



CBSG News

Inside...
**Reports
from the
1993
Annual
CBSG
Meeting**

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IUCN/SSC CBSG Futures Search Workshop

Executive Summary

The CBSG Steering Committee, at its 1992 annual meeting in Vancouver, suggested that a strategic planning process be initiated for CBSG as a guide to directions, activities, and responsibilities for the next 10 years. The time frame used for the futures planning was agreed to be 10 years with the Year 2000 as a 7-year benchmark.

Current Trends

The dominant desirable trends are (a) an increasing capability and support for training and information transfer of new scientific knowledge, (b) increased local (national) support of infrastructure for land and wildlife management and a greater ease in cooperation across national boundaries. The negative external forces outside of our control are (a) continued human population growth with its associated use of land and resources, (b) local fluctuations in economies and political commitment to conservation priorities yielding acute further habitat fragmentation and reductions in populations, and (c) macro-scale events such as global warming and world-wide movement of species into novel environments.

History of CBSG

The development of a history of CBSG activities revealed a pattern of rapidly-evolving workshops using scientific tools from multiple disciplines in order to develop working relationships between stakeholders in a species, to develop priorities for conservation action, and to disseminate the tools and processes widely into the hands of managers. The CBSG is characterized as responsive, innovative, and highly productive in developing processes for organizing scattered information and people into effective knowledge and action in rapidly changing social and technical environments. It has led the development of a global network of individuals who collaborate in work on threatened species.

Forces Impacting CBSG

Major institutional stakeholders in CBSG are the zoos and aquariums, IUCN/SSC and some of its Specialist Groups, and wildlife management agencies. They provide the support framework for all CBSG activities and are the implementing organizations. In turn, CBSG activities are a direct reflection of the evolving need of these organizations to achieve effective linking of their efforts for species conservation. Much of CBSG activity depends upon personal interactions, trust, cross disciplinary working groups, and the opportunity to test ideas. These processes overlap traditional academic and agency boundaries, must function in a management-oriented mode, and utilize current and inadequate information as a base for adaptive management strategies.

The members of CBSG, participants in its Workshops, and individual professionals in zoos, SSC Specialist Groups, wildlife agencies, universities, and other conservation organizations constitute: (a) the sources of data, information, priorities, ideas, and syntheses; (b) the energy, time, and skills for development of the new knowledge; and (c) the responsibility for implementation of the conservation management scenarios developed in the context of their institutions. These stakeholders are the source of response to rapidly-changing events and organizational structures, the testing of innovative ideas and application of new scientific findings to conservation problems, and they are the actors or agents of the international network which is becoming an effective metapopulation of species-conservation activities.



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

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CBSG News

The CBSG news is published by the Captive 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 Captive Breeding Specialist Group is the conservation or establishment of viable populations of threatened species.

The goals of the CBSG are:



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



Arabian Peninsula Report



The Arabian Peninsula Captive Breeding Group had a rather successful year between the last and current CBSG meetings. The NCWCD (National Commission for Wildlife Conservation and Development) of Saudi Arabia held a symposium on the gazelles of Arabia from 31 October to 3 November 1992 in which 45 participants from Bahrain, Kuwait, United Arab Emirates, Saudi Arabia, North America, Australia, and Europe participated.

The most notable development in the region is the reopening of the Kuwait Zoo in February, 1993. This zoo was completely devastated during the Gulf War of 1991. The zoo has been partially renovated and reconstructed with a generous gift of 63 animals (representing 24 species) from Dubai Zoo and some animals from Khaka Zoo, Bangladesh. The Kuwait Zoo had a very grand and successful reopening.

The program proposed a new Dubai Zoo complex on an 6.5 km² area which is still in the design stage.

Report submitted by Dr. Reza Khan, Regional Coordinator for the Arabian Peninsula Captive Breeding Group.

- that feels closely aligned with its regional neighbors.
- Cultural and economic links exist within the region which avoid the complexities associated with multiple official languages, currencies, and social customs.
- The region is relatively isolated from the bulk of the remaining world zoos making animal transportation out of, and into, the region costly and logistically difficult, thereby encouraging optimization of resources within the region.
- Australasia has few zoos relative to other regions, making strong cooperation between the existing zoos feasible.

