested people all over the world. The third area will contain a variety of photos taken by program staff while attending workshops. These will be pictures of animals, zoos, people, and interesting places around the world. All photos will be available for downloading. The fourth section will contain the current CBSG Schedule. The fifth and sixth sections will hold the information about VORTEX and the Global Zoo Directory, respectively. The last section will provide general information about CBSG including history, overview, mission, and brief summaries of the different types of conservation management tools that we utilize around the world. We expect to have the Web site up and running by mid-February 1996.

The 1995 CBSG Annual Meeting was held in Dublin, Ireland 29 September - 1 October. By all accounts, the meeting was an enormous success with 125 delegates from 28 countries in attendance. Please see the executive summary for more details of the 1995 Annual Meeting.

We thank all of you who helped to make 1995 a great year and we look forward to working with you in '96.



Newsletter of the
Conservation Breeding
Specialist Group,
Species Survival Commission,
World Conservation Union

Ulie S. Seal, Chairman

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Urban Council of Hong Kong
Union of German Zoo Directors
Washington Park Zoo
Wassenaar Wildlife Breeding Centre
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CBSG News

The CBSG news is published by the Conservation Breeding Specialist Group, Species Survival Commission, World Conservation Union. CBSG News is intended to inform CBSG members and other individuals and organizations concerned with the conservation of plants and animals of the activities of the CBSG in particular and the conservation community in general. We are interested in exchanging newsletters and receiving notices of your meetings. Contributions of \$25 (U.S.) to help defray the cost of publication would be most appreciated. Please send contributions or news items to:

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CBSG Mission Statement

The mission of the Conservation Breeding Specialist Group is the conservation or establishment of viable populations of threatened species.

The goals of the CBSG are to:

1. Organize a global network of people and resources.
2. Collect, analyze and distribute information.
3. Develop global conservation breeding programs.
4. Integrate management programs for captive and wild populations.



Executive Summary...**1995 CBSG Annual Meeting**

The 1995 CBSG Annual Meeting was extremely informative and diverse with delegates making presentations throughout the three days on issues ranging from regional collection planning, using the new REGASP software package, to the British field cricket breeding and release program. Regional reports by representatives from Latin America, North America, Paraguay, Japan, Europe, South Africa, China, the Southeast Asian Zoo Association, and Australasia highlighted the meeting. But, as always, the heart of CBSG's annual meeting was the significant amount of time allotted for working groups to convene and discuss specific issues. This year's working groups focused on topics such as red panda management, invertebrate conservation, genome resource banking, and the development of satellite CBSGs, among others. The reports compiled within this newsletter are a result of the enormous amount of time and effort extended by the working group participants and other delegates. We are extremely pleased with the results of the 1995 CBSG Annual Meeting and we are grateful to our host, the Dublin Zoo, and to all the participants for their contribution to making the meeting a success. We look forward to the upcoming 1996 Annual Meeting which will be held in Denver 23-25 August 1996 and hosted by the Denver Zoo.

Report from the Asociacion Latinoamericana de Parques Zoológicos Acuarios y Afines (ALZPA)

Mesoamerica is an area of great biological importance because of its double function. It is both a bridge and a filter for biodiversity between North and South America.

If this area is studied in detail one can observe how animals like the coyote have recently migrated from the U.S. to Panama. One can also observe that many plants, like *Pinus*, have a southern distribution limit at Honduras, and species like capybaras have a northern distribution limit at Panama. Between 5 and 10% of the world's biodiversity is here; 32% of Mesoamerica remains as wild land. Conservation of this biodiverse region is a great challenge.

This year, Mesoamerican zoo professionals met to discuss their role as conservationists. This meeting was the first one in the region devoted to the role of zoos in conservation. Thirty five representatives of zoos, universities, and related organizations such as non-government organizations met at the Mesoamerican Conservation Conference in San Jose, Costa Rica from 29 May to 2 June, 1995. This meeting was promoted by AMAZOO and was supported by Wildlife Preservation Trust, The St. Louis Zoo, and FUNDAZOO.

During the meeting, participants analyzed the situation in each represented zoo. We found that all the zoos have the basic programs and all of them are busy remodeling their institutions. Zoo personnel learned about conservation techniques and programs in the U.S. from Dr. Cheryl Asa and Dr. Bruce Carr from the St. Louis Zoo, Dr. Patricia MacDaniel from the Cleveland Zoo, and Dr. Ulysses Seal from CBSG.

Seven commissions with special interests were also organized. The major goal was to develop activities that contribute to wildlife conservation in Mesoamerica. These following specific objectives were set:

- To strengthen the educational department at each zoo.

- To develop SSP-type programs to manage our animals collectively as a population. As a first step, a studbook for the margay, *Felis weidii*, will be developed.

- To assure that the operations and collection plans of each zoo correspond to the World Zoo Conservation Strategy.

- To promote wildlife research in Mesoamerica.

- To cooperate with wildlife managers, field and university biologists, veterinarians, and educators for more effective conservation of endangered species.

This meeting was remarkable for the amount of agreement and enthusiasm generated. It provided a blueprint for Mesoamerican zoos to become conservation leaders.

This report was submitted by Yolanda Matamoros, ALPZA-AMAZOO.

Brazilian Zoo Association



Raul Gonzalez Acosta, director of the Brasilia Zoo, has been the new president of the Zoological Gardens Brazilian Society (SZB) since May when elections took place. Based in Brasilia, SZB is near the major federal organizations, including the institution in charge of environmental and natural resources (IBAMA), and it serves to facilitate communication and paper work. The main targets of the new administration are:

1. A campaign against traffic of wild animals in Brazil aiming to foster public awareness of the fact that, according to WWF studies, Brazil is responsible for the disappearance of over 12 million specimens, which comprises about 10-15% of world-wide traffic received mainly by the United States, Europe, and Japan. The program is to start soon through a coordinated effort among IBAMA, WWF, and SZB.

2. Due to its geographical location, SZB intends to act as an advisor to all zoological gardens regarding international acquisitions, exchanges, and loans. Many times the paper work becomes so complicated that most institutions just abandon negotiation before accomplishing anything.

3. Create a special committee to ensure that the highest standards of husbandry and welfare are employed, especially regarding endangered and rare species.

4. Increase public authorities' understanding of conservation and breeding issues and their relationship to the development of municipalities.

5. Register SZB at the National Research Center (CNPq) and, thus, become entitled to formally obtain facilities to represent the society.

6. Join efforts with the Latin American Association of Zoological Gardens, aquariums and the like to work together to protect neotropical fauna most effectively.

7. Publish a periodical to convey information about surplus and/or wanted animals, courses, seminars, technical information, and other information that may add value to zoo activities.

This report was submitted by Katia Cassaro.

Ex-situ Preservation of Animals in China



China is one of the largest countries and it has abundant wild animal resources and many endangered species. There are 2,340 vertebrate species in China, comprising 499 mammal, 1,186 bird, 376 reptile, and 279 amphibian species. These animals constitute an important part of the world's wildlife resources. Because of the destruction of the environment and illegal hunting, some endangered species are facing great difficulties. Thus, measures should be carried out to enhance the preservation of these animals.

Including exhibit areas inside parks, China has 171 zoos with over 100,000 specimens representing 600 species. Thirty of these are integrated zoos. These zoos have been utilized as schools to teach the public, especially primary and middle school students, to protect wild animals and natural resources as well as

to do research on animal preservation and breeding.

The most important tasks are to improve the habitat conditions of zoo animals and to strengthen research in animal preservation and breeding so as to increase captive populations in order to alleviate pressure on wild animals. The Chinese Association of Zoological Gardens is working positively for wild animal preservation, especially on *ex-situ* preservation. This is being accomplished by:

- Implementing a publication and education plan by publishing scientific and educational books and constructing exhibition and publication facilities.

- Making full use of experts to participate in various social activities on animal preservation such as attracting birds in the urban areas, rescuing animals, and resource investigation.

- Participating in making and implementing the laws and regulations for animal protection and making technical standards for zoos.

- Establishing breeding facilities for endangered animals. A facility has already been established for the giant panda in Chendu as well as for black-faced monkeys, takins, golden monkeys, and cranes.

- Organizing and coordinating the research work on animal breeding to make full use of reproductive animals. For example, since the establishment of the China Giant Panda Breeding Technical Committee in 1989 by the Zoological Association, 32 giant pandas have been bred in the last six years. Protection committees of South China tigers and cranes will soon be established to enhance the coordination of the breeding work of these two animals.

- Strengthening research on animal pedigrees. In order to fully utilize the computer program on the management of animal pedigrees provided by ISIS, we have established international pedigrees for giant pandas, red pandas, South China tigers, black-necked cranes, and red-crowned cranes.

- Training managerial and technical staffs. In 1994, we held a training course in Chendu on the management of pedigrees of animals. Experts from AZA had been invited to give lectures.

- Strengthening the cooperation with international organizations. In the spring of 1995, we successfully cooperated with CBSG to organize the *Conference on the Preservation of the South China Tigers*. In addition, with some international organizations, we are jointly establishing a China Endangered Animals Diagnostic Center.

- Participating in international activities. In 1994 and 1995, we sent delegations to participate in the Hong Kong Southeast Asian Zoological Association Annual Conference, Japanese Association of Zoological Parks and Aquariums Annual Conference, and Cologne IUDZG Annual Conference on the Preservation Strategies.

We are now in the process of applying for membership in IUDZG, which should be approved in 1996.

This report was submitted by Liu Shanghua, vice-president, CAZG.

CIRCC Meeting Minutes

Following are minutes of the CIRCC meeting held in September, 1995 at the Dublin Zoo:

1. Welcome: Opening by Chair W. Labuschagne at 13:40. Brief review of changes in the IUDZG-WZO constitution, providing for regional association memberships, and institutional instead of individual director memberships. Brief review of the development of the Secretariat at ISIS, and it's services to date.

2. Apologies: Bernard Harrison unable to attend; Gen. Ashari representing SEAZA at this meeting.

3. Minutes: Sao Paulo meeting minutes, with minor corrections, approved.

4. Membership: discussed official members of CIRCC, plus reasons for much wider CIRCC mailing list. Want to include those actively operating or developing coordinated breeding programs on CIRCC; want to share information with all associations which are members of WZO. Countries with a national association and breeding program where no regional breeding programs exist should also be included. Those in the process of establishing breeding programs should be assisted by including on the newsletter mailing list and eventually "full" membership. Any group which feels it should be included is encouraged to approach the Chair regarding consideration for membership.

5. Mission/Vision: coordination between regions of species management? Sharing of information, technology, training, and standards? Draft of a formal mission statement will be written by volunteers M. Hutchins and C. Hopkins.

6. The CIRCC monthly mailing is published by Secretariat. Some discussion of the value of editing submissions into an integrated newsletter. The lists of studbook and breeding programs maintained by the EEP/EAZA office has been valuable and was consulted to determine the initial composition of CIRCC. C. Hopkins suggested a monthly topic for CIRCC mailings, asking for responses. Each topic to be coordinated by a CIRCC member for an issue. C. Hopkins volunteered to start with a topic on Dealers; A. Camacho — Confiscated Animals; K. Brouwer — Disposition of Dead Animals; S. C. Sharma/M. Hutchins — Training; N. Flesness — E-mail/computer Access Survey. K. Brouwer mentioned that most information is already published in regional newsletters and that cross-mailing of these to the other regions would be beneficial. General agreement with this. M. Hutchins suggested CIRCC newsletter should get into critical discussions. A. Komori noted that JAZGA translates the monthly CIRCC mailing into Japanese for their member zoos. Electronic linking advantages, maybe some developing regional offices should be financially aided in e-mail. Circulate regional annual reports to all others. Publish full addresses of regional offices annually or semiannually. Request list of each regions' members annually.

7. Collection Planning: reviewed the new ASMP/ISIS association with regard to REGASP and it's new capacity to handle

regional and global collection planning. REGASP for zoo use will be distributed to all ISIS members beginning 1996. REGASP-LINK, for use within regional offices, is also potentially available to regions, but should be negotiated with ARAZPA (which needs to recover some programming and documentation costs). Facilitating planning may be a part of the formal mission/vision. This group could serve as the global reviewer. This might promote more global studbooks. M. Hutchins volunteered to write a document to discuss Regional Collection Planning with directors.

8. Species Heritage (Flagship) Program: IUCN was approached, but after some years of consideration nothing happened. Does zoo community want to take up again (with P. Horse or GLT)? Attempt is to highlight flagship species, and link zoo programs with field conservation. This would have program value, educational value, and marketing potential. Does this mean a financial commitment to a Heritage Program is needed? IUDZG-WZO would be a global consortium of regions/zoos promoting a Heritage (Flagship) Species. Could we work with UN agencies such as UNESCO, which promotes World Heritage Sites? Have to be careful of extensive bureaucratic obligations. Could this promote corporate support? It was noted that Indonesia has several national flagship species and breeding programs.

9. Reintroduction Programs: if issue taken up, M. Hutchins suggests an advisor from IUCN/SSC/Reintroduction Specialist Group. All should be aware of the RSG reintroduction database. Should be a topic for CIRCC Newsletter.

10. Studbooks and Global Numbering System: regional and global numbering systems are overlapping and the confusion is getting worse. A current draft of global studbook rules and procedures was circulated by P. Olney. Drafts of regional studbook standards from AZA and ARAZPA were also circulated for comments. ARKS3 will have a single global studbook field and support separate recording of potentially multiple regional studbook numbers, each with a separate field to hold the acronym of the regional studbook-assigning authority (i.e. AZA, ARAZPA, AZCARM, EAZA, IZA, JAZGA). It was noted that records and studbooks critically depend on marked individual specimens before they have validity. A working group of M. Hutchins, N. Flesness, P. Olney with F. Princee and P. Scobie was assigned to prepare a general recommendation regarding how international and regional studbook numbers should be related. The ISIS is developing a proposal to WZO to jointly distribute all international studbooks by CD-ROM. Copyright may be an issue. Working group will include this issue. International studbooks need approval by WZO, IUCN, and regional association. Flesness noted that 4% of ISIS specimens changed continent. Group agreed that ISIS should develop more information on inter-regional animal moves, which taxa, which regions, etc.

11. Survey of Accessibility to Computers and Their Needs: add to CIRCC mailing.

12. Developed Programs Versus Developing Programs: promote sponsorship of developing program regional representative to developed program meetings.

13. Training Needs Assessment: M. Hutchins announced workshop for sometime during 1996 at White Oak, Florida, U.S.A. for training needs assessment. All CIRCC members included with WZO, CBSG, AZA funding possibilities. Identify existing training within regions/countries. Committee needs to identify other participants and/or alternates, teams of instructors, training of in-country trainers, etc. Must be done with the knowledge and cooperation of regional organization.

14. Budget: the time will come when the committee will need to ask WZO for financial support.

15. Other Business: thanks to WZO-IUDZG President Prof. Dr. G. Nogge for his attendance and support and to Willie Labuschagne, Chair of IUDZG/WZO.

16. Future Meetings: we covered the agenda, so there is no need for additional formal CIRCC sessions this year. Next year's meeting expect to be a whole day. Possible meeting during the White Oak training workshop.

This report was submitted by Willie Labuschagne, CIRCC chairman, National Zoological Gardens of Pretoria, South Africa.

Annual Report of the EAZA/EEP



Meetings

The EEP Committee met twice in 1995, once in Poznan (Poland) on 30 June and again in Prague (Czech Republic) on 9 November. Additionally, a number of decisions was also made through voting by mail in March 1995. The 1995 Poznan Conference was a combination of the 12th EEP Conference, an annual general meeting of EAZA, and the fourth regional CBSG meeting. It was attended by more than 200 people from 115 institutions in 25 countries. The agenda included 15 presentations during plenary sessions, 32 species committee meetings, and 18 TAG Meetings, an EAZA council meeting, a number of EAZA committee meetings and working groups, and the EAZA annual general meeting.

Proposals

The EEP Committee discussed 11 proposals for new EEPs at the 1995 meetings. After consultation with the relevant TAGs, ten proposals were accepted and recommended for approval by EAZA. New EEPs were approved for the following taxa:

- Partula snails (*Partula* spp.); Paul Pearce-Kelly, London
- Dalmatian pelican (*Pelecanus crispus*); Zdzislaw Cwiertnia, Poznan
- Socorro pigeon (*Zenaidura macroura*); Stefan Stadler, Frankfurt
- Green-cheeked amazon (*Amazona viridigenalis*); Mark Pilgram, Chester

- Red-fronted macaw (*Ara rubrogenys*); David Woolcock, Hayle
- White-fronted marmoset (*Callithrix geoffroyi*); Isvan Egyhazi, Szeged
- Pied tamarin (*Saguinus bicolor bicolor*); Bert de Boer, Apeldoorn
- Colombian brown-headed spider monkey (*Ateles fusciceps robustus*); Pierre Gay, Doué la Fontaine
- Geoffroy's cat (*Oncifelis geoffroyi*); Caroline Lees, Federation of Zoos, U.K.
- European bison (*Bison bonasus*); Wanda Olech-Piasecka, Institute of Biological Foundation of Animal Breeding, Brwinow

Several persons stepped down as EEP coordinators in 1995. The EEP Committee recommended the following new coordinators for existing EEP species programs:

- Heloderms: Jaroslav Zima, Usti nad Labem
- Black-footed penguin: Jaap Govers, Natura Artis Magistra, Amsterdam
- White-tailed sea eagle: Frank Rietkerk, NFRZG, Amsterdam
- Hyacinthine macaw: Hannover will decide on short notice if they would wish to keep this EEP
- Sloth bear: vacancy
- Hartmann's mountain zebra: Jaroslav Zima, Usti nad Labem
- Malayan tapir: Helmuth Mägdefrau, Nurnberg
- Indian rhino: Peter Studer, Basle
- Pygmy hippo: Peter Studer, Basle

The EEP Committee also discussed 20 proposals for new European studbooks (ESB) in 1995. After consultation with the relevant TAGs, 18 proposals were accepted and recommended for approval by EAZA. New ESBs were approved for the following taxa:

- Black stork (*Ciconia nigra*); Ryszard Topola, Lodz
- Steller's sea eagle (*Haliaeetus pelagicus*); Sergei Aliskerov, Moscow
- Red and blue lory (*Eos histrio*); Roger Sweeney, Puerto de la Cruz
- Mount Apo lorikeet (*Trichoglossus johnstoniae*); Roger Sweeney, Puerto de la Cruz
- Mexican military macaw (*Aramilitaris mexicana*); Steven Vansteenkiste, Antwerp
- Gentle lemurs (*Haplemur* spp.); Claude-Anne Gauthier, Paris
- Crowned lemur (*Eulemur coronatus*); Pierre Mossons, Mulhouse
- Javan lutung (*Trachypithecus a. auratus*); Sian Waters, Bristol
- Mandrill (*Papio sphinx*); Ilma Bogesch, Budapest
- Two-toed (*Choloepus*) and Hoffmann's sloth (*C. hoffmanni*); Jutta Heuer, Halle
- Binturong (*Arctictis binturong*); William Lewis, Southport
- South American tapir (*Tapirus terrestris*); Franck Haelewyn, Lille

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- African warthog (*Phacochoerus africanus*); Paul Vercammen, Safaripark Beekse Bergen
- Aardvark (*Orycteropus afer*); Joep Wensing, Arnhem
- Bactrian deer (*Cervus elaphus bactrianus*); Waltraut Zimmermann, Cologne Zoo
- Blue duiker (*Cephalophus monticola*); Joep Wensing, Arnhem
- Greater kudu (*Tragelaphus strepticrosus*); Joep Wensing, Arnhem
- Blesbok (*Damaliscus dorcas phillipsi*); and Bontebok (*D. d. dorcas*); Hanny Verberkmoes, Safaripark Beekse Bergen

Several persons stepped down as European studbook keepers in 1995. The EEP Committee recommended the following new studbook keepers for existing ESBs:

- Siamang: Graham Catlow, Edinburgh
- Asiatic black bear: Magdalena Gomolinska, Warsaw

Taxon Advisory Groups

The following new Taxon Advisory Group (TAG) was put forward by the EEP Committee for approval by EAZA Council in 1995:

- Tapirs and Hippos: Sian Waters, Bristol

The existing EEP Ciconiiform TAG was enlarged with Phoenicopteridae and the Hamerkop. New co-chairs were appointed for the following TAGs:

- EEP Invertebrate TAG: Paul Pierce Kelly, London
- EEP Deer TAG: Thomas Kauffels (Wuppertal) to replace Max Müller (Bern)
- EEP Antelope TAG: Frank Rietkerk (NFRZG, Amsterdam) to replace Simone Wakefield (Marwell)

The EEP Committee also accepted a name change: the EEP Invertebrate TAG will be changed to EEP Terrestrial Invertebrate TAG.

Miscellaneous

Four issues of the EAZA/EEP Available and Wanted List were distributed in 1994 and some 100 EAZA members are submitting lists for inclusion. The EEP Committee remains worried that the list also seems to be passed on to certain European animal dealers. It must be made clear that the EAZA Available and Wanted List is only for EAZA members.

Inter-Regional Conservation Coordination

The EEP Office represented EAZA at the Committee for Inter-Regional Conservation Coordination (CIRCC) meeting in Dublin on 27 September 1995. A short report was also presented at the annual CBSG meeting.

Future of EEP Annual Conference

A document dealing with the future of the EEP Annual Conference was put forward to the EEP Committee for discussion in 1995. After long deliberation it was concluded that the EEP Conference will have to be expanded by at least one day to

a total of four days. It would be most efficient if the EAZA AGM could be held in the middle of these four days on a Saturday or Sunday, and if an attempt could be made to have the bird/reptile EEP/TAG meetings on the first two days and the mammal meetings during the last two days.

Animal Brokers and Dealers

The EEP Committee has been notified that several animal dealers/brokers were attempting to join one or more EEPs. It should be made clear to all EEP Coordinators that they should first contact the EEP Committee through the EEP Office before accepting any dealers as members of an EEP. The EEP will never be taken seriously by conservation organizations, other NGOs, or governmental organizations if we include dealers in our programs.

EEP Coordinators

Several coordinators have improved their functioning since the last evaluation in 1994. However, at least five coordinators have shown no improvement at all. The EEP Committee decided to request them to step down as coordinator if they do not submit their 1994 annual reports to the EEP Office for publication in the 1994/1995 EEP Yearbook.

Dates for the proposed EEP Coordinators' course for German-speaking coordinators, to be conducted by staff of the EEP Office and Lydia Kolter of Cologne Zoo, were set for 13 December 1995 (Frankfurt) and 21-22 March 1996 (Tierpark Berlin).

TAGs Regional Collection Plans

The EEP Committee will draft guidelines for the functioning of TAGs in 1996. It is encouraging to notice that several TAGs have already started to draft Regional Collection Plans for their taxa. Three examples of the collection planning process were presented at the EEP Conference in Poznan for hornbills, primates, and bears.

Non-European Zoos in EEP Programs

Many coordinators do not follow the guidelines of the EEP by allowing non-European zoos to join the EEP before consulting with the EEP Committee. Sending animals to other regions and letting the receiving zoo join the EEP is generally not the path that should be followed when one tries to solve a European surplus problem. Institutions outside the European region can only be accepted if certain criteria are fulfilled and if the EEP Committee grants official permission to the EEP coordinator. This issue will be communicated to all EEP coordinators.

Amur Tigers

The EEP Office was contracted by London Zoo/Exxon to assist in the preparation of the EEP Amur tiger meeting in Moscow, 2-3 November 1995. A general paper on EEPs was presented by a member of the staff. Additionally, EEP Office staff assisted in conducting working groups on EEP Amur tiger issues and veterinary management of tigers in the EEP.

The International "Genome Resource Banking Memorandum of Agreement" for tigers will be signed by Dieter Jauch and Koen Brouwer to underline the interest of the European breeding program region in such activities for tigers.

Software

The test version of the European studbook software "ZRBOOK" is planned to be ready at the end of 1995. Distribution to interested coordinators will follow in early 1996 so that coordinators can use it to prepare their 1995 annual reports.

The conversion program, ZRBOOK-SPARKS-ZRBOOK, has been tested and debugged. A manual is also ready and distribution should be possible by the end of 1995. A discussion with ISIS to make the conversion program available to their members has been initiated.

Forthcoming EAZA/EEP Conferences

The next EAZA/EEP Conference will be in Doué la Fontaine, France (1996). Preliminary arrangements have been made and further announcements will be sent out early in 1996.

This report was submitted by Koen Brouwer, EAZA/EEP Office.

British Isles Regional Report

Membership and Structure

Membership of the Federation of Zoological Gardens of Great Britain and Ireland now stands at fifty-six collections and fifty Associate Members. The Federation continues to be administered by a central office at London Zoo comprising two full- and two part-time staff. The Federation's Council directs the activities of four committees; Membership and Licensing, Education, Marketing, and Conservation and Animal Management (CAM). A subcommittee of CAM, the Joint Management of Species Committee (JMSP), oversees the work of the British Isles TAGs which are responsible for cooperative breeding programs and associated activities. Since July 1995, CAM has also been formally responsible for overseeing the activities of the Research Group, a developing group initiated to deal with research issues pertinent to the work of the TAGs.

The developments which have taken place within the British Isles since the last CBSG meeting are summarized below.

Species Management

Britain forms part of the European Region and, as such, both British Isles TAGs (BITAGs) and Joint Management of Species Programs (JMSPs) become subordinate to European TAGs and programs once these are established. Progress with European TAGs and Programs will be covered in the European Regional Report. There are currently 23 active BI TAGs; three previously-active ones now function at the European level only, and

the need for the others to continue as separate BI TAGs is under periodic review.

With an increasing number of European studbooks becoming established, the need to maintain separate JMSP studbooks for certain taxa is also under review, and criteria have been set for the approval or continuance of these to ensure that there is no unnecessary duplication of effort. Two new JMSP studbooks have been approved since October, 1994.

The third ARKS and SPARKS course was run in March, and it was attended by staff from both Britain and mainland Europe. We now have a good core of staff in British Zoos well-trained in the use of ISIS software.

The Federation and some of its members are funding the production of a database package for the analysis of cage space survey data for the purpose of regional collection planning. The use in Britain of the Australasian collection planning program REGASP is also under consideration.

The JMSP Annual Report detailing the work of the TAGs during 1994 was produced and circulated in May.

Education and Training

The Education Committee held their annual conference in November, 1994, hosted by Jersey Wildlife Preservation Trust. The series of presentations and workshops covered a broad spectrum of topics, including *in-situ* conservation projects, the implementation of Agenda 21 (Earth Summit, Rio) through education in zoos, training and qualifications for zoo educators, principles of museum interpretation, and innovative ideas for interactive education projects. Two successful regional workshops were also held during the year dealing with marketing education programs, captive breeding, and networking. A newsletter was circulated to all collections, enabling education officers to keep in touch with the Federation's activities.

Progress is continuing with the rewriting and updating of the City and Guilds Zoo Animal Management Course which is available to zoo staff worldwide.

Conservation

The Federation's database of *in-situ* conservation projects to which its members have contributed is being continuously updated and is to be extended to include mainland European zoos.

Research

The Federation now maintains a database and growing library of student research projects undertaken in member collections. Research needs identified by the TAGs are periodically circulated to university departments via the Federation office as a means of attracting students interested in zoo research. The BI Research Group has appointed a chair, and future activities of the group are under discussion. The BI Group maintains close contact with members of the European Research Committee.

Husbandry Guidelines

The BI TAGs are now responsible for the production of the

British Isles...

Federation's Management Guidelines for the Welfare of Zoo Animals. Drafts have been received for four of the Management Guidelines currently in production. To avoid inter-regional duplication of effort, the Federation Office maintains a database of Guidelines published both within and outside the British Isles.

Zoo Inquiry

The Federation's response to the "WSPA/BFF Zoo Inquiry" document, which was the main thrust of last year's anti-zoo campaign, was completed and circulated in February. A number of other regions have expressed an interest in receiving copies.

Submitted by Caroline Lees, Zoological Gardens, Regent's Park, London.

Regional Report from India



During the last year, the main thrust of the zoo community in India was enhancing the scientific input into zoo management and building effective networking for information sharing. The Central Zoo Authority, the Indian Zoo Directors' Association, and Zoo Outreach Organization/CBSG, India collaborated to achieve this goal. These efforts got strong support from CBSG, EEP, and the Red Panda Management Group. For the latter, our thanks to Dr. Angela Glatston, Dr. Miles Roberts, and Dr. Peter Bircher. Dr. U. S. Seal remained the main inspiring force behind the efforts of the Indian Zoo Community in becoming more and more professional in its approach to conservation.

In October 1994, a symposium with workshop was organized for the networking of zoos, research institutions, and wildlife managers. It was a tremendous experience. The research institutes in India have much expertise in the field of animal nutrition, disease management, assisted reproduction, and molecular biology. Long-term projects have been assigned to these institutions on DNA fingerprinting, assisted reproduction, and genome banking. Facilitation of the international community in obtaining equipment purchased by us is required.

The Red Panda Management Group and EEP took keen interest in the planned breeding of this species and provided three animals to strengthen the gene pool available at Darjeeling Zoo. A training workshop on the management of the red panda was also organized at Darjeeling in April, 1995. The workshop helped to bring the zoos in the specie's range area together on a common platform and get exposure to scientific management of the species.

In February, 1995, a meeting of zoo directors for the planned breeding of Bengal tigers was held at Bhubaneswar. The founder animals have been identified and the responsibility of implemen-

tation of the program has been assumed by Sri S. K. Patnaik, the national coordinator for the program and Dr. A. K. Roychoudhery, a population biologist.

In May, 1995, a meeting for the planned breeding of lion, wild ass, and nicobar pigeon was held in the Gir Forest. The founder animals and participating zoos have been identified. The planned breeding programs are to accelerate shortly.

Breeding of the great Indian bustard is also an area of concern and meetings were organized to determine the strategy of this seriously-endangered species.

PHVA for Gharial

The CBSG, India and Jiwaji University School of Studies in Zoology organized a PHVA on Gharial. This was the first workshop organized with resource persons exclusively from India.

After twenty years of a systematic project to conserve and protect gharial, some researchers and wildlife officers felt that the work lacked a well-defined direction and they were concerned about the actual success of the project. Recent decisions to terminate supplementation of wild populations decreased active assistance towards recuperation of the species. This led in turn to an initiative by researchers and managers for a systematic assessment of the current status of the species.

The PHVA recommendations included that an annual census be done in every area, using a more standardized methodology and using the help of local people and other volunteers for whom briefing sessions and literature would be organized. A computer simulation model suggested the stable Chambal population could withstand even a yearly small harvest for genetic supplementation of other populations. The Mahanadi and Katemiaghat populations are unstable and require supplementation. Genetic studies for diversity and variability are crucial for all populations.

Threats identified included threats to gharial in unprotected areas such as fishing, sand mining, riverside cultivation, and industrial pollution. The workshop felt that conservation of gharial would not be improved by opening trade and it could be seriously damaged. Regular supplementation should be maintained for some populations without significant reduction, but the age of the animals when released and the sex ratio may need to be redefined according to scientific research input. The PHVA participants agreed that the lack of public education has been a major lacuna in the Crocodile Conservation Program.

PHVA for Barasingha

The swamp deer population has been on the decline for the last few decades. A PHVA workshop was organized by the Central Zoo Authority at Wildlife Institute of India, Dehra Dun with the help of CBSG and CBSG, India in July, 1995 and invaluable recommendations came out of this exercise. The workshop was followed by a training workshop on small population biology.

The barasingha is practically a symbol of wildlife of India. Three subspecies of barasingha in India total about 3,500-4,000

animals. They have been greatly reduced in range and numbers from historical levels in this century, and they remain as fragmented populations. They are subject to predation and to poaching in some populations.

Participants contributed life history data to define the values for a healthy population under favorable ecological conditions. The primary data set is taken from a combination of published works for the Kanha population as well as data from other cervid species when specific barasingha data were lacking. A range of values for the effects of predation and poaching on adult mortality were explored to determine their effects on risk of extinction, population growth rates, and as a guide to possible management scenarios. Additional risk factors were also evaluated, including disease epidemics and inbreeding depression. Several scenarios for the establishment of new populations were tested.

Recommendations included: strengthening populations to maintain long-term viability of wild barasingha; developing data on population trends, threats, and protection measures; continuation of taxonomic work on relationships of the three subspecies; identification of rutting, fawning, and summer grounds for all populations; removal of teak and eucalyptus plantations from barasingha habitats; holding a follow-up PHVA in 1-2 years; and having a PHVA specifically for the Dudhwa and for the Kanha populations. There were detailed state/area recommendations as well as a specific plan developed for zoo populations. The report has been produced and delivered to participants at the Wildlife Institute and it is being posted to others at this time. The Chief Wildlife Warden of Madhya Pradesh has already indicated his willingness to hold a follow-up exercise for the Kanha population.

Studbooks

The Indian studbook for tigers and Asiatic lions were updated. Studbook information was provided to the international studbook keepers for tigers, Asiatic lion, and sangai.

Information Sharing

The Zoo Outreach Organization continued to provide invaluable information on various aspects of zoo management through ZOOS' PRINT and ZOO ZEN.

The Central Zoo Authority and Indian Zoo Directors Association started a quarterly journal for sharing information on problems related on zoos management.

The Indian Veterinary Research Institute has started a journal on wild animal diseases.

Important Publications

- Manual on Wild Animal Diseases, Dr. B. M. Aroar
- Zoos of India, published by Central Zoo Authority & Wildlife Institute of India (in press)
- A Handbook of the Management of Wild Animals in Captivity in Lower Bengal (1892) was reprinted.

Training Programs

- Ten-day capsule course for zoo directors

- Training program for zoo keepers in regional language
- Ten-month diploma courses on wildlife diseases

My special thanks are due to Dr. Nögge for taking keen interest in the conservation programs in India and supporting my participation in this meeting and "Strategic Futures Search Workshop" held at Koln and Sarah Cristie from EEP Tiger Breeding Group for participation of Mr. Patnaik, National Coordinator, Tiger Breeding Program in India. My sincere apologies are due to Dr. Angela Glatston and Dr. Gunther Nögge that their offer of support for Mr. Bahuguna's participation could not be used.

My sincere thanks to Dublin Zoo for making a male lowland gorilla available to Mysore Zoo which will help in breeding of this seriously endangered species. We look forward to the offer of the Indian rhino AZA Species Survival Plan for the exchange of an Indian rhino female with a rhino male. We look forward to the finalization of the breeding program of the hunting cheetah.

India is doing its best to improve the image of its zoos by making their displays more naturalistic and congenial to animals. The amount spent in this effort during the last year is about US\$17 million. Special efforts on breeding of endangered species and control of prolifically-breeding species have been major areas of concern. Several initiatives have been taken to address these concerns.

This report was submitted by S. C. Sharma, Ministry of Environment and Resources.

Report from India...

Training in Small Population Management

There are new theories, techniques, and tools available for better management of wildlife populations, particularly small populations at risk in isolated, fragmented habitats. Some of these areas may be politically, geographically, and environmentally non-salvageable and unprotected for a long time to come. In such cases, the last remaining individuals of a species (perhaps an endemic species) could be lost before habitat can be sufficiently protected. This is not an isolated scenario; it is happening around the world at a rapid and accelerating rate. Intensive management, using a growing variety of tools and techniques, is necessary to insure the survival and recovery for an increasing number of wild animals.

Sometimes wildlife managers and officers at higher levels are skeptical of modern management teaching because the material does not address perceived realities or the link between theory and practice has not been made. Concurrently, one of the problems with the increasingly popular Population and Habitat

Training...

Viability Assessment Workshops (PHVA) is that implementation of recommendations has not been carried out. The purpose of a PHVA is to create a report from which a management plan for the species can be made. So far, this has not been done for any species that has been assessed in India.

With this in mind, training in small population biology and the CBSG processes was organized in the Wildlife Institute of India in July 1995. The training included a genuine PHVA for Barasingha. The participants of the training workshop completed modeling scenarios for the PHVA and completed and edited the report. Then, during the following week, a series of lectures and presentations by resource persons on technical subjects were given in the mornings with practicals in the afternoons. It was clear from this training that the wildlife managers were more open to this combination of theory and process (group dynamics) working style.

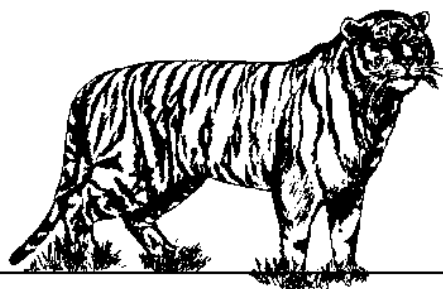
Therefore, the training planned in 1996 will be limited to wildlife managers and researchers working with the Forest Department. The proposed training is intended to address many of the problems mentioned above through interactive discussions and working groups. To achieve this objective, a case study species (lion-tailed macaque) which has been assessed in a PHVA and which is available in nearby habitats will be used to put theory into practice.

Indian as well as foreign resource persons will be utilized. Briefing material will be provided and computers for simulation modeling and constructing of life tables will be provided, one to every two participants.

The mornings will be devoted to theory and the afternoons to working group sessions, in most instances using the information conveyed in the morning session. Three field trips are scheduled, two to lion-tailed macaque habitats and one to the site of a new zoo (the Coimbatore Zoological Park).

The training will be at Coimbatore. Funding will be sought from the Ministry of Environment and Forests, Government of India via the Central Zoo Authority. The course is being organized by the Zoo Outreach Organization/CBSG, India, the Central Zoo Authority, and CBSG/SSC/IUCN. Collaborators for the course are the Institute of Forest Genetics and Tree Breeding, the State Forest Rangers College, the Center for Ecological Sciences (proposed, not yet confirmed), the Wildlife Institute of India (proposed), the Indian Institute for Forest Management (proposed), and possibly others.

This report was submitted by Sally Walker, CBSG, India.