Since the early 1980s, the zoos in Australia and New Zealand have cooperated through species management programs for priority species and an annual circulation of an animal census commenced in 1986. By 1988, the need for the region to coordinate its efforts at the complete collection level was identified. Work on priority species could not be adequately supported without a thorough review of all our current holdings, including both species of high conservation value and those with no discernible value in terms of conservation potential. The review was needed in order to map the zoo "spaces" we had available for assignment to priority species, and those that we envisaged creating in the next five to ten years. Documentation of this sort of information would allow us to strategically plan all our conservation efforts.

Compile Regional Census and Plan

The first step towards regional collection planning was to encourage and assist zoos in drafting their individual collection plans based on the information available to them at that time. In each case, this information included some combination of the following: zoo masterplans, forward financial planning, capital works plans, climatic restraints, existing and potential involvement in conservation programs, identified collection themes, and information gleaned on relative wild status of species and the availability of new stock.

The second step involved the compilation of the individual zoo collection plans into a regional collection plan. Our first Regional Census and Plan was produced and circulated for critical review by the zoos involved. The need to rationalize the plan was immediately clear. With the exception of the bird component, for which regional collection planning workshops had been held, the zoo collection plans had been developed largely in isolation. At this point, our Regional Collection Plan contained inconsistencies, evidence of duplication of effort, and had no obvious regional conservation focus.

Rationalize Regional Plan

The third step was the rationalization process which was accomplished through the activities of our Taxon Advisory Groups. All species listed on the plan were reviewed on the basis of a series of selection criteria including:

- Biogeographic significance - ASMP zoos have identified Southeast Asia as their conservation priority region

Australasia Regional Report



Program Structure

The Australasian Species Management Program (ASMP) is the species management arm of the Australasian Regional Association of Zoological Parks and Aquaria (ARAZPA). The ASMP currently has 14 participating institutions. The ARAZPA is now able to accept as institutional members any institution that agrees to enter into an accreditation process and that adopts ARAZPA's code of ethics. Any institution gaining membership to ARAZPA is entitled to participate in the ASMP. The ASMP is administered by a board of directors appointed by the ARAZPA Executive and it employs a full-time conservation coordinator, assistant, and database manager. Office space is provided on the grounds of Taronga Zoo, Sydney, by the Zoological Parks Board of NSW.

This report concentrates on the process of Regional Collection Planning which is an ASMP activity and which differs most from that of other regional programs.

Background

Several characteristics of the Australasian region make it well suited to cooperative management of zoos:

- Australasia is geographically distinct, with a population

with work also being done on some priority species from other regions, e.g. Africa.

- Level of threat - all sources of information relating to the wild status of species were tapped (CBSG was particularly useful in this regard).
- Potential for reintroduction - in cases where several species of similar conservation need were listed, consideration was given to the species for which the potential for the development of a reintroduction program was the greatest.
- Global articulation - where appropriate, species were chosen for management in conjunction with other regional programs.
- Biodiversity - over-representation of some families at the expense of other families was avoided. The general aim was to increase the number of families represented on our plan while reducing the average number of species per family.
- Regional carrying capacity - in cases where plan spaces were assigned across similar species, consideration was given to focusing on fewer (or just one) species, thereby increasing our holding capacity for the target species.

As part of the rationalization process, and to ensure the efficient allocation of our limited resources, species were prioritized according to their relative need for regional management:

- Cat. 1 Cooperative conservation program species - high level regional management with species covered by multi-agency conservation programs involving on-site conservation work, e.g., reintroduction into the wild.
- Cat. 2 Coordinated species - high level regional management with species covered by a Species Management Plan (SMP) that provides management recommendations to participating institutions.
- Cat. 3 Monitored species - medium level regional management with species covered by a studbook to which participating institutions may refer and/or by Taxon Advisory Group recommendations.
- Cat. 4 Censused species - low level regional management with species monitored by the Taxon Advisory Groups.

The intention to elevate the category of a species is indicated by a bracketed number. Thus, a species designated Cat. 3(2) is currently managed at Cat. 3, but following the completion of appropriate analysis and documentation, it will become a Cat. 2 species.

Format of Regional Census and Plan

The Regional Census and Plan lists details of the current holdings of our participating institutions together with planned holdings for the next five to ten years and a brief statement on how each zoo intends to progress from their current to their planned holdings.

A summary of species management recommendations is provided by the Species Coordinator in the case of Cat. 1 and

Cat. 2 species and by the Taxon Advisory Group Convenor for Cat. 3 and Cat. 4 species.

Infrastructure Needed

The establishment, continuing development, and implementation of our regional collection plan has depended on:

(1) The development and management of a database system designed for the purpose of regional collection planning. The system, called REGASP, has two versions: REGASP which resides in each of the zoos and is used to work on in-house data and to view regional data, and REGASP-LINK which is used in the ASMP offices to compile individual zoo data into the regional database.