Southeast Asian Zoological Parks Association (SEAZA)

IVth SEAZA Annual Conference in Hong Kong

The IVth SEAZA Annual Conference was held in Hong Kong on 15-18 November 1994. It was attended by 134 delegates and 40 guests from 15 countries and territories including Australia, China, India, Japan, United Kingdom, and the USA. The theme for this conference was, "Regional cooperation within the global zoo community and animal record keeping systems as a foundation for collection management of conservation." To this end, special mention should be given to the chairman of the CBSG, Dr. U. S. Seal and his group, Dr. Ronald L. Tilson, Dr. Nathan R. Flesness, and Ms. Christine Hopkins. We also appreciate the preparedness of the CBSG leadership to assist the conference in setting up the PHVA workshop on the clouded leopard.

The SEAZA recognizes the following 12 countries and territories as being in the Southeast Asian region and therefore eligible to become voting members of SEAZA: Brunei, Cambodia, Hong Kong, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Taiwan, Thailand, and Vietnam.

The Vth SEAZA Annual Conference will be held in Taipei, Taiwan on 16-20 October 1995. The VIth SEAZA Annual Conference will be hosted by Zoo Melaka, Malaysia on 21-24 October 1996. Malaysia has formed a national zoo organization, the Malaysian Association of Zoological Parks and Aquariums.

Southeast Asia is characterized by a rich diversity of social systems and cultures. Therefore, zoological institutions and resources available to these institutions are widely varied, with some of them belonging to the most advanced in the zoo world, while some others are less developed.

The SEAZA's guiding principle is to promote regional solidarity among zoological institutions of Southeast Asia by collectively assisting each other to understand and learn modern zoo management which will lead to better zoos and to greater regional cooperation and unity. A unifying mission of our members is one of public education in biology and environmental conservation.

SEAZA Executive Board Meeting

The SEAZA's executive board meeting discussed preparations for the Taipei Conference, addressing the following items:

- review of points in Communiqué IV, Hong Kong
- amendments of SEAZA membership categories and dues (Membership Committee)
- education and training (Zoo and Animal Management Manual)
- standards for professional behavior (Professional Standards Committee)
- animal welfare, human safety, public education
- REGASP computerized animal records keeping system.

ASEAN's New Member

Since July, 1995, Vietnam has been the seventh member of the Association of South East Asian Nations (ASEAN). Other nations in the region having an observer's status and planning to join ASEAN in the near future are Myanmar, Cambodia, and Laos.

1995: ASEAN Year of the Environment

The year 1995 was designated as the ASEAN Year of the Environment, a step forward to coordinate efforts in the fields of:

- conservation of natural habitat of flora and fauna, preventing and controlling forest fires.
- law enforcement against illegal traffic of protected species.
- firmer actions against destructive methods of fishing along coastal waters and coral reefs.
- conservation of marine biodiversity.

Indonesian Zoological Parks Association

The Indonesian Zoological Parks Association (PBSKI) led the commemoration of the National Flora-Fauna Day, 5 November 1995, in Indonesia. In commemorating this day, the PBSKI has been designated as Chair of the Central Committee to coordinate government agencies and non-government organization's (NGO) in related activities. In all 27 provincial regions, the governors are to chair the regional commemoration committees.

The theme will be, "Enhancing the care for and conservation of national flora and fauna in conjunction with the golden anniversary of the Republic of Indonesia." The program of activities will include:

- national campaign to continue the planting of one million trees in the regions as the "Re-greening of Indonesia"
- intensifying efforts in the conservation of provincial flagship species of flora and fauna (Presidential Decree No. 4, 1992)
- public education to promote preservation of the environment and care for its flora and fauna
- workshops, seminars, and scientific sessions
- competitions amongst school children and the general public in paintings, poetry reading, essays, etc., based on the national theme
- other NGO's activities in related fields.

Biodiversity

Under the aegis of the Global Biodiversity Strategy and the U.N. Convention on Biodiversity, two events were held in November 1995 in Jakarta:

- the third meeting of the Global Diversity Forum (GBF3) on 4-5 November 1995
- the second meeting of the Conference of the Parties to the Convention on Biological Diversity (COP2) on 6-17 November 1995 with it's theme; "Biodiversity for equitable welfare of all people."

At Sao Paolo, Brazil, we have recorded a joint CBSG-IUDZG resolution on the U.N. Convention on Biodiversity and

on Climate Change.

Marine Biodiversity

At the COP1, governments agreed to take up marine biodiversity as the main theme and they recognized that marine species significantly differed from terrestrial species, in particular:

- information and strategies concerning the conservation and sustainable use of marine biodiversity and biological resources
- unique problems of marine biodiversity conservation and proposed solutions
- protected area management and policy
- community-based coastal resources management.
- needs and mechanisms for regional and international cooperation
- relationship of the Biodiversity Convention to other international marine treaties and programs
- priorities for special action by the COP and its subsidiary bodies on marine biodiversity.

Considering the geographical disposition of the Southeast Asian region, marine biodiversity is of utmost importance for the welfare of the people.

Regulating Access to Genetic Resources

The Biodiversity Convention establishes that genetic resources lie within the sovereign jurisdiction of individual nations. Countries are now moving to establish legal regimes to regulate access to and utilization of their genetic resources which, due to rapid development of biotechnologies, are becoming increasingly valuable as raw material of drugs, crops, and industrial material and processes. Areas of discussion included:

- national efforts to develop policies and laws regulating genetic resources access
- compensation for local communities within the national access regulation frameworks
- principles and mechanisms for benefit sharing
- the unique situation of indigenous people with respect to genetic resources exploitation in their territories
- the need for international mechanisms to harmonize and give effect to national access regimes.

Decentralization of Governance and Biodiversity Conservation

Many national governments are moving to decentralize their powers to provincial, state, or lower levels of government, or even giving some of their traditional responsibilities to the private sector. Questions discussed included:

- what experience exists to date with decentralization of biodiversity management?
- what steps need to be taken to ensure that increasing decentralization of governance helps rather than hurts biodiversity conservation?
- how can financing of biodiversity conservation flow directly to local level efforts and reflect local level priorities?

SEAZA...

Forests and Biodiversity

Forests are a key repository for the earth's biodiversity as well as important resources for both national and local economies. Forest loss has been a topic of great concern, particularly in the species-rich tropical forests, for at least a decade or more.

Better and more relevant research is necessary to provide answers to the intricate problems of sustainable forest management. There was no agreement at UNCED on a mechanism for promoting sustainability of the world's forests. A protocol under the Convention on Biological Diversity has been one proposed mechanism. Areas of discussion included:

- can the Convention effectively address the myriad of socio-economic and biophysical factors affecting the sustainability of forests?
- what specific steps should be taken within the context of the Biodiversity Convention?
- what is the role of science in helping to develop a comprehensive mechanism to promote sustainable forest management?

Conclusion

Solutions to the above questions are to be addressed by the Global Biodiversity Forum (GBF3) and the second conference of the Parties to the Convention on Biodiversity (COP2) will influence the future developments of Southeast Asia, being an archipelagic region with its species rich in tropical forests. Being part of the region, SEAZA has to face these realities.

This report was submitted by D. Ashari, SEAZA.

PAAZAB Report

The second African Preservation Program (APP) Coordinating Committee Meeting was held at the Port Elizabeth Museum, Port Elizabeth, South Africa, during the 1995 PAAZAB conference. The following decisions were taken:

1. The APP status of the grysbok has been upgraded to full APP.
2. Studbooks will no longer be restricted to only APP specimens, but they will include all captive animals anywhere in Africa. This includes animals in private hands. They will now be considered regional studbooks, with the region being Africa.
3. Due to Dave Morgan's present workload, he requested to be replaced as APP secretary. This request was granted. Paul Hart of Tygerberg Zoo has been appointed as APP secretary.
4. An informal species coordinator's newsletter will be produced by Paul Hart.
5. Funding for the Wild Dog Studbook (in fact, any APP-related material) may be funded by PAAZAB.

6. Each propagation group can write their own memorandum of participation (MOP). The MOP in the Species Coordinators Handbook is a guideline only.

7. It was decided that the GRB under the chairmanship of Dr. Paul Bartels should be a separate standing committee of its own, although available to all TAG's and APP's when required.

An APP workshop was held with many questions being asked by those attending. Most of these were answered from our charter. One point which cannot be stressed too often is to get loan agreements correct and agreed to by both parties before the actual transfer of specimens takes place.

Concern was expressed that all PAAZAB members, in particular new members, may not know what the APP is. It was agreed that the National Zoo would produce a brochure for distribution.

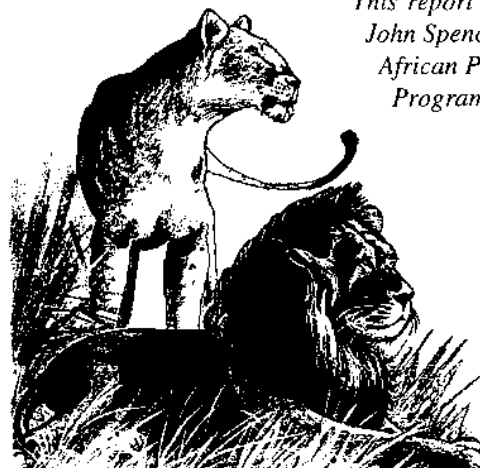
Reports on each TAG were read. No further species were named as APP's because we are still short of species coordinators: three for mammals, one for birds, and one for reptiles. The APP committee decided not to propose more APP species before we have activated all the ones already proposed. There was one resignation of a species coordinator; Carol Walton of Tygerberg Zoo resigned as coordinator for the cape vulture. Werna Fourie, Curator of Birds, Tygerberg Zoo, has replaced her. Dr. Alan Abrey has resigned as Taxon Coordinator for Birds due to the pressure of work. Glen Holland of Natal Parks Board was appointed in his place. The Reptile/Amphibian TAG has increased by two members to a total of 14.

Once again, I appealed to members of PAAZAB for newsworthy items to be forwarded to me for forwarding to CIRCC for publication. Last year, I did not receive a single item from members.

A fact-finding mission to Africa north of South Africa was approved by Council. We feel that this is a very important step towards furthering the APP and the PAAZAB itself. We have great difficulty in obtaining information on zoos north of South Africa. We are confident that this will be a breakthrough.

Once again, I would like to thank the members of PAAZAB and, in particular, my APP Committee for their support and assistance over the past year.

*This report was submitted by
John Spence, chairman,
African Preservation
Program.*



Annual Report ...

International Studbooks and Registers

This annual survey of international studbooks and registers for August 1994 to August 1995 is the 12th annual survey prepared for CBSG and IUDZG, and it updates the previous survey produced for the last annual meetings of CBSG and IUDZG held in Sao Paulo, Brazil in August/September 1994.

Since that survey there have been a further five international studbooks endorsed by IUDZG and IUCN/SSC. They are:

Caracal lynx, *Lynx caracal*
 Studbook Keeper: Diane Versteeg
 The Living Desert
 47-900 Portola Avenue
 Palm Desert, CA 92260 USA

Komodo monitor, *Varanus komodensis*
 Studbook Keeper: Johnny R. Arnett
 Supervisor, Herpetology & Ichthyology
 The Cincinnati Zoo & Botanical Gardens
 Zoological Society of Cincinnati
 3400 Vine Street
 Cincinnati, OH 45220-1399 USA

Black-faced impala, *Aepyceros melampus petersi*
 Studbook Keeper: Eric Bairrão Ruivo
 Animal Collections Coordinator
 Jardim Zoológico e de Aclimação em Portugal, SA
 Estrada de Benfica 158
 1500 Lisbon, Portugal

Bicolored tamarin (pied tamarin), *Saguinus b. bicolor*
 Studbook Keeper: Dr. Andrew J. Baker
 Curator of Primates & Small Animals
 Philadelphia Zoological Garden
 3400 W. Girard Avenue
 Philadelphia, PA 19104-1196 USA

Yellow-backed duiker, *Cephalophus sylvicultor*
 Studbook Keeper: Linda Rohr
 Franklin Park Zoo
 One Franklin Park Road
 Boston, MA 02121 USA

As of August 1995, there were 147 international studbooks and two registers for a total of 149, including all subspecies which are kept as separate studbooks. In previous totals, some studbooks which contained separated subspecies may have been included as only one studbook.

The WCMC/AZA approved an application by Larry Collins

(National Zoological Park, USA) for the expansion of his studbook for the Matschie's tree kangaroo, *Dendrolagus matschiei*, to include two other species, Goodfellow's, *D. goodfellowi*, and the Grizzled, *D. inustus*. These are now included as separate studbooks in the overall total.

Changes of Addresses and Changes of Studbook Keeper

Oriental White Stork: retained by Tama Zoological Park but transferred to Takahisa Hosoda. *Rodrigues Fruit Bat*: retained by Jersey Wildlife Preservation Trust; studbook keeper to be appointed. *Aye-aye*: retained by Jersey Wildlife Preservation Trust, but transferred to Dr. Anna Feistner. *Cotton-top Tamarin*: transferred to Dr. William Langbauer Jr. (Philadelphia Zoological Garden). *Pileated Gibbon*: retained by Zurich Zoo, but transferred to Robert Zingg. *Gorilla*: Dr. Rosl Kirchshofer has retired, but the studbook is retained by Frankfurt Zoo. *Vicugna*: retained by Dr. Christian Schmidt after his move from Zurich to become Director of Frankfurt Zoo. *Malagasy Giant Jumping Rat*: retained by Jersey Wildlife Preservation Trust, but transferred to Dennis Mosely. *Malayan Tapir*: studbook keeper Rick Barongi's address is now General Manager Animal Operations, Walt Disney World, PO Box 10200, Lake Buena Vista, Florida 32830-1000, USA. *Slender-horned Gazelle*: retained by Zoological Society of San Diego, but transferred to Steven K. Kingswood, Research Associate, Center for Reproduction of Endangered Species.

Items Under Discussion

The following items are still under discussion awaiting resolution:

- transfer of the Moloch gibbon studbook to Perth Zoo, Australia
- transfer of the Arabian oryx studbook to Joe Christman, Phoenix zoo
- change of studbook keeper for Indian rhinoceros and Pygmy hippopotamus following the retirement of studbook keeper Kathleen Tobler, Basel Zoo
- possible discontinuation of International Studbooks for heloderms (Vacant), Waldrapp ibis (Vacant), Golden conure (Vacant), Cabot's tragopan (World Pheasant Association), mouse lemurs and dwarf lemurs (Barbara Coffman, Duke University Primate Center), pampas deer (Dr. Hans Fradich, Berlin), Barbary sheep (Dr. C.L. Alados, Almeria).

Most studbooks are being published within the three-year time limitation and regular updates are being prepared and made available. There are a few which are now overdue and I am in correspondence with the studbook keepers to try and rectify the situation.

Rules and Procedures

The IUDZG and CBSG agreed to the recommendation that the following requirements be met in order to transfer studbooks:

- 1) The international studbook coordinator is to receive: 1) approval of the regional or, if none, national association; 2)

Studbooks...

signed statement of institutional support; 3) signed guarantee of commitment from the proposed studbook keeper; and 4) written agreement of existing studbook keeper. Once the coordinator has the above, the change will be simply endorsed by the coordinator. New international studbooks will be required to be approved by IUDZG Council, which has resolved to do so upon the recommendation of CIRCC.

Studbook Numbers

In some species, considerable confusion has arisen with the assignment of different international and regional studbook numbers for the same individual. With the rapid proliferation of regional studbooks, the problems which can arise in accurately identifying an individual are likely to get worse unless there is an agreed-upon system which provides an individual animal with a unique lifetime studbook identity. The ISIS 3 and ARKS 3 programs have the ability to recognize a large number of different studbook numbers for a single specimen. The problem of identity could possibly be solved if each number, whether it is an international or regional number, also had added an acronym representing the assigning authority.

This problem will be discussed at the CIRCC meeting in Dublin, where it is hoped that a coordinated policy on studbook numbers can be developed. The rules and procedures for international and regional studbooks can then be amended.

This report was submitted by P. J. S. Olney, International Studbook Coordinator

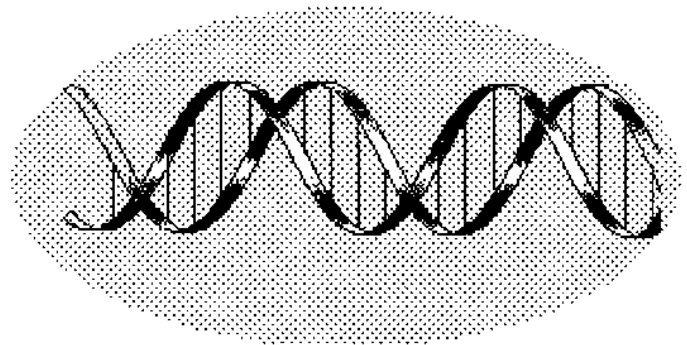
CBSG Recommendations...**Genome Resource Bank Ownership**

In the continued spirit of global cooperation and commitment to effective wildlife conservation, it is ideally recognized that biomaterials should be donated to each respective genome resource bank (GRB) program. The highest priority concerning the use and ownership of biomaterials is to ensure conservation to benefit the species. Ideally, this benefit should be uncoupled to commercial interests. However, for some species, commercialization of biomaterials could be beneficial. For example, the commercialization of some "excess" biomaterials could result in profits that could be directly committed to management (conservation) activities for species both *in situ* and *ex situ*. This decision ultimately must be made by initiators of the GRB Action Plan. Successful and rapid development of effective GRBs will require a written commitment and trust between all concerned parties.

Each region has the sole responsibility to determine its own GRB guidelines (within international and legal limits) to determine the use, ownership, storage, distribution, and, if appropriate, commercial benefits of relevant biomaterials. It is recommended:

1. That some proportion of every collection of biomaterials be designated, not for ownership by any single institution, but placed in the central GRB that is regulated by the appropriate species specialist group or management committee;
2. That any research program, either directly or indirectly associated with the GRB and involved in biomaterials collection, should donate a proportion (amount to be set by the needs of the Action Plan) of the biomaterial to the existing bank. This recommendation also should be incorporated into import and export permits for biomaterials crossing country borders.
3. For a specific taxon, the regional GRB will hold, care for, and distribute biomaterials for the owner(s) and the species manager(s). In all cases, personnel associated with banking operations should serve as facilitators of collection, storage, and use, not owners of the biomaterials. Special consideration for ownership by the collector(s) could be given in situations where commercial and conservation work in synergy.
4. Ownership of all germ plasm (sperm, oocytes, and embryos) will remain with the owner(s) of the donor animal (nation, institution, or individual), unless they are given to the regional species coordinator. Such transfer of title from the owner to the coordinator is encouraged.
5. Right and title to all other biomaterials (tissues, blood products, DNA, and other bodily fluids or excretions [urine, saliva, feces]) will be given by the owner(s) of the donor animal to the regional coordinator.
6. Decisions about apportionment of offspring resulting from the use of stored germ plasm will be made by the owner(s) at the time when they agree to the use of the biomaterials.

Contributors to this report were David Wildt, Smithsonian Institution (USA); Hiroshi Hori, Yokohama Zoo (Japan); Atef Kamel, Suez Canal University (Egypt); Brad Andrews, Sea World (USA); Paul Bartels, Wildlife Breeding Research Centre (S. Africa); Edward Plotka, Marshfield Medical Research Foundation (USA); Sarah Christie, Zoological Society of London (GB); and Roger Wheater, Royal Zoological Society of Scotland (GB).



Update on Genome Resource Banking in Southern Africa

The Wildlife Breeding Research Centre (WBRC) is a working group of the Endangered Wildlife Trust and is coordinating the PAAZAB initiative to promote and develop the concepts and techniques of GRB as a powerful tool for the conservation of endangered wildlife species.

Central Facility

One of the recommendations of the GRB workshop for Conservation in Africa (Pretoria, June 1994) was the establishment of a central GRB bank in Southern Africa. This recommendation has been accepted by the WBRC who have instituted moves to establish such a center. A suitable facility has been found in Pretoria which is centrally situated in Southern Africa. This latter fact is very important as the success of a GRB bank is based on effective cooperation and networking. This is only possible if the bank is centrally situated and has effective communication systems available, such as telecommunications, road network, and a major airport.

As a kick-off point for the centrally-situated facility, the WBRC has launched its newest program, Gamete Recovery International (GRI). This program concerns the receiving and processing of GRB material from sources throughout Southern Africa. Even before its official launch, the WBRC received material from three species; rhino, black-footed cat, and buffalo. The GRI program will therefore serve all institutions in Southern Africa until they develop their own facilities and expertise.

Of particular importance is the development of facilities at the two biggest zoos in Southern Africa. The National Zoological Gardens of South Africa recently moved into their new Animal Hospital and Research Centre. This facility has its own dedicated GRB laboratory. The Johannesburg Zoo has made a laboratory available for GRB work. These developments illustrate the importance being given to GRBs by the zoos concerned.

Aims and Strategy

1. Develop a regional GRB.
2. Networking and cooperation, regionally and globally on GRB issues.
3. Integrate the Research, Education, Conservation, and Extension legs of the program.
4. Interface between and within *ex situ* and *in situ* conservation programs.
5. Acquire the necessary funds to drive the above programs.

Research and Education

The WBRC is making use of material from two sources,

live and dead (culled or accidental death) animals. We have facilities housing a number of species and we also work in the zoos, game farms, and national parks in Southern Africa.

Both research and education are used to support each other. There are two main programs, national and international. Nationally there are four universities involved, some sending post-graduate students to our facilities or participating in the use of GRB material collected by the WBRC.

Our International program has been particularly strong with the participation of a research team from Omaha's Henry Doorly Zoo. A lot of basic reproductive work has been done on cull material acquired as a result of *in situ* wildlife management procedures. The WBRC provides logistic support to researchers. This includes communications, organization, transport, and one static and two mobile laboratories.

Plans are underway to work with Australia which has launched its own initiative to develop a regional GRB program. In this regard, we will be working closely with Monash University who will be sending a student/researcher to our facilities during 1996 to work on ova cryopreservation. We also plan to cooperate with the Zoological Parks Board of NSW concerning rhino conservation. This Board is leading the way in *ex situ* rhino reproductive research.

The WBRC has also developed good working relationships with organizations in Europe and it is hoped that these ties will be further strengthened in time.

Conservation

The WBRC has initiated a number of programs which cover material for GRB I (archival), II (management), and III (research) and include the previously-mentioned GRI program, buffalo breeding, and rhino reproduction. Material from many wildlife species has been banked and there are plans to expand to include a bigger variety of species.

Conclusion

The GRBs are potentially a powerful conservation tool which could be used to "house" hundreds, if not thousands, of individuals, which is not possible with the amount of animal spaces available in *ex situ* facilities. This tool can also be used to interface between and within *ex situ* and *in situ* wildlife populations without having to take animals out of the wild and would also allow new genetic material (from the wild or other sources) to be "born into" an *ex situ* facility.

The situation for a number of species which could benefit from GRBs and assisted reproduction has become critical. Africa is not vast open plains with abundant wildlife species and resources. The race is on to save some, and I stress only some, of these species as it is probably too late for a number of them. We will have to push very hard if we are to save some wildlife species from inbreeding and extinction. The GRBs represent a tool that should be exploited as a matter of urgency.

This report was submitted by P. Bartels, Wildlife Breeding Research Centre, Endangered Wildlife Trust.

The Sunset Zoo Paraguay Project

When we reported on the Paraguay Project at last year's meeting, it was only six months old. We had made our first visit to the Asuncion Zoo, spending a month there assessing the condition and organization of the zoo and we had made a list of short- and long-term suggestions.

Also during that visit at the request of Dr. Seal, we had carried out a preliminary assessment of conservation activities in Paraguay through contacts with the Ministry of Agriculture and Livestock, universities, museums, embassies, and non-government organizations (NGO). Our findings were that the only national wildlife conservation project was the establishment of a series of "Forest Reserves". This program, SINASIP, is administered by the Directorate of National Parks and Wildlife. A major NGO, the Moises Bertoni Foundation in collaboration with Nature Conservancy, had established a preserve at Mbaracayu in the "Oriental" region of Paraguay along the Brazilian border. In discussions with Parks and Wildlife Officials and those of the Bertoni Foundation, it was apparent that no thought had been given to wildlife conservation in that region nor was any then planned. Informally, they welcomed the idea of technical assistance from CBSG, AZA, and any other agencies with the expertise to provide such help.

As a result of those meetings, subsequent meetings with Dr. Seal in Manhattan, and discussions with AZA Conservation and Science officials, Sunset Zoo petitioned the Wildlife Conservation and Management Committee of AZA for permission to form a Fauna Interest Group for Paraguay. Tentative approval was given to establish the FIG in August, 1994 and final approval was received in March, 1995.

The boundaries between the Sister Zoo project (Asuncion and Sunset Zoo) and the Paraguay FIG have become somewhat obscured because the two projects ultimately will be mutually interactive. Wildlife management in Paraguay must take into consideration CITES restrictions, the tenor of the Paraguayan government to exportation of its "wildlife patrimony", and the problems of dealing with significant numbers of animals confiscated in connection with illegal smuggling. In some instances *ex-situ* breeding and management of endangered wildlife will have to be confined to locations in Paraguay. At present, only two zoos, Asuncion and Itaipu (which has a large colony of the endangered Bush Dogs, *Speothos venaticus*) are the logical locations for such facilities. Most confiscated animals are taken to the Asuncion Zoo at present. That zoo is ill-equipped to handle the problem and it must be upgraded significantly to fulfill that mission. That upgrading is part of the complete project. Mike Quick, then General Curator of Sunset Zoo, spent three weeks in January, 1995, at the Asuncion Zoo working with a new biologist on basic animal husbandry techniques, nutrition, exhibiting, and

general zoo operations. He worked with two architects (one from the Municipality of Asuncion and the other working with the private Jardin Botanico y Zoologico) and developed a Zoo Master Plan which emphasizes developing a collection consisting solely of Paraguayan Species, as recommended in 1994.

Our work in Paraguay has been presented at several venues. In March of 1995, we made two presentations on the zoo project. The first was at the annual meeting of the Kansas Partners of the Americas who had funded our transportation to Paraguay. We were fortunate to have present at that meeting the Paraguayan Ambassador to the U.S., Señor José Prieto Conti. The second presentation was at the AZA Central Regional Conference held in Wichita, Kansas. In July, 1995, we presented the development and goal of the FIG at the Committing to Conservation Conference sponsored by the Columbus Zoo. In August, at the V International Neotropical Ornithological Conference, we presented, in plenary session, a paper on the Role of the FIG in Paraguayan Wildlife Conservation. At that conference, we held two panel discussions on the possible role of the FIG in Paraguay. Those panels were co-moderated by Dr. Susie Ellis of CBSG and me. Dr. Ellis discussed with the participants the role that CBSG could provide in the form of CAMPs and possible PHVAs. Finally, at the 1995 AZA National Conference in Seattle, we presented a paper on the results of our 18 months in the Paraguay Project. Summarizing the latter, the Asuncion Zoo has made tremendous strides in just one year. Exhibits have been refurbished along lines suggested by us and new monkey and parrot exhibits (as opposed to cages) have been constructed. A hideous and disgraceful reptile exhibit has been demolished and replaced with one developed by Mike Quick and the zoo architects. A new flight aviary that would be the envy of many small zoos was been constructed to house scarlet and hyacinthine macaws. However, an expert on hyacinthine macaws from the U.K. indicated that the two should not be housed together and who has tentatively arranged with the German Embassy to provide funds to duplicate the macaw aviary. Plans have been drawn (although funding and implementation is a question) for a veterinary clinic at the zoo. A plant-clogged lagoon has been dredged, rocks placed at the perimeter and around three islands to prevent erosion, and the islands provided with housing for spider, owl, and capuchin monkeys. All of this has taken place in less than a year. As you are aware, one of the rolls of a FIG is to provide technical and consultative assistance to "local zoos". In that regard, we feel that we have begun to make a difference.

Wildlife conservation activities in Paraguay are still in their infancy. A conference to identify threatened and endangered species in Paraguay is planned. The results of that conference are to form the basis for the development of a national wildlife management and conservation plan. We have offered the assistance of FIG members to further development and implementation of that plan once it is formulated. We have, quite frankly, resisted efforts to have "us" formulate the plan for them, although it now seems that this might be necessary to provide several optional approaches from which they can proceed.

In the interim, we are looking very closely at a suggestion

made by Mike Quick as the result of his visit. Treatment and care of confiscated wildlife is a major problem. Much of the "loss" of these animals results not from loss of habitat but from their removal from the habitat. There is currently no way these animals can be returned to that habitat. We have proposed the development of a rehabilitation and recovery center at the Asuncion Zoo where animals could be quarantined and, once determined that they are disease free, be held and ultimately returned to the environment or used in *ex-situ* management practices. Fortunately, the proposed plan for a veterinary clinic at the zoo is very amenable to inclusion of this rehabilitation center. Reaction to this idea in Paraguay from every official with whom I discussed it was overwhelmingly positive and it is something that I believe we should consider strongly. Mike Quick, now Curator of Mammals at Sedgewick County Zoo, has offered to head this project.

This is our progress to date. It has been slow in many aspects as expected, but it has blossomed in others. The FIG now counts 42 members and societies in the U.S., Germany, Canada, and the U.K. and 43 in Paraguay with more having shown interest during the August, 1995 visit. We have had some setbacks; grant applications have not been successful which was understandably so since there are no specific conservation projects in Paraguay that would fit the goals of these agencies.

We believe that the FIG/Zoo Project has progressed quite well in the past 18 months. We know that cultural differences, political, and social considerations enter into the project. Enthusiasm on both sides, however, is high and we expect it to continue with some slow, but progressive, activities.

This report was submitted by Robert D. Klemm, Director, Conservation and Research/Coordinator of AZA Paraguay Fauna Interest Group, Sunset Zoological Park, Manhattan, Kansas USA.

Reintroduction Group

The recommendations of the Wildlife Reintroduction Group are as follows: 1) In recognizing the growing number of wildlife reintroduction programs planned worldwide, it is recommended that all CBSG members be encouraged to coordinate and work closely with appropriate SSC specialist groups (in particular the reintroduction specialist groups) when considering any such programs; 2) Ideally, a PHVA type of workshop should be conducted on a local basis before any reintroduction programs commence in order to fully evaluate the need for and impact of such a program.

This report was submitted by Paul Garland, Orana Park Wildlife Trust, Christchurch, New Zealand.

Japanese Association of Zoological Gardens and Aquariums



During 1994-95, there were several big accidents in Japan. The first was the Great Kobe Earthquake. Fortunately, few zoo animals were harmed except for numerous fish in the big tank of Suma Aquarium. The second accident was the loss of the last female Japanese crested ibis, *Nipponia nippon*, at Sado Island. The Ibis Preservation Center of Sado Island and the three zoos of Tokyo — Ueno Zoo, Tama Zoo, and Inokashira Park Zoo — had organized a project team for breeding the ibis. A male ibis was on loan from the Beijing Zoo to pair with this last female in Japan. However, all efforts failed. Now, the crested ibis remains in wild and in captivity only in China. So I think that perhaps we must change the name of the ibis from *Nipponia nippon* to *Chinia china*.

For several years, the SSCJ has promoted the propagation of 44 species of rare mammals and ten species of Japanese freshwater fishes. However, last year we reconsidered the priorities of these propagation works and formed new groups. These new groups will be presented at the 8th Annual Meeting of SSCJ at Wakayama.

On 1 August 1995, the Environment Agency of the Japanese government made public the proposed draft of the National Strategy on Biodiversity. In the item on *ex situ* preservation, there is some description of JAZGA activities. This is the first time JAZGA was formally recognized by the government authority, despite the fact that JAZGA has worked cooperatively for several years with the Environment Agency on the *ex situ* propagation of endangered species in Japan, such as Blakiston's Fish Owl, Tsushima Wild Cat, and so on. On the whole, the Strategy lacked a global vision, so I offered my opinion for the draft that there should be more information on IUCN, SSC, CBSG, and ISIS.

Besides the above, JAZGA has had to deal with a major difficulty which is the financial problem. About ten years ago, we established the fund for conservation activities. In that time, the annual interest rate was over 6%. However since then, the rate has continued to decline because of the sudden increase of the Yen. The rate is now less than 1%. So it is to my great regret that JAZGA could not support the many conservation works of the CBSG.

However, do not hesitate to ask to us for further cooperation for conservation work, because we will try to get more supporters. In 1998, you are all invited to the meeting at Yokohama, which I expect will be a nice sponsor.

This report was submitted by Atsushi Komori, Executive Director, JAZGA.

International Distribution of REGASP 3.0

At the last annual CBSG meeting at Sao Paulo, I reported our intention to prepare REGASP for international distribution as well as our intention to incorporate information generated through the CBSG's CAMP and GCAR processes into the system so that it can be utilized by zoos and regional associations during the development and implementation of collection plans. Due to a number of recent developments, we have been able to act on those intentions. Before giving you an overview of the recent developments, I will briefly discuss the history of the REGASP project and then demonstrate some of the main components of the system.

The REGASP was developed by the staff of the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA) as a function of the Association's species management program (ASMP). The system programmer, Kevin Johnson, has recently conducted workshops and training sessions at both the AZA meeting in Seattle and at the CBSG meeting. The ASMP has been very well supported for many years by its member zoos. Much of the work on REGASP has been conducted at the Association's offices which are provided by the Zoological Parks Board of New South Wales on the grounds of Taronga Zoo; all the costs of running the ASMP, including the development of REGASP over a five-year period, have been met by its founding members which are the 14 major zoos in Australia and New Zealand.

At all stages in the development of REGASP, we have benefited from close collaboration with ISIS. Because the ISIS staff proved to be so amenable to the idea of collaboration and were so easy to work with, we were encouraged to write the system, not as a stand alone, product but as a compatible addition to the existing ISIS package. There were, of course, other reasons for us choosing to work with ISIS, but one major reason was the growing perception among regulatory bodies and wildlife authorities, at least in our region, that the term "good zoo" equates with the term "ISIS-member zoo". Our federal wildlife agency recognizes that ISIS-member zoos maintain thorough animal records and can retrieve information on their collection easily and quickly. They see that ISIS-member zoos use a single system allowing them to share the data on their collections with other zoos worldwide and they see that ISIS member zoos support a-operative studbook system which facilitates management based on genetic and demographic analysis.

With the distribution of REGASP as an ISIS product, ISIS-member zoos will be able to share details on not only their current collections but also on the composition of the animal collection that they plan to develop.

The third significant component to the development of REGASP was the receipt of positive responses to all requests for input from the international zoo community. For two years now,

starting at the Antwerp CBSG meeting, we have been actively seeking international input into the system. Essentially, we wanted to know if zoos and regional associations beyond Australasia were interested in using the same or a similar system. Collection planning is emerging as a very significant issue for the captive community and we were pleased that interest was expressed in REGASP as a tool to aid this process.

Fourthly, the Board of the ASMP decided that it was more appropriate that REGASP be made available as a contribution from our region to the global zoo community rather than through the sale of the system to zoos. This commitment was given on the proviso that the remaining development needed to prepare REGASP for international release did not incur further costs for Australasian zoos.

More recently in April and May this year, a two further developments occurred. Firstly, not only did the ASMP Board agree to transfer the distribution rights for REGASP to ISIS, but Chris Larcombe, on behalf of the Zoological Board of Victoria, offered to underwrite the final development costs, enabling programming and database amendments needed to make the system suitable for all zoos and aquariums, not just those in Australasia. Finally, the ISIS Board agreed to a proposal whereby ISIS distributes REGASP to its 490 members and a Memorandum of Agreement has now been drafted.

As a result of these developments, the international version of REGASP (incorporating CBSG data) will be distributed to all ISIS Member zoos and aquariums by February 1996.

The REGASP is basically 1) a range of databases containing species and captive community information of use to anyone developing or implementing a collection plan; 2) databases containing the details of the resident zoo or aquarium collection plan and summary information on the plans from other zoos and aquariums regionally and internationally; and 3) a set of programs allowing people with no previous computing experience to access this information in a number of useful formats.

It is very gratifying for me to see this project reaching implementation stage. This is at least in part because it represents close collaboration between my regional zoo association and what I see as the three organizations that are having the most significant impact on the global zoo and aquarium community today:

1. The International Species Information System (ISIS) which has been involved in the development of REGASP and will be distributing the system worldwide;
2. The World Zoo Organization (IUDZG) which has promoted, firstly through the World Zoo Conservation Strategy and more recently in the Zoo Future 2005 document, the need for zoos and zoo associations to plan their collection so as to ensure the value of those collections to conservation efforts and;
3. The IUCN/SSC Conservation Breeding Specialist Group which has lead the way in collection planning at the global level and has been very supportive of the efforts of my association in promoting regional and institutional collection planning.

This report was submitted by Christine Hopkins, ASMP.

Working Group Report...

Collection Planning Using REGASP

In accordance with a newly-established agreement between the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA) and the International Species Information System (ISIS), the collection planning program, REGASP (Regional Animal Species Collection Plan) will be distributed to all ISIS members in February, 1996. This will provide individual institutions and regional zoo associations with a tool to assist with the creation, development, and implementation of collection plans. The collection planning workshop had three main aims:

1. To give zoo personnel an opportunity to view the software. It is likely that some features will need modification to be of use in some regions. It is intended that most modifications or additions will be made to the software prior to its distribution in February.

2. The second objective was to discuss the proposed method of data transfer between institutions, on both the regional and international levels.

3. The workshop also gave us an opportunity to review the way in which CBSG data has been incorporated into the system. Input was sought on the ways in which links between CBSG processes and zoo and aquarium collection planning could be strengthened.

Thirteen delegates representing eight regions attended the workshop which consisted of a relatively detailed demonstration of the major "views" that the system provides. Several additional

features were suggested, including the addition of space survey data and additional IUCN/SSC data.

Zoo-based participants saw value in the system, and they offered several suggestions for additional features. These included facilities to provide an interface with a developing space survey database, enhancement of the TAG recommendation facilities, and the inclusion of a date field to indicate the time-frame for the plans for each species.

The proposed method of regional and international data transfers was discussed. Although still to be finalized, it is currently proposed that institution-level planning data will be forwarded to ISIS via diskette on a monthly basis with pooled global planning data being returned to each institution each month. Regions that choose to make use of the REGASP-Link system to manage regional activities (such as assignment of TAG Convenors and Species Managers, the establishment of species selection criteria and species management categories, and the maintenance of various databases) would distribute these data to institutions within their regions as required. No further recommendations regarding data transfer were made during the workshop.