(2) Electronic communications - the 14 participating institutions have been provided with modems giving them access to an electronic bulletin board housed in the ASMP offices. Zoos post their in-house REGASP data to the bulletin board once a month. These data are used to update the regional component of the REGASP databases and they are made available for transfer back to the zoos, again via the bulletin board.

(3) The ASMP depends on its network of Species Managers for the generation of recommendations on our current collection and on our plan. These include:

- Taxon Advisory Group Convenors - responsible for coordinating the production of species management and collection planning recommendations for a defined group of species, usually an order or family.
- Species Coordinators Cat. 1 Species - operates as the zoo industry representative on what usually constitutes a Recovery Team headed by the appropriate federal or state wildlife authority.
- Species Coordinator Cat. 2 Species - having produced a Species Management Plan (SMP) which has been endorsed by the ASMP and by the director of each participating institution involved, the Species Coordinator is responsible for monitoring, reporting on, and facilitating the implementation of the SMP.
- Regional Studbook Keeper Cat. 3(2) Species - responsible for the production of a SMP (including studbook) for a species or sub-species.
- Regional Studbook Keeper Cat. 3 and Cat. 4 Species - responsible for the production of a regional studbook for a species or sub-species.

(4) The development of our regional plan and associated programs has also depended on our closely-knit Records Officers Specialist Group. The group works to ensure standardization of record-keeping procedures throughout the region, to continually improve on the accuracy and accessibility of our animal records, and to provide assistance to new and/or relatively inexperienced records officers.

(5) Training of zoo staff in the role and operation of the ASMP is accomplished through a series of manuals including the ASMP Procedures Manual, Records Keeping Manual (in prep), and the REGASP User Manual (in prep). Detailed training in the use of ISIS software to develop and analyze

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studbook data sets and to draw species management recommendations from the results of these analyses is accomplished through structured training courses (the first scheduled for October 1993) and through instruction and assistance provided by ASMP staff and other experienced species managers.

Applications

Having put in place what was needed to support the development of our regional collection plan, we now have a working document (Regional Census and Plan) that is available for critical review and a system of operations (including REGASP and our TAGs) that allows us to act upon recommendations that come from that review. This development has put our region in the unique position of being able to objectively monitor the progress of each of our zoos, and the region as a whole, with regard to achieving collection plan goals.

Critical Review of Plan

Comment is sought on our plan from within the regional and global zoo community and from the broader scientific community including state, federal, and international wildlife agencies. External review has resulted in local wildlife agencies and legislators having a better idea of the role our zoos have taken on in the field of conservation and an increased empathy with our aims. It has allowed us to discuss the streamlining of legal procedures associated with animal transactions.

Internal review also allows us to reconfirm that our efforts are well-directed and are based on the best available information. The ASMP Zoo Directors are able to compare plans for their zoo with those of other zoos in the region. Some comparative information is provided in the annual Regional Census and Plan.

Objective Review of Progress.

Now that our working plan has been established, a greater emphasis will be placed on developing means of monitoring our progress towards the plan. This has been complicated by the fact that the plan has been undergoing rapid change. The rate of change has now lessened, however, we expect on-going modifications to our plan in response to changes to the wild status of species and to our potential to take action. We need to find means of objectively viewing our progress towards an ever changing goal. Our attempts to achieve this will be evident in the future editions of the ASMP Regional Census and Plan.

Conclusion

Zoo Managers from other regions are invited to review the process of regional collection planning that has been adopted by Australasian zoos. Comment is sought both on our plan and on our scheme for developing and implementing the plan.

The REGASP software used to support regional collection planning in Australasia will be made available to zoos worldwide through ISIS disk distributions. This will allow individual

zoos to make use of the in-house functions of the system. The full regional component of the system, through which zoo data is linked, is dependent on the presence of someone responsible for, and willing to undertake, the regional data coordination role. The ASMP staff is currently making modifications to the REGASP-LINK programs that would allow this coordinating version of REGASP to be used in other regions.

Acknowledgments

The principle instigator of the regional collection planning process in the Australasian region was Graeme Phipps, Taronga Zoo, Sydney, Australia. It was as a result of his efforts that the regions' zoos agreed to undergo this process.