The CBSG CAMP and GCAR data which will be disseminated to zoos within REGASP were examined and found to be of great value during the collection planning process.

This report was submitted by Kevin Johnson, ARAZPA.

1995 Summary of Activities...

Population and Habitat Viability Assessment

Introduction

The Population and Habitat Viability Assessment (PHVA) workshop has become an important component of CBSG's tool kit of scientifically-based conservation processes. In this contribution, I will provide a brief overview of the basic premise and characteristics of the PHVA workshop, followed by a discussion of the eight PHVA workshops conducted by CBSG during the past year (September 1994 - September 1995). Three of these workshops will be highlighted and discussed in the context of perhaps the most important feature of this process: broad-based individual and institutional participation and support. I will then conclude with some additional words regarding the continued evolution of the PHVA facilitator's training workshop process introduced earlier in this informative session.

The PHVA Process

Stated very simply, the PHVA workshop is designed to assist in the development of comprehensive management plans for a

single given species or population, as well as that species' or population's corresponding habitat. From the more narrow perspective of population biology, the PHVA is the estimation of extinction probabilities by analyses that incorporate identifiable threats to population survival into models of the extinction process. Information on the life history, population dynamics, ecology, and distribution of the focal species or population is assembled and analyzed at the workshop and it serves as input to the simulation models that assess both current persistence as well as the consequences of alternative management strategies proposed at the workshop.

An important feature of these workshops is the extraction, assembly, and assessment of information from the species experts present at the workshop. Much of this information, as much as 75-80%, is not readily available in published form but it may be of decisive importance in understanding the population dynamics of the species in the wild. I will give a graphic example of this phenomenon during a discussion at one of the past year's

PHVA...

workshops. Moreover, the social structure of the PHVA workshop provides a neutral environment within which individual participants' agendas are set aside and mutual problem-solving is fostered in the development of species management programs.

PHVA Species List

A total of eight PHVA workshops have been conducted by CBSG between September 1994 and September 1995:

- Peninsular Pronghorn (*Antilocapra americana peninsularis*), La Paz, Mexico
- Baird's Tapir (*Tapirus bairdii*), Rio Chagres, Panama
- Gharial (*Gavialis gangeticus*), Gwalior, India
- Mantled Howler Monkey (*Alouatta palliata mexicana*), Puebla, Mexico
- Masked Bobwhite (*Colinus virginianus ridgwayi*), Arizona, United States
- Costa Rica Squirrel Monkey (*Saimiri oerstedii citrinellus*), Quepos, Costa Rica
- European Bison (*Bison bonasus*), Miedzyzdroje, Poland
- Barasingha (*Cervus duvauceli*), Dehra Dun, India

The CBSG also provided expertise and guidance in population biology in two additional workshops for the golden-cheeked warbler (*Dendroica chrysoparia*) and the black-capped vireo (*Vireo atricapillus*) in the United States. These two workshops were conducted and facilitated by the U. S. Fish and Wildlife Service.

Workshops of particular note in the above list are: the gharial, which was organized, funded, conducted, and facilitated solely by people within the range country; and the European bison, which is the first PHVA for a land mammal in mainland Europe. Moreover, workshops in Mexico and Panama were the first of their kind in these countries as well. We at CBSG are confident that these firsts will serve as precedents for further expansion and development of this process in new ways and in new locations.

Future workshops include one for the clouded leopard in Taiwan and the Komodo monitor and selected sea turtle species in Indonesia. Early in 1996, a PHVA workshop on the volcano rabbit will be held in Mexico City.

Broad and Diverse Participation: A Cornerstone of the PHVA Process

A defining characteristic of the PHVA process is the broad base of individual and institutional participation at each and every workshop. All those people with a stake in conservation of the species in question are invited to actively participate in the workshop. For example, a total of more than 200 people from nearly 110 institutions participated in the eight PHVA workshops listed above. This social environment facilitates the discussion of many difficult topics related to species management, and it ultimately results in a strong sense of participant ownership of the workshop product. This sense of personal ownership in a proposed conservation strategy has enormous

impact on the subsequent implementation of that strategy.

I will now briefly discuss three PHVA workshops that illustrate this phenomenon. First, I will introduce the PHVA for the peninsular pronghorn, conducted in La Paz, Mexico in November 1994. This was our first PHVA workshop in Mexico and brought together 30 scientists, governmental representatives, and members of non-governmental organizations. These participants were from eighteen institutions, representing academic, scientific, governmental, and commercial interests. In fact, this workshop was the first time that all those individuals in Mexico concerned with pronghorn conservation had come together at one table to discuss the important issues related to management of this acutely-threatened species.

Distribution of the subspecies has been reduced by more than 90% during this century. Specific management recommendations made at the workshop included:

- The establishment of a detailed environmental education campaign from the local to the international level;
- The prioritization of detailed research needs directed towards pronghorn biology;
- Efforts directed towards predator (coyote) control;
- An intensive study of the utility and the nature of any future captive breeding program.

Twenty people from ten institutions attended the masked bobwhite quail PHVA workshop in southeastern Arizona. The bird's distribution is currently restricted to two locations: Buenos Aires National Wildlife Refuge in southeastern Arizona and a small private ranch in Sonora, Mexico. Considerable effort has recently been directed into a captive chick rearing and release program using birds reared in the United States, but the program is showing very little evidence for success. The VORTEX modeling at the workshop demonstrated that even a small increase in the survival of released chicks can have enormous benefits for the populations; concerted efforts are now underway to improve both the captive rearing and release phases of the masked bobwhite conservation program.

This broad level of institutional participation is a key to many PHVA workshops conducted in the United States. For example, a workshop in Austin, Texas in mid-1994 focusing on the Houston toad (*Bufo houstonensis*) had over 50 participants, only a small handful of which were toad biologists or related specialists. The remainder were dominated by members of the public sector such as local board of realty representatives, chamber of commerce members, and private landowners (a very important member of the conservation constituency in Texas since virtually all land in the state is privately owned). The diverse array of participants admittedly led to challenging problems being raised during the discussion, but it ultimately proved crucial to the success of the workshop.

The recent PHVA workshop for the European bison, held in Poland in June 1995, may best illustrate the participation phenomenon. Twenty-one institutions were represented by 29 participants from 10 countries. Many of the participants were Russian, Belarussian, and Polish. Among the many recommendations made at the workshop was the establishment of an EEP

captive breeding program as well as the establishment of a genome resource bank or GRB.

Two major issues critical to successful bison management were identified at the workshop but are as of yet unresolved:

- The etiology and epidemiology of a urogenital disease in males, which leads to their sterilization and ultimate elimination from an affected herd (as many as 20% of all males in a given herd are removed in this way), needs to be determined and its effect on the demography, genetics, and risk of extinction of affected herds assessed. Risks from other domestic livestock near the bison herds also needs to be systematically evaluated.

- Two lines of European bison are currently being managed separately: the pure lowland line (*Bison bonasus bonasus*) and a line of hybrids between *B. b. bonasus* and the Caucasian subspecies, *B. b. caucasicus*, now extinct. The lowland line resides primarily in Poland, while the majority of lowland-Caucasian bison reside in Russia and the Ukraine. The degree of genetic distance between these two lines needs to be addressed within the context of proposed admixture between lines, thereby greatly increasing overall population size.

The Continued Evolution of VORTEX

This past year has seen an important advance in the evolution of VORTEX such as the added capability of modeling species with hermaphroditic breeding systems. Now implemented in Version 7.0 of the package, this new feature will greatly expand CBSG's capability to apply the PHVA process to a wide variety of species, including plants. It is hoped that the coming year will include PHVAs for an increasing number of plant species.

PHVA Facilitator's Training Workshops

There is a projected need for hundreds, if not thousands, of PHVA workshops to be conducted globally over the next decade. Existing CBSG staff can participate in only a small fraction of these workshops; consequently, a strategy to contend with this shortfall is to train people around the world to do this work. One of the primary areas of emphasis for CBSG for the next 2-3 years is training additional workshop facilitators and population biologists to meet this need.

I only wanted to add a few comments to those made previously in this session concerning the PHVA Facilitator's Training Workshops. One of the primary products to come out of the first workshop in Minnesota in 1994 was what we call the PHVA Process Design Manual. This manual provides a detailed guide to the steps necessary to successful organization and implementation of a PHVA workshop. In addition, the authors of the manual, all with considerable experience in the PHVA workshop process, address many of the difficult issues, both biological and otherwise, that commonly surface during the course of a workshop. It is a very valuable document that can be used by anyone organizing or facilitating a PHVA workshop.

This report was submitted by Philip S. Miller, Program Officer, CBSG.

Saimiri PHVA

One of the recommendations made at the *Saimiri* (squirrel monkeys) workshop held in 1994 was to have a second one in the area where the animal lives. Because of this, 48 people met from 5-7 June 1995 at Manuel Antonio National Park, on the Central Pacific coast of Costa Rica, to discuss the situation of the species. Three of the people were from El Salvador, Mexico, and Cuba. They observed and participated in the process. Five groups were formed:

Biology: This group discussed the biological data available and ran the VORTEX population simulation for the species.

Distribution: This group analyzed the past and current distribution of the species and mapped the area of remaining *Saimiri* populations.

Translocation and Captive Breeding: With the assistance of Dr. Cheryl Asa of the St. Louis Zoo and Dr. Larry Williams from the University of South Alabama, this group developed protocols in case they were recommended for species survival.

Public Education: This group discussed the need for education as one of the actions to take.

Community: This group analyzed current and future community actions. The local authorities and five campesinos participated in this group.

Although we are in the process of finishing the report of this workshop, the principle recommendation is to do more specific research that will support an adequate management of the species.

The most urgent topics are:

- Determine the distribution and demographics of the populations of the subspecies.
- Establish a public education program directed to the community and the tourist.
- Establish a community action plan to protect the species.

Dr. Ulysses Seal met with the governmental authorities and they are more than willing to implement the recommendations. They are waiting for a final report. At this moment, an American scientist is interested in directing the research.

This report was submitted by Yolanda Matamoros, ALPZA-AMAZOO.

South Indian Medicinal Plants CAMP



This CAMP workshop came from a need by a local non-governmental organization to know which species with which to begin working. First, a "planning session" was held in October, 1994 with expert botanists from major institutions as well as forest department representatives in South India to discuss the need for prioritizing selected medicinal plants for conservation. The CBSG, India facilitators explained the new IUCN criteria and the CAMP process. Although skeptical at first, the botanists decided to participate in a CAMP workshop early in 1995. These botanists put aside their doubts when asked if they were currently satisfied with the direction of conservation efforts for endangered plant species. They agreed to collect all the information possible on 36 medicinal plants selected from a list of nearly 200 rare medicinal plants.

The first full CAMP workshop to be held in India and the first full CAMP workshop for plant species to be held anywhere was held in Bangalore on 23- 25 February 1995, sponsored by the Foundation for Revitalization of Local Health Traditions (FRLHT) and organized and facilitated by ZOO/CBSG, India and CBSG/SSC. Dr. U. S. Seal facilitated the workshop. Nearly two dozen botanists from different specialties such as taxonomy, genetics, population biology, and reproductive biology from the three southern Indian states participated.

The process for evaluation of threat and the IUCN threat categories were explained according to the latest revisions and tested on plants for the first time. In this regard, a strong recommendation was that species be categorized according to three levels depending on their distribution and their local status. The categories were: national, if the species was endemic to India; regional, if the species was native to India and had populations in the neighboring countries; and global, if the species had a wide distribution in a given bio-geographic area in many countries.

Working groups discussed problems and possibilities for improvement of conservation for medicinal plants, including cultivation for utilization, assigning threatened IUCN Red List categories, and the need for assessing threat status at the regional or national level. Recommendations were also made for better adapting the CAMP process to plants, as well as suggesting some additions to the Taxon Data Sheets and the Summary Data Table.

A report was produced and circulated widely to governmental and non-governmental agencies from which there has been an interested response. There is interest from other institutions and even an industry in holding CAMPs for plants from different regions.

Another CAMP for 39 additional species of the same group is to be held in February 1996. New plant species plus those which were categorized "data deficient" will be assessed. These are currently being surveyed and will be able to be categorized.

In addition to the southern Indian botanists for this CAMP, representatives from the Botanical Survey of India and other plant conservation specialists from all the regions of India are being invited as observers of the CAMP process. Special summaries of reports which include overview information about CBSG and its processes will be circulated to policy makers relevant to plant conservation. By 1997, CAMP workshops for plants are hoped to be scheduled in other regions of India.

In addition to these CAMPs, the CBSG, India Plants SIG is collaborating with Botanic Gardens Conservation International to organize three workshops on botanic education for zoos, botanic gardens, and research institutions. This will be an ongoing program in which we help zoos organize educational material integrating plants with their common animal exhibits as well as holding future workshops.

This report was submitted by Sally Walker, CBSG, India.

Invertebrate Conservation in India



CBSG, India Commitment

At the last CBSG meeting in Sao Paulo, members of the Special Working Group on Invertebrates made commitments for the following year. The commitment of CBSG, India was to begin catalyzing interest in invertebrate conservation in India by bringing out a special issue of ZOOS' PRINT on invertebrates during the year and to help Paul Pearce Kelly prepare a workbook on how to set up an invertebrate exhibit. We have brought out a special issue concerned only with invertebrates. Also, we have published a great deal of background material on invertebrates in India, including the list of endangered species in an easy to use format as well as other materials. In addition, we have published three issues of ZOO ZEN on invertebrate exhibition which is a compendium of useful articles from publications around the world.

We set up a Special Invertebrate Flying Squad within the Zoo Outreach Organization whom we are training in techniques of invertebrate exhibition and husbandry. This group could then go to zoos and help them set up new exhibits. Our program officer underwent an intensive training at London Zoo Conservation Center last spring with Paul Pearce Kelly and his staff. This month, Paul will return to India with me and conduct five, two-day training workshops on invertebrate exhibition and conservation for five zoos in four states. Our Flying Squad will attend all the workshops and have special sessions. In fact, we have formed a partnership with the invertebrate conservation center which is providing guidance, advice, and training, as well as financial support for some of our invertebrate projects.

One of our group is especially interested in zoo education and is preparing as part of a thesis some exhibit designs which

show the interaction between common zoo animals and invertebrates for distribution to zoos interested in teaching about invertebrates.

We have employed an entomologist with assistance from the Invertebrate Conservation Center to carry out much of this work. His projects include: making a survey of invertebrate conservation, including research, going on in India today; to assemble a handbook describing all invertebrates listed on the Indian Wildlife Protection Act; and to develop educational materials on invertebrates.

Invertebrate Conservation at Universities

In order to assess the status of invertebrate conservation in India, questionnaires were sent to zoology departments of various Indian universities and national research institutes. One hundred and eighty questionnaires were circulated with 80 completed questionnaires have been returned so far. This survey is an ongoing project as almost every respondent suggested one or more additional persons to whom we can send a questionnaire.

The overall information obtained to date indicates that invertebrate conservation in India would benefit by guidance and facilitation. Although 76% of respondents answered that they were carrying out research related to conservation, most of the projects are concerned with routine subjects. It was also clear from the survey that invertebrate conservation in India is not very popular although its importance is well understood.

Respondents to these questionnaires are being kept in a special data base and sent information relevant to invertebrate conservation to stimulate interest and they are already very much a part of our CBSG, India Invertebrate Special Interest Group.

From the information obtained, it seems that no specific geographical area has taken up invertebrate study or conservation. Special requests were made by many respondents to convene seminars/workshops/meetings/refresher courses to discuss and work on invertebrate conservation. Our initiative to educate the public about the importance of insect/invertebrate conservation has been appreciated.

From discussions with various officials we know that a Red Data Book for invertebrates is under preparation by the Zoological Survey of India but the work is going very slowly, and is of the "one man in an office" variety.

Invertebrate Conservation at Zoos

A questionnaire was also circulated to zoos concerning their activity and interest in invertebrates. No zoo is presently exhibiting invertebrates, although three zoos planned to do so. More than 50% were "interested" and wanted more information. All wanted guidelines on how to educate the public about invertebrate biodiversity without having an actual invertebrate exhibit or ready-made educational material. Only two zoos were regularly feeding any invertebrate species to their insectivorous animals, collecting this material from suppliers.

Handbook of Protected Invertebrates

The officers, agents and inspectors who are in charge of

implementing the Wildlife (Protection) Act can readily recognize mammals, birds, and reptiles. The invertebrates, however, are a great mystery as there is literally no single source book in which to find the endangered insects of the country. Therefore, we are compiling information about invertebrates into an accessible and easy-to-use handbook.

Among the "scheduled animals" of the Wildlife (Protection) Act (1972), butterflies form the major groups. There are 452 species belonging to nine families for which collection and trade is prohibited. We have targeted 128 species of insects listed in Schedule I. Another objective of collecting this material is to ascertain what is not available in published literature that will form the basis for Conservation Assessment and Management Plan (CAMP) workshops for invertebrates. We intend to begin these in late 1996 or 1997 with a special meeting and training workshop to introduce the CAMP process and to plan a series of Indian regional CAMPs for Invertebrates.

This report was submitted by Sally Walker, CBSG, India.

CBSG Satellite Working Group Report

Reasons

The reasons for creating a regional or local CBSG network are to:

1. Establish a regional conservation identity;
2. Provide a framework for arming or empowering people in areas of high biodiversity;
3. Have the mission of CBSG carried out more effectively and efficiently;
4. Promote more local involvement;
5. Provide "atmosphere" for collaboration and cooperation between different disciplines at local level;
6. Organize CBSG process and training workshops more effectively;
7. Facilitate the implementation of recommendations of CBSG process workshops;
8. Increase "ownership" of processes; and
9. Empower potential users of CBSG process workshops, CBSG tools, and training

Guidelines

In starting regional satellite CBSG networks, it is not desirable or possible to give very specific guidelines. It is crucial that each satellite CBSG reflect the requirements and conditions of its own region.

Principles and Basic Characteristics

The principles and basic characteristics of CBSG/SSC could be adopted because they are what makes CBSG unique. Beyond

Sattelite...

this, the "personality" of the satellite should be allowed to evolve in response to the political, cultural, and social environment of the region. Some of the qualities of CBSG/SSC which Satellites might strive to emulate are flexibility, catalyst (an agent for change), innovative, multiple approaches, commitment, integrative (an agent for unity; fellowship), non-dictatorial, flat and small organizational structure, objectivity, vision (long-range goals), need-based, expert and enthusiastic, responsible, and network approach.

Mission and Objectives

Likewise, the mission and basic objectives of CBSG Satellites would be the same as CBSG/SSC, but they should be tuned to the needs of the region. The mission would be *to conserve and establish viable populations of threatened species through captive propagation programs and through intensive protection and management of small and fragmented populations in the wild.*

Profile of Host Organization

The host organization should have:

1. Respect of colleagues from a broad range of disciplines;
2. Reputation for commitment and clarity of motives;
3. Compatibility of basic principles and objectives;
4. Direct involvement in some aspect of conservation (either *in situ* or *ex situ*);
5. A small and flat organization with flexibility of action;
6. Scientific orientation;
7. Capacity for objectivity;
8. Capacity for immediate action;
9. Capacity for providing the basic infrastructure for good communication both regionally and internationally;
10. Capacity for supporting the satellite financially, at least until some means for generating funds can be found.