The staff of ISIS, Nate Flesness and Paul Scobie in particular, have provided advice, assistance, and moral support at several stages during the development of REGASP and they have recently agreed to help distribute the package to zoos outside the Australasian region and to pursue the issue of further integration of the functions of REGASP into ISIS software.

Data compiled and circulated by the CBSG have been crucial to the development of our plan. Documents produced through the PHVA, CAMP, and GCAP processes have provided information on the wild status of a species and on desirability of captive management which is available through no other source.

This report was submitted by Christine Hopkins, ASMP, Mosman, Australia.

Brazilian Zoo Association Meeting



The Sociedade de Zoologicos do Brasil held its annual meeting and first International Congress in May of this year. It was held in Goiania and was hosted by the Goiania Zoo. Over 200 people attended, including zoo administrators, zoo veterinarians, biologists, and students. Through a grant from WWF Brazil and some other companies, the zoo association was able to invite a number of guests from the different regional associations. Invited guests included representatives from the international zoo community. The guests included:

- Bert DeBoer, EEP
- Lorena Calvo, AMAZOO
- Amy Camacho, AZPAM, who also represented the newly formed Latin American Zoo Association (ALPZA)
- Jaques Prescott, CAZPA, gave a great presentation on behavior enrichment in zoos.
- Charles Coe gave a presentation on the growing field of zoo architecture and planning.
- Devra Kleiman talked on behavioral programs.

It was important that the *Leothopithecus* Committee meetings coincided with this meeting, allowing many the opportunity to attend.

The meeting was divided into presentations and workshops which covered veterinary medicine, environmental education, zoo biology, and specialized workshops on animal husbandry topics (reptiles, birds).

Adauto Nunes, the President of the Association, was re-elected to another two year term. It was also decided that the next meeting of the SZB will be in Rio de Janeiro in Brazil in March next year.

There is a great interest in zoos in Brazil at this time - including the formation of regional networks and state organizations. The Paulista Zoo Organization has been active in Sao Paulo, which has the greatest density and number of zoos in Brazil.

Managed breeding programs are progressing, including the maned wolf, which is the most advanced managed program. Studbooks have also been proposed for a number of taxa, including felids (margay). This will be especially important if there is a felid meeting in Brazil in conjunction with the CBSG and IUDZG meetings in Sao Paulo.

Another important studbook being developed is the Hyacinth macaw studbook. Information has been collected and it is being compiled. This was very important in the *Anodorhynchus* Conservation effort in Belo Horizonte last October.

There is a great amount of progress and interest in Brazil in developing programs for zoos which should be quite evident during the CBSG/IUDZG meetings in Brazil in October, 1994.

This report was submitted by Natasha Shischakin, Houston Zoo.

Report on EEP



In 1992, the European Association of Zoos and Aquaria (EAZA) was founded and it is the organizational fundament for the operation of the European coordinated breeding programs (EEP). An EEP Committee is responsible for the EEPs, sets up general guidelines, selects species for EEPs, and appoints species coordinators and chairpersons for Taxon Advisory Groups. The EEP Executive Office, based at Amsterdam Zoo, is financed since 1 January 1993, by membership fees of EAZA members.

The annual EEP conference was held in June at Salzburg Zoo, Austria for the second time in conjunction with a regional CBSG meeting. This kind of meeting allows more people to understand and to participate in CBSG activities. The major topic of the conference was how to start the process of collection planning. As we have developed coordinated breeding programs for certain species during the 1980's, it is the task of the 90's to develop strategies for overall collection planning. Recommendations from CBSG resulting from CAMPs, PHVAs, GCAPs, and GASPs have to be implemented, but the potentials and limitations of zoos must be considered. To start this difficult

process, Taxon Advisory Groups have been installed for about 20 different vertebrate groups.

To improve cooperation between the zoo community and the conservation community in Europe, European candidate species or taxa for PHVA or CAMP workshops were discussed, which turned out to be much more difficult in Europe than in other regions of the world.

A number of European zoos are now involved in field projects e.g., for Vietnam, Madagascar, and the Philippines, which are fine examples for the integration of *ex situ* and *in situ* conservation.

The proceedings of the EEP conference, together with all annual reports from over 80 EEP coordinators, will be published by the EEP Executive Office in a volume called *EEP Yearbook* and will be distributed to the more than 300 EEP participating institutions and other interested people and organizations.

The director of the National Foundation for Research in Zoological Gardens in the Netherlands and the EEP Executive Office has been Bert de Boer. His successor as of 1 November 1993, will be Koen Brouwer.

This report was submitted by Gunther Nogge, Köln Zoo.

India Regional Report



The Zoo Outreach Organization is a non-governmental organization working to promote scientific management in Indian zoos for the last eight years. With the addition of CBSG, India to our activities nearly two years ago, we expanded our focus to include other individuals and agencies in the research, forest, and wildlife fields. This was done after observing that most of our subscribers and members came from these disciplines. Now, we have a conservation network of more than 800 individuals and institutions who are active in conservation.

This year we focused largely on organizing PHVA Workshops. There was one on the Sangai in October 1992 and there will be three more in the near future. We are aggressively organizing the workshops so that more Indians can be exposed to the CBSG processes.

We exploit the opportunity of a PHVA to train many professionals and educate many policy makers and the public. Much of the money which we request for conducting a PHVA goes to prepare training and educational materials for zoos and others in our network. Last October, we held a PHVA for the Manipur Brow-antlered deer. This October and December, we are having PHVAs for Lion-tailed macaque, Asiatic lion, and Asian rhino. Every zoo holding these animals gets an education kit - hopefully in time for Wildlife Week - containing brochures, stickers, T-shirts, posters, calendars, and other items to help them promote those species. Because we help out with education programs, zoos are very cooperative in filling out the elaborate

India...

status and management forms we circulate to prepare information for the PHVAs.

For the upcoming PHVAs, we propose to provide preliminary Geographic Information System (GIS) analyses of the major habitats of these three species as part of an ongoing process. Our plan is to include introductory material on GIS in the briefing books using maps of the appropriate habitats and then to combine all the material into one teaching manual on GIS.

We invite more people than normal to our PHVAs because we consider them training exercises. We have excellent conservation biologists in India who will be sufficiently experienced after the upcoming series of PHVAs so as to be able to conduct PHVAs themselves. In 1994, we plan to conduct such workshops strictly in-country for endemics having very limited ranges and which have not attracted international attention, but which are of concern, such as giant grizzled squirrel. By 1994, we hope to be relatively independent, relying on CBSG only for information.

In connection with the PHVA for Asiatic lion, an international teaching team will conduct four reproduction workshops for zoo and wildlife veterinarians. These will take place concurrently with sessions, given in the local language of three different states (Gujarat, Maharashtra, and Bihar), for zookeepers on practical animal handling related to assisting with veterinary aspects of animal management.

Nothing of this sort is planned for the rhino meeting, but last November during the Zoo Management Course organized by the Wildlife Institute of India, Tom Foose gave a one-day workshop session in metapopulation management using the Asian rhino as a working model.

The draft report of the Sangai PHVA came out in the May issue of *ZOOS' PRINT* (ZP). The LTM meeting is being underwritten by a consortium of SSP zoos with CBSG taking up the slack. The Lion meeting is being sponsored by the AAZPA CEF Ralston Purina Big Cat Survival Fund.

To take advantage of the many important people coming together, we have scheduled regional CBSG, India meetings just before the PHVAs. Because India is such a vast country with so many species, we have organized these as meetings for the south, west, and east/northeast. The Central Zoo Authority has very kindly agreed to hold their Regional Species Coordinators meetings on those days which will facilitate attendance of the PHVAs.

We are trying to integrate all our activities around the theme of conservation biology. Education workshops were held last year with Malcolm Whitehead, Director of Education, Twycross Zoo, discussing the theme, "Using the Zoo to Teach Biodiversity." These workshops took place in four different states. This December, Jeremy Cherfas, author of *Zoo 2000*, will conduct workshops on zoo conservation and science journalism for forest department and zoo journalists and information officers. Malcolm Whitehead will also return to present zoo education workshops using the theme, "Teaching conservation using the new zoo sciences".

These meetings are being conducted as three-day workshops held in a different zoo within three to four different states of a region. They are organized under the auspices of the CBSG Core Education Committee, but are underwritten by the Regional British High Commission. Because they are conducted in individual zoos, we can accommodate all levels of zoo personnel with someone translating into the local language. We make briefing books featuring the CBSG core conservation articles for all our workshops and courses.

The Desert Monitor Special Interest Group (SIG) and the Civet Special Interest Group have done some interesting field research on human use of these species. Reports of this work are given in the recent issue of *ZOOS' PRINT*. The Wildfowl & Wetlands Trust donated seed money for the White-winged Wood Duck SIG and they are planning various surveys and educational activities. A PHVA in Assam for WWWD is coming up in 1994 or 1995. Roland Wirth's Society for Conservation of Species and Populations has funded the civet SIG and project.