Profile of Basic Structure

The basic structure can have the following:

1. The membership may be from conservation community in general. Membership can operate on the IUCN triennium concept, e.g. dissolution every three years.
2. A coordinating committee which may be taken from lists of local CBSG/SSC members who have attended CBSG workshops.
3. Working groups which may be useful for focusing on specific taxa or subject areas.
4. Officers which may be informal or decorative, but leadership and direction is necessary.

Profile of Potential Members

Potential members can be comprised of:

1. Government personnel (wildlife, botanical, zoological, natural resources, etc.);
2. Universities and research institute personnel; and
3. Related professional communities;

4. Non-traditional partners, e.g. farmers, tribes, press, industrial community, other stakeholders in conservation.

Creation of Logo and Name

The logo and name of the CBSG satellite may have the following characteristics:

1. The CBSG satellite logo may be recognizable as a clone of the CBSG/SSC logo but otherwise have its own regional identity;
2. Endangered species of the region (maybe species that have been targeted for attention already). Aesthetics should be considered also;
3. In countries where the language is not English, the acronym "CBSG" may be preserved in the logo but the translation should be included in the local language; and
4. The name of the country or region should be included, e.g., CBSG, India; CBSG, Mexico; CBSG, Mesoamerica.

This report was submitted by Sally Walker, CBSG, India.

Invertebrate Working Group Report



The group tackled the long-standing question of how we might increase the number of "invertebrate people" at annual meetings (a prerequisite to enabling informed program discussion). It was recognized that although improving, a fundamental problem remains the relatively low level of invertebrate-oriented people within the current CBSG membership. It was felt that this situation is only likely to change when:

1. More of the current CBSG membership becomes involved in invertebrate conservation work.
2. We succeed in expanding the current CBSG membership to include the people that are currently engaged in relevant invertebrate work. It was acknowledged that the bulk of these people reside outside of the zoo community and are mostly to be found in the university and museum world, medical research units, and commercial breeding facilities (such as bio-control units and ranch butterfly farming).

A key action recommendation the group set itself is to compile a comprehensive directory of key invertebrate people and to actively solicit their participation in CBSG. It was also noted that there is a need is for the current group membership to do their best to attend the annual meetings!

The group reviewed the current membership agreed some additions to the group and identified gaps that still require filling. New members proposed at that meeting were: Louis Garibaldi, Peter Clarke, Dr. Seppo Turunen, Gordon Reid, and David Wetzel.

If practical, a good way to both review the current level of invertebrate conservation work, identify new people, and gener-

ally discuss how the CBSG invertebrate group can expand its critical mass (sufficiently to further develop invertebrate program work) would be to arrange a meeting a day before the next annual CBSG meeting in Denver.

We greatly welcome this year's platform presentation opportunities to inform our CBSG colleagues of developments in invertebrate conservation and related initiatives. We would like to strongly recommend that this practice continues in future meetings.

This report was submitted by Paul Pearce-Kelly, London Zoo.

European Bison Working Group

Historically, the European bison (*Bison bonasus*) was distributed through western, central, and south-eastern Europe. By the early 20th century, free-ranging populations were extinct throughout their range except for a population in the Bialowieza Primeval Forest, which declined rapidly from 785 individuals in 1915 and became extinct after World War I (April 1919), and a population in the northwestern Caucasus region, which met the same fate in 1927. Only 54 animals (29 males, 25 females) with proven pedigrees survived the total population crash in European zoos. Of these animals, 39 originated from the Lowland (Bialowieza) subspecies of European bison (*Bison bonasus bonasus*). The current living population of the species is descended from just 13 animals, representing a recombination of only 12 diploid genomes, including one bull from the Caucasus population (*Bison bonasus caucasicus*). In its original distribution, the species was subdivided into three subspecies, two of which are now extinct. The living population of the species is managed as two separate lineages, one derived solely from the Lowland subspecies with about 1,000 animals (of which 69% are free-ranging in Belarus, Lithuania, Poland, Russia, and Ukraine), the other with the contribution of the bull from the Caucasus subspecies with about 2,200 (50% free-ranging) animals (European Bison Pedigree Book [EBPB], 1995). European Bison populations are protected by law in each of the range countries.

The goal of the management and recovery programs is to have a free-ranging population of 3,000 for each lineage to provide a genetically viable, self-sustaining population. In order to achieve the goal of recovery, it is necessary to understand the risk factors that affect survival of the European bison. Risk evaluation is a major concern in endangered species management and a goal is to reduce the risk of extinction to an acceptable level. A set of software tools to assist simulation and quantitative evaluation of risk of extinction is available and it was used as part of a Population and Habitat Viability Assessment Workshop. This technique can improve identification and ranking of risks

and it can assist assessment of management options.

Twenty-nine biologists, managers, and decision makers from 10 countries attended a Population and Habitat Viability Assessment (PHVA) Workshop in Miedzyzdroje, Poland near the Wolinski National Park on 26-28 June 1995 to apply these recently-developed procedures to the European bison. The workshop was the joint effort of the Conservation Breeding Specialist Group of the Species Survival Commission of the World Conservation Union (SSC/IUCN), the IUCN/SSC Bison Specialist Group, the Poznan Zoo, and the European Endangered Species Program (EEP). The purpose was to review data from the wild and captive populations as a basis for developing stochastic population simulation models. These models estimate risk of extinction and rates of genetic loss from the interactions of demographic, genetic, and environmental factors as a tool for ongoing management of the subspecies. Other goals included determination of habitat and capacity requirements, role of captive propagation, impact of disease threats, and prioritized research needs.

Two major issues were identified at the workshop to be resolved in future discussions. First, a severe urogenital disease affecting male bison, affecting as many as 20% of the males within particular herds being eliminated annually, was identified and discussed. Secondly, the question of genetic distance between the Lowland subspecies (*B. b. bonasus*) and the Caucasian subspecies (*B. b. caucasicus*) was discussed in the context of proposed admixture between the Lowland and Lowland-Caucasian lines currently being managed separately.

The European Bison Working Group was assembled at the CBSG Annual Meeting to address these issues and to provide a framework for future action. More specifically, the following recommendations were made:

1. The etiology and epidemiology of the reproductive disease in males needs to be determined and its effect on the demography, genetics, and risk of extinction of the affected herds assessed. Risks from other domestic livestock near the bison herds needs to be systematically evaluated. The disease should be further studied by veterinarians using the reports of Bernd Schildger and the papers by Kita and by Krasochko as starting points.
2. Before deciding on future breeding policy, research should be done on the morphology and genetics of the two described subspecies. The genetics work could be performed by Gunther Hartl at The Institut für Haustierkunde in Kiel. The Institute of Zoology of the Zoological Society of London and the Frankfurt Zoo may be able to assist in this work, but sufficient funding would first be necessary.
3. In addition, the need for a European bison EEP was discussed. An application for a Wisent EEP will be submitted by Wanda Olech-Piasecka of the Institute of Biological Foundations of Animal Breeding in Brwinow, Poland, and it will be decided by the EEP Committee in November, 1995.

This report was submitted by Phillip S. Miller, CBSG.

Overview of the Conservation Assessment and Management Plan and Its Application to Asian Wild Cattle

The CBSG has developed and promoted the use of science-based management tools, including the Conservation Assessment and Management Plan (CAMP) workshop, which allow informed and efficient decision-making for conservation. The CAMP process is a tool for bringing together stakeholders in the future of a taxon or region and for assembling information and setting conservation action priorities. The goals of the CAMP are to: 1) assess threat using the new IUCN Red List criteria; 2) make broad-based management recommendations; and 3) recommend specific conservation-oriented research. As Bill Conway stated recently in *Biodiversity and Conservation*, the CAMP process is one of the most imaginative and productive organizing forces for species conservation today.

Since the inception of the process in 1991, 39 CAMPs have been conducted with 319 institutions from 39 countries participating. Nine CAMPs have been held so far this year and seven are already scheduled for 1996.

The CAMP is not meant to be the final word on the conservation of a species. The process, as well as the documents created therein, is constantly evolving. There have been many changes in the process since it began. One of these changes is the use of the new IUCN Red List Categories. When CAMPs began, we were using the Mace-Lande categories described in 1991. These categories were especially relevant for large vertebrates. At the request of the IUCN, the Mace-Lande categories were revised and expanded upon resulting in the adoption of the new IUCN Red List categories which we now use in all CAMPs. These new categories provide a way of making comparisons across a wide range of taxa, based both on population and distribution criteria. In addition, these categories can be applied to any taxonomic unit at or below the species level.

Another change made recently is that the taxon data sheet is now the primary vehicle for data compilation rather than the spreadsheet. This enables the gathering of more complete information for each individual taxa considered during the workshop including a record of the sources of the information and the compilers of that particular data sheet. Soon all the information from the taxon data sheet will be incorporated into REGASP, developed by ASMP. This will allow information to get to ISIS institutions as rapidly as possible.

A relatively new addition to the CAMP process is the Global Captive Action Recommendations (GCAR). The GCAR is designed to serve as a guide for institutions and regions that are involved in collection planning. When appropriate, we hold the GCAR at the same time as the CAMP in order to take advantage of the expertise of the participants.

For taxa recommended for captive management, a global captive target population is determined using the CAPACITY program. In addition, information is gathered on the current populations held in captivity. This GCAR data is now included

in some of the most recent CAMP reports.

In spite of all the changes made to the CAMP process over the years, the role of CBSG has remained the same. The CBSG serves as a neutral facilitator of the process but the recommendations are made by the workshop participants.

One of our most recent CAMPs was the Asian Wild Cattle CAMP held in Chonburi, Thailand in July, 1995. This workshop was sponsored by four AZA institutions and the Japanese Association of Zoos and was hosted by the Kheow Kheo Open Zoo. This meeting was organized by CBSG, the Asian Wild Cattle and Stork, Ibis, and Spoonbill Specialist Groups, the Thailand Royal Forestry Department, and the Zoological Parks Organization of Thailand.

It was a truly global workshop with 14 countries represented. One of the most valuable functions of CBSG is to bring together people together who have similar concerns for the survival of a particular species or group of species but who have never met. People from several Southeast Asian countries gathered at this workshop and formed friendships and collaborations that they hope will be long-lasting and productive.

The goals of this workshop were to:

1. To review population status and demographic trends, assign new IUCN Red List categories of threat, and identifying management options.
2. To provide recommendations for *in situ* and *ex situ* management, research, and information gathering.
3. To produce draft CAMP reports.

The participants subdivided into working groups with each working group having a Thai facilitator. Working group reports were given in both Thai and English. The results from this workshop have been summarized in a draft report. Seventeen of the 25 (68%) of the Asian wild cattle taxa examined were classified as threatened (either critical, endangered or vulnerable).

When the results of all CAMP workshops are combined, it can be seen that 40% of the over 4,000 taxa considered in CAMP workshops to date are classified as threatened, thus indicating the need for some degree of timely conservation attention.

Determining the type of conservation attention needed is another goal of the CAMP. Based upon the information gathered and the status of the taxon, decisions must be made regarding the need for taxonomic and genetic studies, surveys, population monitoring, habitat management, management of factors limiting the population or research to determine what the limiting factors are, life history studies, or translocation. Another recommendation to be considered during the CAMP is whether or not a PHVA workshop should be held for a taxon. The PHVA is designed to evaluate the factors affecting the population's risk of extinction and to develop a management strategy for minimizing that risk.

One of the valuable results that can come from a CAMP workshop is the understanding of not just what we know but what we don't know as well. In the Asian Wild Cattle CAMP, 56% of all research recommendations made were for information gathering, such as survey, monitoring, and taxonomic studies. This is also true when we look at the cumulative data. Nearly half of all recommendations are for the same three types of studies.

Another category of recommendation to be considered in the CAMP process is that of captive management. The CBSG approach is that captive propagation should be considered a support, not a substitute, for wild populations and programs should be developed in the country of origin of the taxa if possible. There are three levels of captive programs. Level 1 is the most intensive program with a goal of retaining 90% heterozygosity for 100 years and to be implemented immediately. Level 2 is similar to Level 1 but includes periodic supplementation of genetic material from the wild. Level 3 is used for taxa that are not recommended for captive programs for conservation purposes but for other important reasons such as education and research. If there is not enough information available at the time of the CAMP to determine if a captive program is required, a recommendation of Pending is assigned. Alternatively, no captive program may be needed.

All the captive recommendations made in the Asian Wild Cattle CAMP were made for threatened species. In total, seven recommendations were made for captive programs and four taxa were given a recommendation of pending, but the majority, fully 50% of the taxa, were not recommended for captive programs.

Similarly, for over half of the taxa considered in the CAMP process to date, no captive program has been recommended. It is important to note, however, that recommendations have been made for many taxa not currently held in captivity. Obviously, the mission of CBSG is not to promote captive breeding at the exclusion of other options. You can see that changing our name from "Captive" to "Conservation" was a very appropriate move.

In every CAMP workshop, issues important to a particular species or a group of species are discussed and short reports of the discussions are included in the documents produced from the workshop. Recommendations resulting from discussions at the Asian Wild Cattle CAMP included: 1) stop breeding gaur subspecies hybrids; 2) develop a survey, census, and monitoring training program; 3) conduct disease surveys and outbreak investigations; and 4) establish a wild cattle genome resource bank.

One of the goals of the CAMP is to produce the draft workshop report at the meeting. The value of the report is greatly enhanced if it is published soon after the workshop has been conducted. We now add a day or two onto each workshop to give us time to complete the draft report. The draft report from the Asian Wild Cattle CAMP was completed before we left Thailand and is now being reviewed. The working document will be completed by mid-October. This report, and reports from each of the CAMP workshops, is available from the CBSG Office.

This report was submitted by Onnie Byers, CBSG.

Report from Brazil

Golden Lion Tamarin

Cecilia Kierulff began the translocation of golden lion tamarins (GLT) from endangered habitat fragments to Fazenda Uniao having over 2,800 ha of forest. The Associacao Mico Leao Dourado (AMLD) signed an agreement for the use of these 2,800 ha of lowland Mata Atlantica with the RFFSA (Federal Railroad Network). The Association will pursue the development of an agreement with Fazenda Uniao to establish a RPPN (Private Reserve of Natural Patrimony) to ensure the continued legal protection of the Fazenda's 2,800 ha of forest. There will also be re-emphasized efforts to encourage Fazenda owners to protect their remaining forest patches legally. The AMLD will work with local municipalities to pass laws to support GLT conservation.

Kierulff and Oliveira will capture and translocate to Fazenda Uniao six additional GLT groups and they will begin baiting and following an additional five groups. Kierulff intends to determine whether translocation is a more cost-effective method of increasing numbers and genetic diversity than reintroduction.

After ten years, the Reintroduction Program has added 2,300 ha to the total area protected for GLTs in Brazil through its program of releasing GLTs on private fazendas. By the end of 1994, Benjamin Beck reported that there were 125 tamarins surviving as a result of the reintroduction program, living in 26 social groups on 13 ranches. Five more zoo-born GLTs were released into the wild in early January 1995.

Beck and Ballou have organized the shipment of up to 24 GLTs from 13 zoos (many coming to North America from Europe) to be housed as six "pipeline" zoos in free-ranging exhibits prior to reintroduction in Brazil between 1995-1996. Two family groups of tamarins will likely be reintroduced in 1995.

Dietz and Baker continued the semi-annual physical examination of 34 groups of wild GLTs as part of the genetic-demographic studies and logged nearly 4,000 hours of direct observations on 17 habituated groups. One female, originally trapped in 1983, still survives!

We intend to continue ongoing field research in the following areas: sociobiology, communication, ecology, medical studies, locomotion and functional morphology, reproductive physiology, reintroduction, and organization. We hope to initiate studies of the foraging behavior and diet of wild GLTs and seasonal changes in food consumption during 1995-1996. We also hope to start field studies on the development of feeding and foraging in wild GLTs to be compared with zoo-born tamarins.

The new Associacao Mico Leao Dourado (AMLD) assumed responsibility (from FBCN) for all 26 staff members working for the GLTCP and equipment and vehicles.

Golden-headed Lion Tamarin

By using the Golden-headed Lion Tamarin, *Leontopithecus*

Brazil...

chrysomelas, (GHLT) as a "flagship" species, funds have been raised to increase the protected lands of the Una Biological Reserve by 2,300 ha. Studies currently being undertaken by Dr. James Dietz (University of Maryland) have established that the protected area requires to be doubled in size (approximately a further 10,000 ha required) so that a viable population of GHLT in the wild can be achieved. The JWPT will continue to seek opportunities to help collaborating NGOs (WWF-US; Conservation International) secure the necessary funds to realize this goal.

Black Lion Tamarin

An excellent paper has recently been published in Dodo by Claudio Padua and Laury Cullen entitled "Distribution, Abundance and Minimum Viable Metapopulation of the Black Lion Tamarin". The JWPT continues to support translocations and to develop the captive breeding program for this critically endangered species.

Black-faced Lion Tamarin

No black-faced lion tamarins, *Leontopithecus caissara*, are maintained in captivity. Field studies were supported on distribution, status, and conservation of the black lion tamarin on Supragui.

Reintroduction of the European Lynx (*Lynx lynx*) in Poland

The lynx was a predator in central European lowland forests in former times. It is a extremely rare and protected species in Poland with an estimated population of about 200 individuals. Human hunting pressure, agricultural change, and its economic value were the reasons that the lynx abandoned the Puszcza Kampinoska in the 19th century.

The project described herein was a field experiment with zoo-born individuals which was an important and new zoo strategy in global natural conservation. Since 1992, two male and five female lynx equipped with radiotelemetry collars were moved to Kampinoski National Park from their former enclosure. The reintroduction procedure was based on information from recent scientific literature about the lynx, the considerable experience of Polish and German teams in reproduction, behavior, and reintroduction of threatened species, as well as forest and wildlife managers. The program adheres to:

1. The Washington Convention (CITES) - the lynx are captive-bred and for conservation purposes and not for trade;

2. The European Council on Nature and Environment Series on the status, conservation needs, and reintroduction of the lynx (*Lynx lynx*) in Europe, Strasbourg, 1990;

3. The Convention of the Conservation of European Wildlife and Natural Habitats (Bern Convention), Environmental Encounters No. 11, 1992;

4. Recommendation No. 20 of the Bern Convention on the protection of the European lynx;

5. The IUCN position statement on the translocation of living organisms, 4 September 1987.

Our project was accepted by the head conservator of Poland (the Vice Minister of Environment) and the Polish National Council of Wildlife Conservation.

Since 1994, three females reared offspring after release in the Kampinoski National Park area. Young lynx, which were born in the forest, are quite different individuals. They are fully-wild, beautiful cats with excellent adaptation to their new home. All lynx prey on animal up to the size of Roe deer or sometimes even domestic cats and rabbits.

This report was submitted by Dr. Michael Boer, Dr. Jan Smielowski (Poznan), and Pawel Tyrala.