We have started a Wildlife Welfare SIG which will interact closely with our very large Veterinary SIG. Dr. Jacob Cheeran is chairman of both. We have formed a partnership with the Universities Federation for Animal Welfare to promote their International Academy of Animal Welfare Sciences. They are funding a Development Officer cum Program Officer for running these activities. We have also formed a partnership with the Wildlife Information Network, which is Suzanne Jackson's project, to be coordinated by the same Program Officer. We hope the combination of these two subject areas will result in an effective way to address some of the very sticky issues of surplus, non-viable, confiscated, or rescued animals which are currently absorbing space and resources needed for priority conservation projects. We hope to find ways of resolving some of these problems by utilizing some of the vast resources of the Animal Welfare community.

Fred Swengel of the Minnesota Zoo, who volunteers for the CBSG and who also is Editor of the *Global Zoo Directory*, has started a small organization called FRAWG - Friends of Rare Amphibians of the Western Ghats. As we are located in the Western Ghats, we coordinate many of the activities funded by FRAWG. These include setting up a ten-year field research project on a rare amphibian yet to be decided, funding one graduate student's research every year on amphibians of this area, and publishing the Proceedings of the Indian Subcontinent Reptile and Amphibian Specialist Group in *ZOOS' PRINT*. Incidentally, Fred also donated his entire honorarium for doing the *Global Zoo Directory* to CBSG, India which paid our rent and salaries for an otherwise disastrous three months.

Dr. S. Paulraj has given an excellent presentation at the Wildlife Institute Zoo Management on developing an in-house training program for Indian keepers, which could possibly serve as a model for other developing countries. Copies of this are available in the March 1993 ZP which reviews all new training opportunities around the world. The Wildlife Institute course is being organized this year at Madras Zoo.

The Indian Zoo Directors' Association has a new slate of

officers with Mr. S. K. Patnaik, Director of the Nandankanan Zoo, again as President. A list of officers and their addresses is available from us.

This report was submitted by Sally Walker, Zoo Outreach Organization and CBSG, India.

India Report: Central Zoo Authority



Over the years, the number of zoos and deer parks in India has increased considerably. The large and medium zoos can match their designs and animal maintenance with zoos in any part of the world. However, the mini zoos and deer parks have been created by various departments of the state governments and central government as well as business organizations. The main objective of these parks has been to provide outdoor recreation to the urban population. Very little care has been given by the owners to ensure that these centers contribute significantly towards wildlife conservation.

The government of India made a policy decision in 1988 that the main objective of the management of zoos in India is conservation. Captive breeding of endangered species and creation of empathy towards wildlife are to be the main vehicles to achieve this goal. Recreation will be allowed only to the extent it is consistent with the conservation objective. Zoos will not be permitted to be a drain on the wildlife resource.

It was also decided that to ensure successful captive breeding program, certain legally enforceable standards and norms of upkeep and management of animals in zoos had to be enacted and enforced. It was in following this decision that the Central Zoo Authority was established in 1992. No zoo can now operated in India without recognition of the Authority. Zoo rules have been promulgated and a program for evaluation and recognition has already begun.

The Zoo Authority has a large cross-section of zoo interest groups as members. National Institutes on Wildlife, Veterinary Sciences, and Animal Welfare are represented on the Zoo Authority. The Chairman of the Indian Zoo Directors' Association is also a permanent invitee to the Zoo Authority meetings. The CBSG, India is also closely associated with the activities of the Authority.

The Main functions of the Authority are:

- (1) Accreditation of zoos and enforcing of the minimum standards and norms of management;
- (2) Providing financial assistance to zoos in planned development;
- (3) Coordinate captive breeding programs for endangered species on scientific lines and organize frequent exchanges of animals between zoos;
- (4) Training and education on zoo management;

(5) Providing technology on modern aspects of zoo management through international cooperation;

(6) Establishing linkages between *ex-situ* conservation and *in-situ* conservation.

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

Pan African Association of Zoological Gardens, Aquaria, and Botanical Gardens

The Fourth Annual Conference of the Pan African Association of Zoological Gardens, Aquaria, and Botanical Gardens (PAAZAB) was held in June this year at Sea World Durban, South Africa. The conference was attended by 41 delegates representing 27 institutions from six countries. Attending the conference for the first time was a representative from the Rabat Zoo in Morocco. Their chief veterinarian, Dr. Brahim Haddane, remarked that through his presence, PAAZAB has truly become a Pan African Association covering the vast African continent from its most northerly point, all the way to South Africa almost 8,000 km distant.

Membership was granted to 73 new members, bringing the total membership of PAAZAB to 258 individuals. Our many American members continue to support PAAZAB through the sponsorship program and I gratefully acknowledge their contribution. Associated membership was granted to two American institutions: The Living Desert and the St. Louis Zoo.

John Spence, Director of the Tygerberg Zoo, was elected as the new chairman of the African Preservation Program (APP). Considerable progress was made with the APP and much time was spent during the conference in finalizing a charter and organizational structure for the African Preservation Program.

The conference was also attended by Dr. Ulie Seäl, CBSG chairman, who made valuable contributions. Other contributions came from Karen Sausman, Charlie Hoessle, Joyce Basel, and Dietrich Schaaf, all from the United States of America. A Code of Ethics for PAAZAB was finalized and progress was made with an accreditation system.

Our financial position is very sound, largely due to a substantial contribution by the Chicago Zoological Society. Earlier in the year Dr. George Rabb, director of the Brookfield Zoo, informed us that the 1992 Presidential Award of the Chicago Zoological Society had been awarded to the Pan African Association and two other regional associations. The money was used to establish a special investment fund to be known as the PAAZAB Project Fund. Interest generated by this fund will be deployed to further the aims and objectives of PAAZAB as defined in its constitution.

Conservation Coordinators Committee to developing Regions, a Development Working Group was established to investigate the ability of the Conservation Coordinators to work together to raise funds for training and improved communication systems, particularly in developing Regions. The committee members who volunteered to participate in this working group are: Mike Hutchins, Mr. Sharma, Nate Flesness, Lorena Calvo, and Christine Hopkins. General Ashari, although not present, was recommended for the working group. It was also suggested that perhaps an outsider with good fundraising skills be included.

In addition, a description of an information-providing mentor program between regions will be developed by Sally Walker and distributed to the committee for review. It is hoped that a program like this, with each Region having a corresponding Region to rely on, will help facilitate exchange of information and assistance within this arena.

This reported was submitted by Onnie Byers (CBSG), Christine Hopkins (ASMP), and Bert de Boer (EEP).

IUCN/SSC CBSG Southeast Asian Fauna Interest Group

The Southeast Asian Fauna Interest Group is a body of the IUCN/SSC CBSG and its international members who share a common interest in developing and implementing zoological programs in the Southeast Asian region.

Indonesian Programs

- *IUCN/SSC CBSG Tiger GASP, Sumatran Tiger Regional Captive Breeding, and Sumatran Tiger PHVA Workshops* (see *Tiger GASP Report*, page 18).

- *Orangutan PHVA Workshop, Indonesia* (see *Orangutan PHVA Report*, page 14).

- *Asian Elephant PHVA Workshop, Indonesia.* The Directorate General of Forest Protection and Nature Conservation of Indonesia (PHPA) had requested the IUCN/SSC CBSG Office to prepare and conduct a Population and Habitat Viability Analysis Workshop for Asian elephants. Workshop dates were 8-10 November 1993 in Bandar Lampung, South Sumatra. Participants included members of the IUCN/SSC Asian Elephant Specialist Group and the AAZPA Asian Elephant Regional Program representatives.

- *White-winged Wood Duck PHVA Workshop, Indonesia.* This workshop was held in conjunction with the above Asian Elephant Workshop and it was coordinated by the Asian Wetland Bureau (M. Ounsted).

- *Sumatran Rhino PHVA Workshop, Indonesia.* This workshop was also held in conjunction with the above Asian Elephant Workshop. Workshop dates were 11-13 November 1993 at the same site. Participants included members from the respective IUCN/SSC and Regional Sumatran Rhino groups.

The Sumatran Rhino Trust (SRT) has terminated its Memorandum of Understanding (MOU) with the Indonesian Directorate General of PHPA. No further field capture of Sumatran rhinos will occur under the aegis of the SRT. A proposal from the Yayasan Mitra Rhino is being developed in Indonesia to initiate an *in situ* captive breeding program for Sumatran rhinos.