Equus hemionus Working Group

Background

The CBSG has received a request from the government of Turkmenistan for assistance in dealing with the increasing population of Turkmenian kulan, *Equus hemionus kulan*, in the Badchyz Reserve in the southwestern portion of that country. The CBSG *Equus hemionus* Working Group discussed holding a PHVA in Badchyz Reserve to bring together interested individuals, organizations, and governments. The increasing population of kulan in the reserve has resulted in conflicts with local inhabitants. Population estimates for kulans total several thousand, making Badchyz the largest single population of this Appendix II-listed equid.

Following discussion, the *Equus hemionus* Working Group agreed:

1. Before a PHVA is conducted, a wildlife biologist with expertise in equids should visit the area for a sufficient period of time to assemble a report concerning the status of the kulans, especially in Badchyz Reserve, and the nature and extent of the kulan-human population conflicts. This report should be distributed in draft form prior to the PHVA.

2. The SSC Equid Specialist Group was recommended to identify both an appropriate qualified biologist and sources of funding for the costs involved in collecting the necessary field information and compiling the report.

3. The most knowledgeable person regarding current status

of kulan is wildlife photographer Gertrud Neuman-Denzau. The group suggests that she be included in the survey and status report activities because of her familiarity with the situation in Turkmenistan.

4. The CBSG *Equus hemionus* Working Group recognizes the importance of ongoing studies in systematics of *Equus hemionus* for assessing the validity of named subspecies and the conservation importance of specific populations of *E. hemionus* kulan. These studies are being conducted at Heidelberg University (Arnd Schreiber), Museum of Paleontology, Paris (Vera Eisenmann), and Zoological Society of San Diego (Ann Oakenfull and Oliver Ryder). Funding for initial studies has been obtained and some results may be expected early in 1996. The findings of these studies will provide important background for discussions at the PHVA meeting.

This report was submitted by Waltraut Zimmermann, Zoologischer Garten Koln, Germany.

Pygmy Hog

The official Agreement for Collaboration between the JWPT, the Pigs and Peccaries Specialist Group, the State Forest Department of Assam, and the Indian government's Ministry of Environment and Forests was signed in Delhi on 16 February 1995.

Former ITC trainees have been appointed to key positions. The Indian authorities have nominated the director of the Manas Tiger Reserve, Paramenda Lahan, as the project leader and the Trust has employed Dr. Goutam Narayan as the Project Manager. Dr. Narayan is well known to all the key officials in the state and he is very familiar with Pigmy Hog habitat as it is shared by the Bengal Florican which was the subject of his doctoral thesis. William Oliver will be directing the recovery program.

After considerable discussion and after visiting many possible locations, it has been decided to build the captive facilities at Basistha in the Garbhanga Reserve Forest on the outskirts of Guwahati. The rainy season should finish by the end of September when it is hoped that construction will start with completion by the end of the year. This is essential as the ideal time for a capture mission, almost certainly to Manas, will be early in the new year. Most of this year so far has been spent carrying out a series of surveys, the first for a number of years, in the area that was known to be populated by Pigmy Hog in the past. So far, traces have been confirmed at four different locations.

Mr. Mrigen Barua, Range Officer for the Assam State Zoo Division, Guwahati, has been accepted by the ITC training. On his return, he will be an important link between the zoo authorities and the Pigmy Hog captive breeding center.

This report was submitted by John R. M. Hartley, Jersey Wildlife Preservation Trust, U. K.

Avian Working Group Report



A brief review of the history of the Avian Working Group was provided by Chairman Emeritus Steve Wylie. The Avian Working Group first met in 1988 and largely was formed to ensure that avian considerations were presented in CBSG activities. Early meetings focused on identifying priority groups, including naming particular avian groups for review in the CAMP process as well as identifying individuals to serve as the point person for each group to ensure that the workshops were carried out. There have been 13 avian CAMPs to date.

Most of the initial priorities have been met. The results of the recent Stork, Ibis, and Spoonbill CAMP were reviewed by Koen Brouwer. Other CAMPs currently being re-vamped also were discussed, such as those for parrots now being overseen by the World Parrot Trust, and penguins which will be revisited in conjunction with the Third International Penguin Conference in South Africa in 1996.

The group discussed possibilities for future directions, including how it might best serve the constituency, taking into consideration that participants change from year to year. Several ideas were discussed:

- The need to aggressively solicit and incorporate avian reports from all regions in the briefing materials to promote inter-regional communication.
- The need to better link regions. It was suggested that it might be very useful to arrange for taxon-based groups from the various regions to meet, perhaps utilizing CBSG meetings to focus on selected groups as in Antwerp two years ago with the numerous GCAR workshops, or as had been done in Singapore with the hornbill CAMP workshop.
- The possibility of advance planning of working group meetings to focus on selected topics also was discussed; for example, on issues such as confiscated animals or trade as it affects bird collections.
- It also was suggested that the group might function to ensure that the development of emerging tools in CBSG, such as GRB, take avian issues into consideration and that the group participate in and track that progress.

These discussions will be continued with the current Avian Working Group Chair, Chelle Plasse, who was not able to attend the meeting.

The final realization is that while this group has made a great deal of progress and generated many contributions, its basic mission and aims are the same as seven years ago when it began – to represent avian considerations. The task now is to determine how best to carry out that aim so that the contributions of the group continue to be relevant within the broader framework of CBSG.

This report was submitted by Susie Ellis, CBSG.

Captive Breeding of Wild Dogs in South Africa

Until as recently as the 1960's, African wild dogs were being hunted down in South African game reserves as vermin. Now, wild dogs are fast joining elephants and black rhinos as a flagship species for conservation. The wild dog is the second-most endangered carnivore in Africa, and there are in fact fewer wild dogs in protected areas than there are black rhinos. The factors which have caused the extinction of wild dogs in 19 of 34 sub-Saharan countries show no signs of abating: disease, habitat loss, and conflict with humans. It is thus essential that a well-managed captive breeding program be established for this species.

From an analysis of the records of the main institutions which have held this species, it is estimated that some 750 wild dogs have been bred in captivity since the 1960's. There are currently 80 specimens held at nine institutions. Several problems in captive breeding have become apparent, however.

First, $\pm 70\%$ of pups die within the first few days of birth. Second, various physical disorders have been diagnosed in captive wild dogs, including abortions, bone disease, heart failure, and gastrointestinal ulceration. Behavioral abnormalities, such as neglect or killing of pups by mothers, have also been recorded. These are all conditions which may be manifestations of chronic stress. Third, there are indications that a degree of inbreeding may have occurred in the past. Problems such as these must be solved if captive breeding is to make a real contribution to the conservation of this endangered species.

Stress and Conditions of Captivity

Wild dogs have a complex social structure, and in this may lie the key to the symptoms of stress and the high pup mortality recorded in captive animals. Within a pack of wild dogs, there are separate male and female hierarchies headed by an alpha pair which advertise their status through scent marking and enforce it during dominance interactions. Breeding is usually restricted to the alpha female and if a subordinate female breeds, her pups are often killed by the alpha female. All members of the pack help to look after the alpha female and her pups, by guarding the den and regurgitating food.

An analysis of suspected causes of mortalities of captive wild dogs reveals several interesting points. A large percentage of failed litters are attributed to infanticide of pups in packs containing more than one potentially breeding female. This is, of course, to be expected in wild dogs and may be regarded as "natural" mortality. However, a large percentage of mortalities have been attributed to management actions which may be a source of social stress in a socially complex species. Chronic stress may not only affect the health of animals but may also result in pathological behavior, such as the killing of pups by their own parents.

One suspected cause of pup mortalities is human distur-

bance at or near whelping, e.g. cleaning of dens. This may cause a mother to abandon or even kill her pups. Another is the disruption of social groups, e.g. the removal of some pack members. If an alpha animal is removed from a group for treatment, it is invariably challenged by its subordinates upon return to the pack and ousted from its position of dominance. This is followed by a period of upheaval in the pack, with an excess of aggressive interactions as relative positions in the dominance hierarchy are sorted out. The accompanying stress will probably impact breeding females the most. If an alpha female with pups loses her rank position, her pups may well be killed by her challenger. The arrangement of groups of animals appears to be one of the main sources of stress in captive wild dogs. Wild dogs held in cages within sight and sound of other wild dogs showed the greatest signs of stress; they paced most and had the highest levels of stress hormones in their blood. Such animals are unable to resolve social relationships, as they would if in a pack. Females in adjacent cages all regard themselves as alpha individuals and all attempt to breed, but the resulting social stress may cause reproductive failure.

Some of the recommendations which can thus be made to minimize stress in captive wild dogs are: 1) to avoid keeping mating pairs in adjacent cages and to instead maintain a large pack of animals (this also effectively maintains a behavioral repertoire which is integral to the species and which may be essential for successful reproduction); and 2) to disturb or disrupt the group as little as possible during the breeding season, and particularly, to avoid disturbance to alpha individuals.

Cooperative Management

No single institution has the facilities to maintain a viable population of animals. Ideally, the animals held at institutions should be managed cooperatively, thereby increasing the effective size of the captive population. This is the aim of the African Preservation Program (APP), operating under the auspices of PAAZAB. The APP for wild dogs was established this year and currently has four members. This is rather discouraging considering that nine South African institutions currently hold wild dogs. The problem is a people-management one. There is unfortunately a perception that the APP is about telling people how to run their business. Because of this, there is considerable resistance to the idea of an APP, particularly from the center holding the largest number of wild dogs. On the other hand, the concept of an APP enjoys the support of the National Parks Board, which has donated two wild-caught individuals to the program.

One of the spin-offs of the APP will be the compilation of a husbandry manual, so that information regarding the maintenance of wild dogs in captivity can be made accessible to everyone. Another is the establishment of a regional studbook for wild dogs, by Malka Frantzen and me. A comprehensive studbook is essential for genetic management of the captive population. From breeding records, it is evident that two distinct lineages have been maintained in captivity, but within each lineage there has been a degree of inbreeding. Inbreeding

coefficients as high as 0.375 have been recorded. Certain founders have also been over-represented in the captive population. Apart from the two new founders from Kruger National Park, a reshuffling of animals between some institutions has occurred so that in the future, progeny at most institutions should have a minimal amount of inbreeding.

One aspect of genetic management is the prevention of inbreeding. Another is the protection of genetically-distinct subpopulations. Work at the laboratory of Dr. Robert Wayne of UCLA has shown that eastern and southern African wild dogs are separate subspecies. As yet, we have no idea where Namibian animals fit into the picture. At the moment, animals from different geographic locations are being kept separate, but work is underway to determine the relationships between such groups. For this purpose, Malka Frantzen has collected samples from wherever she could get them, and she has taken them to UCLA.

Contribution of Captive Breeding to Free-ranging Wild Dog Populations

Two diseases responsible for a large percentage of wild dog mortalities in the wild are canine distemper and rabies. In fact, these diseases were implicated in the extinction of several packs of wild dogs in the Serengeti a few years ago. Diseases may be controlled through active management programs involving the use of vaccines, and captive animals provide a means of testing vaccines under controlled conditions. There is as yet no safe vaccine against distemper. In fact, several captive pups died after vaccination with the live virus. Recent tests by Prof. Meltzer, Veterinary Faculty, University of Pretoria, have indicated that vaccination with an inactivated rabies virus is safe and causes a build-up of antibodies against the virus. The efficacy of the vaccine in preventing the disease has not yet been tested, however.

The ultimate goal of a successful captive breeding program is the reintroduction of surplus animals into the wild. In the past, reintroductions of wild dogs have had little success. Conflict with humans, conflict with other predators, an inability to hunt, and an unstable pack structure are some of the factors which may influence the success of such attempts. We believe that some of these problems may be overcome by introducing a pack consisting of both wild-caught and captive-bred individuals. The reintroduction of such a group at the Modikwe Game Reserve last month appears to be working so far, with the wild dogs hunting successfully and not conflicting with humans in the area. In order to establish a stable social group with the minimum of aggression between strange animals, we suggest that group formation mimic the establishment of new packs in the wild, i.e. a group of siblings of one sex should be joined with a group of siblings of the other sex. Three such groups have been successfully formed along these lines: the Modikwe group, plus two groups in captivity. It is important to note, however, that it may take some time before such groups breed, since reproductive competition will be fierce until relative ranks are sorted out amongst group members.

At the beginning of this paper, I mentioned that the African

wild dog is fast becoming a flagship species in South Africa. Captive animals have been featured in numerous newspaper articles and in several programs on two television networks. They are the subject of at least two wildlife documentaries in the making. Perhaps one of the biggest coups was the filming of the birth of wild dog pups at the Congo Croc Ranch in Oudsthoorn.

Conclusion

Wild dogs are undoubtedly growing in popularity, but public sympathy may not be enough to save them in the wild. The recent extinction of several packs of animals in the Serengeti due to disease is a case in point. If the survival of this species is to be ensured, it is essential that a successful captive management program be established. In this way, both knowledge and animals can be pooled and this should allow the establishment of a viable population of physically, behaviorally, and genetically healthy wild dogs in captivity. We have a barrier to overcome, however, in that no institution wishes to be told how to run its business and institutions are apt to resent what they regard as interference from outside. If the APP does receive the support of all institutions, it could make a real contribution to the conservation of wild dogs.

This report was submitted by M. S. De Villiers, University of Pretoria, South Africa.



Minutes of the International Red Panda Management Group Meeting

A review of recent developments and progress since the last meeting in Antwerp in 1993 included a brief discussion of recent breedings and regional progress. An analysis of infant mortality did not indicate any key factors aside from good husbandry. Zoos in the U.K. and Australia are reviewing diet. The Japanese region has only 15 *fulgens* and would like to relocate them and concentrate on *sytani*.

The North American region has taken steps to standardize management strategy. The reduction of infant mortality will improve the predictability of projected reproductive rates. All regions are reaching carrying capacity very quickly. The goals of our program should be to have a direct benefit to the population in the wild. We can augment the wild population, help educate, and support field work. North America has restructured their management group, and they are keen to get on with it to go beyond captive breeding and back to the field.

Efforts towards a partnership with China have not developed and, therefore, work with *svvani* may be a distant goal. In light of the recent meeting in Darjeeling, *in-situ* work with the

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fulgens population, beginning in India with further involvement in Nepal and Bhutan, may present a better prospect.

Following a recent workshop in Darjeeling, it has been suggested that the IRPMG focus *in-situ* efforts in northeastern India at first. One of the first steps is to get a captive population into India. The wild-caught red pandas in Darjeeling Zoo were not breeding. Several animals were sent over from the EEP population to form the basis of a captive breeding population. It was realized that animals coming from outside India should be "hardened up" before introduction to the Indian population. The second time, a keeper was sent with the animals, and the second and third animals have now bred. There is the beginning of a small population in the Darjeeling Zoo. Two more zoos, in Sikkim and Arunachal-Pradesh, are very interested in joining the captive breeding program. The attention focused on this international effort resulted in the workshop which focused on husbandry and management issues. This was the initiative of the Central Zoo Authority in India which invited a group to consult about the captive management of the species. The Forest Department is interested in restocking red pandas as one of several species. This conference represents the largest step taken from the European side.

Mr. Sharma indicated that before any programs go ahead in India, there is need for training of keepers. Unless the survival rate increases, the chances of the program succeeding are not as good. Veterinarians and keepers both need training. Sikkim, Arunachal and the Darjeeling Zoo would like 13 animals to start. Then survey work and socio-ecological aspects should go on simultaneously. All three zoos should develop together. Training should include both people coming to India and people from India going elsewhere. One or two courses for ten people each with three to four people at each zoo.

Variations found within the captive *fulgens* population and issues of domestication were discussed with reference to potential impact on any future reintroduction program. Frank Princee pointed out that domestication takes thousands of generations, and it was, therefore, tameness that was a husbandry issue. Are we mixing a genetic line? There is an urgency to do a genetic typing between animals. Mr. Sharma indicated there is expertise in India to do DNA fingerprinting. He reiterated that India needs expertise and guidance more than money.

We have enough animals and we have the expertise, so what are we doing with them? We can perfect our techniques for restocking. A national park in Sikkim provides what appears to be suitable habitat for release. There is no conflict with humans. We can continue to develop a program which could eventually lead to a restocking, but it can also be a basis of knowledge acquisition. Whether or not restocking becomes the ultimate goal, we must leave the door open to that possibility.

The commitment in India for any programs must come from the government, Department of Forestry, etc. We need a strategic plan to determine what is to be done with a definite plan for the first two years. There are seven or eight Indian zoos in a

suitable climate, but at this point we should target the three zoos mentioned above. Another need is for an agency coordinator to receive funds. The channeling of funds needs to be approved by the Indian government beforehand. Gifts should not be sent piecemeal.

As decisions on the *fulgens* subspecies will determine our direction for the next ten years or so, a canvassing of individual IRPMG members was made for their concerns. All members felt that since the principles set forth in this program would be the same for both subspecies, anything learned would equally benefit both.

The second day of the meeting began with establishing a framework for our new focus on *in-situ* conservation of the red panda. The following items were discussed:

Name

The group agreed the project be called the Red Panda GASP, until another more suitable name is found.

Mission Statement

To promote long-term conservation of the red panda and red panda habitat using the captive population as a focus for education, research, public relations, funding, as well as a genetic resource.

Objectives

1. Research (short-term)
 - Support of field research and survey work both in India and in Nepal and Bhutan
 - Develop people in these areas by identifying training opportunities to create advisors in place.
 - Continue captive research to include veterinary medicine.
2. Education and Public Relations
 - Facilitate communication between IRPMG members via an international newsletter
 - Coordinate educational activities, both *in-situ* and *ex-situ*.
 - Coordinate public relations efforts.
3. Captive Breeding Program.
 - Set up captive breeding core in Indian zoos.
 - Establish transfers between regions.
4. Training of Staff
 - Veterinary, curators, and keeping staff training needs.
5. Fundraising
 - Coordinate fundraising activities, although focused regionally.

It was agreed that IRPMG members would assume functional roles as facilitators for the above activities. The following members are allocated as follows:

- Research: Miles Roberts, Washington
 - Education, Public Relations: Carol Bach, Sydney
 - Captive Breeding Program: Angela Glatston, Rotterdam
 - Training of Staff: Peter Bircher, Marwell
- It was further agreed that the IRPMG members would draft

our respective sections of the program proposal with goals and deadlines. These program drafts would then be submitted and discussed further at our next IRPMG meeting in Darjeeling in April, 1996.

This report was submitted by Angela Gluston, Royal Rotterdam Zoological Gardens, Netherlands.

North Sinai Perspective... The Role Of Captive Breeding Centers in Wildlife Conservation

Introduction

The reintroduction of captive-bred wildlife into secure and stabilized natural habitats is an important strategy for the conservation of endangered species.

In the Sinai desert, the growing need for space and food for humans have increased the pressure on the natural environment and accelerated the modification and destruction of natural habitats. Human over-exploitation of animal populations has led to the disappearance or extermination of many plants and animals, a process whereby predators and ungulates have particularly suffered. The Sinai desert was formerly occupied by different wild fauna (e.g., Nubian ibex, houbara bustard, Sinai leopard, cheetah, Barbary sheep, Arabian gazelle, and slender-horned gazelle) which are now either endangered or extinct.

The concept of modern conservation strategy has changed dramatically and captive breeding of endangered and threatened species has come as a last resort. Three major objectives dominate present-day captive breeding management: 1) propagating and managing an extinct species gene bank; 2) maintaining the genetic diversity of extinct species; and 3) breeding wild animals with a view to releasing them in nature thereby helping the conservation of wildlife.

For example, take the case of the Nubian ibex (*Capra ibex nubiana*). This species formerly occurred throughout the Sinai Peninsula but extensive hunting for pleasure, profit, or meat and domestication have reduced the number to a level threatening survival of the species.

It is evident from the success story of the reintroduction of threatened species (e.g., Arabian oryx, *Oryx leucoryx*) in the Gulf area that captive breeding centers are part and parcel of the wildlife conservation strategy in this region. This paper provides some information on the wildlife of the Sinai Peninsula and ways captive breeding centers can help in wildlife conservation.

The Sinai Peninsula

The Sinai Peninsula is a triangular area of land linking

Africa with Asia, but is usually considered as a part of Asia. The southern third of the Peninsula is formed by steep mountains. The central and part of the northern Sinai is formed of a high plateau. The Mediterranean coastal desert of the Sinai is low and sparsely vegetated. The Sinai Peninsula is of great zoogeographical importance because it constitutes a continental bridge between Asia and Africa. Most of the Sinai is regarded as an arid zone except for semi-arid, southern mountains over 2000 m have an annual snowfall on the summits. The vegetation is restricted to water courses or fissures in rock strata, while trees are restricted to special moist areas, springs, and water courses.

The Isthmus of Suez is a low, sandy, and sparsely vegetated neck of land connecting Egypt with the Sinai and Nubian ibex and houbara bustard are found in its mountains. It is now traversed by the Suez Canal. It does not seem to form an effective barrier between the Sinai and the eastern desert.

Fauna

Few previous reports, depicting the wildlife of Egypt in general and North Sinai in particular, are available with which to compare recent reports. Therefore, it is very hard to determine which wildlife have disappeared from Egypt. There are roughly 75 species of mammals, about 430 species of birds (150 resident species), 100 species of reptiles, 1,200 species of fish, and 30 species of amphibians. The majority of these species are not endangered, but the status of Egypt's fauna, with a few exceptions, has not been well studied. Best known are some of the larger mammals, birds, and reptiles. Species currently classified as endangered, declining, or probably extinct are not definitive for all endangered species in Egypt. Rather, researchers are attempting to indicate the status and vulnerability of various groups and species.

Extinct Species

It is now apparent that Egypt has lost wild populations of Barbary sheep (*Ammotragus lervia ornatus*), cheetah (*Acinonyx jubatus*), Arabian gazelle (*Gazella gazella arabica*), slender-horned gazelle (*Gazella leptoceros leptoceros*), houbara bustard (*Chlamydotis undulata*), Sinai leopard (*Panthera pardus pardus* and *Panthera pardus jarvisi*), sacred ibis (*Threshkioris aethiopicus*), Egyptian plover (*Pluvianus aegyptius*), white-faced duck (*Dendrocygna viduata*), and an unknown number of reptilian species.

Threatened Species

There are some species whose population have been depleted to such an extent that they are threatened with extinction in this region. These are the fennec fox (*Vulpes zerda*), wild ass (*Equus asinus africanus*), wild cat (*Felis sylvestris*), Nubian ibex (*Capra ibex nubiana*), sand cat (*Felis margarita*), peregrine falcon (*Falco peregrinus*), sooty falcon (*Falco concolor*), ostrich (*Struthio camelus*), demoiselle crane (*Anthropoides virgo*), glossy ibis (*Plegadis falcinellus*), Nile crocodile (*Crocodylus niloticus*), green sea turtle (*Chelonia crispus*), hawksbill sea turtle (*Eretmochelya imbricata*), leatherback sea turtle

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(*Dermochelys coriacea*), dabb lizard (*Uromastix aegyptius*), desert monitor lizard (*Varanus griseus*), and Nile monitor (*Varanus niloticus*).

Role of the North Sinai Captive Breeding Center

We now have three groups of animals which are considered priority species as far as the wildlife conservation of the region is concerned. The first group includes the extinct species. Although extinct from nature, they may still be present in private collections and zoos. The species which are not represented by a viable population comprise the second group. The third group includes those species which may be threatened with extinction.

The captive breeding and reintroduction of the extinct and near-extinct species are an immediate necessity provided that the causes which led to extinction have been eliminated and sufficient protection for the environment and the species is guaranteed. Animals from the second group must be procured in such a way that wild populations are not diminished.

At the same time, the number of specimens collected should be sufficient to build up a captive population, ensure viability, and develop a breeding strategy. Attempts will be made to breed animals of the third group in captivity with a view to developing a future strategy.

Breeding Strategy

It is a fact that the Nubian ibex, houbara bustard, hyena, slender-horned gazelle, Arabian gazelle, and Barbary sheep cannot be procured from nature within the jurisdiction of Egypt. The only alternative available is to collect them from zoos and private collections. An inventory of locations holding endangered and extinct species is to be prepared. This should include the name of the species, the number of specimens kept under each private owner, and the breeding and medical history, if available.

Once the required specimens are collected, no stone should be left unturned to get the desired result, which would be successful breeding by identifying obstacles and finding solutions to them. This will form the basis for the breeding strategy of a species.

The breeding strategy of all the extinct, endangered, and threatened species of a country are to be determined. Such strategies are to be substantiated with genetic monitoring to determine inbreeding depression and other such phenomena. It would be ironic, though, if inbreeding depression became a problem because of decreasing genetic diversity despite ecological conditions remaining favorable for re-establishment.

Because it may be impossible for a captive breeding center in north Sinai to achieve the above goals, regional and international cooperation may become imperative.

Semi-captive Breeding

In a semi-captive breeding program, an animal research center provides a piece of natural plot or an artificial area heavily planted with indigenous plants with suitable landscaping plus a

regular water and food supply. In such conditions, animals may procure some food materials from the natural plants and animals may breed there. The area is usually protected from human disturbance, predation, and livestock by using fences. In these protected areas, feeding, breeding, social behavior, medical care, handling, and capture for treatment and vaccination will be recorded.

The Al Ain Zoo and Dubai Wildlife Research Center have become successful in semi-captive breeding of dikkop, stone-curlew, buff-crested bustard, white-bellied and houbara bustard, and kori bustard. Similarly, Al-Areen Wildlife Park has also become successful in breeding a couple of species of oryx, gazelle, and bustard. Oman has become very successful in semi-captive breeding of Arabian oryx.

As far as known, no introductions of captive-bred wild species have been made in Egypt. The first country in the Gulf area to reintroduce captive-bred stock is Oman, where the Arabian oryx was introduced in 1980. Saudi Arabia is following the Oman experience and has introduced oryx, gazelle, and possibly houbara bustard.

Fate of Reintroduced Species

It is important to ensure that when a species is reintroduced into its former natural habitat, the cause(s) that had depleted or wiped out the population earlier had been removed completely. This will involve protection of the entire habitat from any interference by human activities or livestock. Any poaching of the released animals must be prohibited. Continuous monitoring of the ecology and behavior of the species needs to be maintained until the population becomes well established. This would include collecting data on losses, disappearances, predation, and births.

Suggested Measures

As Sinai still has vast stretches of empty desert and uninhabited areas, attempts will be made to reintroduce the extinct Nubian ibex, houbara bustard, and dorcas gazelle.

It is important to take steps to produce an up-to-date statistical information sheet on Nubian ibex, gazelle, and houbara in private possession as this may have a great significance in the maintenance of a gene pool on a world-wide basis.

The Egyptian Environmental Affairs (EAA) will take all the necessary steps as it is responsible for the protection of wildlife, resources, and the environment, but I will select a site for the captive breeding center, the site for reintroduction, and the process of releasing and monitoring the species.

The time has come for the EAA to take coordinated steps to streamline the activities of the breeding center in order to conserve the wildlife populations of Egypt through the re-establishment of extinct species which have bred successfully in their previous natural habitat.

This report was submitted by Dr. Atef Mohammed Kamel Ahmed, Suez Canal University, Ismailia, Egypt.

Frog Conservation at Melbourne Zoo



The World Zoo Conservation Strategy has urged three main conservation objectives for zoos:

1. Active support for the conservation of endangered species, both *in situ* and *ex situ*, and ultimately habitats.
2. Offer support and facilities to increase scientific knowledge to benefit conservation, and support the conservation community through the provision of knowledge and experience.
3. Promote an increase in public and political awareness of the necessity of conservation, natural resource sustainability, and the creation of a new equilibrium between people and nature (IUDZG/CBSG (IUCN/SSC), 1993).

Melbourne Zoo's frog conservation program encompasses all three objectives. Reflecting the Zoo's two-pronged conservation focus of Australia and southeast Asia, two programs have delivered this objective.

Romer's Tree Frog Recovery Program

Following a request from the World Wide Fund For Nature (Hong Kong) in August 1991, 30 Romer's Tree Frogs (*Philautus romeri*) were transferred to Melbourne Zoo in April, 1992 and a collaborative breeding program was established with the University of Hong Kong. Melbourne Zoo's role was to establish an *ex situ* breeding group and provide frogs for reintroduction.

The request arose out of the Environmental Impact Statement for Hong Kong's new international airport being built on the island of Chek Lap Kok, which at the time comprised one third of this frog's total distribution (Karsen et al., 1986). The resulting ecological and genetic studies, and identification of new sites was funded by the Royal Hong Kong Jockey Club, while the transfer of Melbourne Zoo's founder population was supported by QANTAS. Ongoing maintenance and return transport costs are met by the Zoo.

The breeding program has been particularly successful and by July, 1995 over 700 frogs have been returned to Hong Kong for release into designated field sites where they are breeding successfully (Banks, 1994; M. Lau, pers. comm.). The species is now totally protected in Hong Kong and an additional captive group has been sent to Berlin Zoo. Wild populations are monitored by University of Hong Kong researchers and a public display is maintained at Melbourne Zoo. The program has also stimulated considerable media interest in Australia and Hong Kong.

Sharp-snouted Torrent Frog

The global frog extinctions and population declines have been most apparent in Australia in the far northeast, specifically the upland rainforest streams of northeast Queensland (Ingram and McDonald, 1993; Tyler, in press). Following a series of increasingly alarming field surveys in the area, the Queensland Department of Environment and Heritage (DEH) decided to

remove all remaining sharp-snouted torrent frogs and tadpoles to captive facilities early in 1994. Only two frogs were found in a December, 1993 survey of the last known population (K. McDonald, pers. comm.).

Batches of tadpoles were sent to Melbourne and Taronga Zoos and two universities. Melbourne had most success, raising over 20 frogs to at least four months of age; all others died as tadpoles or within one month of metamorphosing. One frog was maintained to almost 12 months of age. When it was confirmed to be a female carrying eggs, three of the eight frogs remaining in Queensland were flown to Melbourne in the hope of achieving spawning (two were males). Unfortunately, all died and only two are still alive in Queensland. The species, listed as Endangered, is at least functionally extinct in the wild.

This possible extinction is part of a northward advancing wave of declines and extinctions in northeast Australia (Richards et al., 1993). A virus is thought to be the cause, but it is yet to be positively identified. The information gained at Melbourne Zoo, including pathology results, has been collated and provided to the recovery team.

Achievements of this objective at Melbourne Zoo also reflect an Australian and southeast Asian focus, for example:

1. *Establishing management protocols for endangered western Australian frogs.* In a far-sighted approach, the University of Western Australia and the Western Australian Department of Conservation and Land Management (CALM) has asked Melbourne Zoo to establish captive management protocols for the white-bellied frog (*Geocrinia alba*) and yellow-bellied frog (*G. vitellina*), listed as Endangered and Vulnerable respectively (Majors et al., 1991), through work with the analogue roseate frog (*G. rosea*). With funding from the WA agencies, two groups of ten metamorphlings have been established in custom-built tanks in a secure off-limit area of the Zoo. The frogs are progressing well, now eight months after arrival, and useful information has already been obtained.

2. *Providing captive support for the endangered spotted tree frog.* Arising from its staff networks, Melbourne Zoo has been collaborating with the Victorian Department of Conservation and Natural Resources (VDCNR) on the spotted tree frog (*Litoria spenceri*) since 1992. We currently hold long-term adults and a group of juveniles which are being raised under different conditions to clarify captive requirements. The adults are on exhibit in a riverine setting, simulating a northeast Victorian stream. Staff also provide field support for surveys in northern Victoria, in collaboration with other government agencies and community groups. The species is listed as Endangered and is the subject of a national recovery program (Watson et al., 1991).

3. *Exporting skills to southeast Asia.* Melbourne Zoo was the only Australian agency represented at the workshop on Monitoring Amphibian Populations in Southeast Asia in January, 1995 in Sabah, Malaysia (Inger, 1994). The meeting was organized by the Chicago Field Museum of Natural History on behalf of the Southeast Asian Working Group of the Task Force on Declining Amphibian Populations (TFDAP). A good cross-

Frogs...

section of southeast Asian amphibian specialists attended and the Melbourne delegate worked closely with the team from Thailand to assist development of their program (J. Birkett, pers. comm.).

4. *Contributing to the increase of scientific knowledge.* Melbourne Zoo currently holds 15 species of frogs. Apart from the three extant species already mentioned, these include three species listed as Insufficiently Known (Lesueur's frog, *Litoria lesueuri*; southern bell frog, *L. raniformis*; and great barred frog, *Mixophyes fasciolatus*). A further three native species are regularly reproduced at the Zoo, i.e., dainty green tree frog, (*Litoria gracilenta*), giant green tree frog (*L. infrafrenata*), and spotted grass frog (*Limnodynastes tasmaniensis*). The information gained from working with these species is made available through published papers and regional species management meetings (Banks and Leyden, 1990; Banks et al., 1980; Vincent and Banks, in prep.).

World of Frogs

Arguably the most important amphibian development at the Zoo was the opening of "World of Frogs" in August, 1993 by the Victorian Minister for Conservation, the Hon. Mark Birrell. Comprising eight landscaped displays and two research rooms covering almost 50 m², and a 170-m² wetland habitat, the facility immediately stimulated much community and research interest. A very important aspect of the development was the building's sponsorship by Cadbury Schweppes and "Freddo", the company's chocolate frog logo (Banks, 1995).

The project is of national significance, being the only facility of its type in Australia. It has also been a major factor in developing collaborative programs with frog researchers and an excellent vehicle for promotional activities.

An additional recent development was the installation of four in-ground, multi-directional weatherproof speakers. Audio replay is from microprocessor-controlled digital signals on a computer chip. The effect of the calls from 11 frog species common in the Melbourne area was immediately apparent.

Education Programs

An important component of the Cadbury Schweppes sponsorship allowed for production of an identification brochure of the frogs on display, two full color posters featuring the southern bell frog and a booklet of teachers' notes. The notes were based on the excellent "For the Love of Frogs" publication produced by Metro Toronto Zoo to stimulate school and community action (Johnson, 1992).

These materials enhanced a range of successful programs already being delivered by teachers in the Zoo's Education Service to students from preparatory to higher secondary level. As well as in-class activities, the students are shown frog environments within the main teaching area and elsewhere in the Zoo.

Everyone likes frogs. Most members of the general commu-

nity have an affinity with frogs to varying degrees, having collected or kept spawn or tadpoles as children. This is a marvelous positive foundation on which to base zoo involvement. It is up to all our institutions to build on this sympathy and positive base to direct our considerable skills and resources in support of frog conservation.

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This report was submitted by Chris Banks, Director of Conservation Programs, Zoological Board of Victoria, Victoria, Australia.

Meeting Announcement and Invitation...

1996 Annual Meeting of the Conservation Breeding Specialist Group CBSG/SSC/IUCN

Dear CBSG Members and Colleagues,

I would like to cordially invite you to participate in the 1996 Conservation Breeding Specialist Group (CBSG) Annual Meeting 23-25 August 1996 and Reception on 22 August in Denver, Colorado USA. The CBSG meeting will immediately precede the Annual Meeting of the IUDZG - The World Zoo Organization.

Our annual meeting will be hosted by the Denver Zoological Foundation which is celebrating the Denver Zoo's Centennial. In addition to helping CBSG organize the meeting, especially registration, they will also be treating CBSG delegates and spouses to a barbecue dinner Saturday evening at the Denver Zoo.

The CBSG Annual Meeting will, as usual, be a working meeting. Delegates will divide into working groups and present reports to the entire delegation. We will update you on various CBSG projects and developments. We are now planning the meeting's agenda and look forward to your suggestions.

Changes are being made to improve the quality of our annual meeting and reduce the costs for you. The meeting has been extended to 5:00 pm on Sunday to meet the request for more time in working groups. Our registration fees are \$60 lower than the 1995 fees. Late registration begins later and coincides with the hotel reservations deadline. More information about the CBSG schedule and activities may be found on our World Wide Web Site at <http://cbsg.org>.

I look forward to seeing you in Denver.

Ulysses S. Seal, Chairman, CBSG

Registration Contact

Angela Baier, Marketing Director
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City Park, 2300 Steele Street
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Hotel Contact

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Renaissance Denver Hotel
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Preliminary Schedule

Thursday, 22 August

1500-1700 Registration in the Hotel Ballroom Foyer
1700-1900 Welcome Reception in the Hotel's Ballroom D

Friday, 23 August

0800-1700 Registration in the Hotel's Ballroom Foyer
0830-1015 Meeting in the Hotel's Ballroom
1015-1030 Coffee Break
1030-1215 Meeting in the Hotel's Ballroom
1215-1330 Lunch
1330-1500 Meeting in the Hotel's Ballroom/Working Groups
1500-1515 Coffee Break
1515-1700 Meeting in the Hotel's Ballroom/Working Groups
1700-1900 Dinner on your own
1900-2200 Working Groups Rooms available

Saturday, 24 August

0800-1700 Registration in the Hotel's Ballroom Foyer
0830-1015 Meeting in the Hotel's Ballroom/Working Groups
1015-1030 Coffee Break

1030-1215 Meeting in the Hotel's Ballroom/Working Groups
1215-1330 Lunch
1330-1500 Meeting in the Hotel's Ballroom/Working Groups
1500-1515 Coffee Break
1515-1800 Meeting in the Hotel's Ballroom/Working Groups
1815 Buses depart for Denver Zoo Visit
1830-2200 Dinner hosted by the Denver Zoo at the Denver Zoo and Denver Zoo Visit

Sunday, 25 August

0800-1700 Registration in the Hotel's Ballroom Foyer
0830-1015 Meeting in the Hotel's Ballroom/Working Groups
1015-1030 Coffee Break
1030-1215 Meeting in the Hotel's Ballroom/Working Groups
1215-1330 Lunch
1330-1500 Meeting in the Hotel's Ballroom/Working Groups
1500-1515 Coffee Break
1515-1700 Meeting in the Hotel's Ballroom/Working Groups
1700 Meeting Adjourned

CBSG News



*Newsletter of the Conservation Breeding Specialist Group
Species Survival Commission
IUCN – World Conservation Union*



CBSG News
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