- *Development of the Indonesian Sumatran Tiger Masterplan.* This project, sponsored by the AAZPA Ralston Purina Big Cat Survival Fund, proposed a team to visit six Javanese zoos to medically evaluate captive Sumatran tigers as identified in the Indonesian Regional Sumatran Tiger Masterplan (November 1992) and, while doing so, train Indonesian zoo counterparts to perform these tasks themselves. This *in situ* transfer of information, technology, and expertise is the highest priority of the CBSG Global Tiger GASP, which was officially endorsed by the AAZPA Tiger SSP (September 1992). Three key objectives are: (1) to medically evaluate the Indonesian Sumatran tiger captive population; (2) conduct hands-on training sessions at each zoo; and (3) facilitate an IZPA (Indonesian Zoological Parks Association) Sumatran Tiger Masterplan. A genome resource banking component is being considered as part of this project.

- *Genome Resource Banking (Sumatran Tigers), Indonesia.* A cooperative *in situ* genome banking program among the Minnesota Zoo, National Zoo, Omaha's Henry Doorly Zoo, the Bogor Agricultural University, Taman Safari Indonesia, and PHPA was initiated in Indonesia during the Sumatran Tiger Regional Captive Breeding Workshop. At that time, this genome program banked three male founder Sumatran tigers currently held at Taman Safari, Indonesia.

A research project to expand the GRB of founder Sumatran tigers at other Javanese zoos was developed and submitted by A. Byers to the AAZPA Ralston Purina Big Cat Survival Fund. This project was endorsed by the AAZPA Felid TAG at its most recent meeting at Front Royal, VA. Unfortunately, this project was not funded.

- *Primate CAMP & Gibbon PHVA Workshops, Indonesia.* A Primate CAMP for all Indonesian species in conjunction with the Indonesian Primate Society and PHPA is being discussed for May 1994. Two critical subsets of this comprehensive workshop will involve analyses of the Javan and Mentawai gibbons (PHVAs) and the training of Indonesians in the use of Vortex modeling (Bahasa Indonesian text has been translated).

- *Minnesota Zoo's Adopt-A-Park Program, Indonesia.* Ronald Tilson, Minnesota Zoo, visited Indonesia and Ujung Kulon National Park in August and October 1992 and again in April 1993 to implement goals of the cooperative program between the Indonesian Directorate of Forest Protection and Nature Conservation (PHPA) and the Minnesota Zoo. The program has developed into a cooperative effort that also includes the New Zealand Department of Nature Conservation and World Wildlife Fund-Indonesia. A new masterplan for park development has been developed and sites identified for new guard posts. The Minnesota Zoo will construct or renovate eight of the 17 guard posts (New Zealand, WWF and PHPA will handle the remaining posts).

- *Minnesota Conservation Officers' Association "Adopt-A-Warden" Program, Indonesia.* As part of the Minnesota Zoo's Adopt-A-Park Program, the Minnesota Conservation Officers'

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Association of the State's Department of Natural Resources has undertaken a five-year commitment to fund costs for uniforms and personal equipment of Indonesian park wardens in Ujung Kulon National Park. *In situ* training of park wardens and funding to support training of park wardens at the Conservation Officers' Academy will be part of this program.

- *Expanding the Adopt-A-Park Program, Southeast Asia.* A development tour of Sumatra was conducted in April/May 1992, the Chiefs of the National Parks consulted, and preliminary project proposals on how the zoo community can adopt their park of choice in Sumatra were developed. These "Adopt-a-Park" programs need to be further refined by PHPA so that the programs fit in with their national conservation strategy.

At two recent international meetings, a joint IUCN/SSC Rhino Specialist Group and CBSG Rhino Taxon Advisory Group Meeting in London, a list of 37 major protected areas (18 African and 19 Asian) were identified as likely Adopt-A-Park candidates; and at an IUCN/SSC CBSG Tiger Global Animal Survival Plan (GASP) Meeting in Edinburgh, Scotland, a list of 36 major protected areas in 10 countries of Asia were suggested as likely Adopt-A-Park candidates. Reports from both of these meetings recommended that funds be secured to establish programs in the protected areas.

- *Restructuring the Bali Mynah Reintroduction Project, Indonesia.* R. Seibels, Species Coordinator, Riverbanks Zoological Park, reported on the joint AAZPA and BirdLife International (ICBP) Project for Bali mynahs in Bali Barat National Park, Indonesia. A new Memorandum of Understanding is being developed with PHPA to continue this project. A successful release and full integration of captive-raised birds into the small remaining wild flock is underway. A new Amnesty Campaign, which is registering wild-caught Bali mynahs held illegally by private citizens without prosecution, is proceeding.

Thailand Programs

- *Zoological Parks Organization of Thailand & IUCN/SSC CBSG Project, Thailand* (see *Thai Zoo Report*, page 13).

- *Gibbon PHVA Workshop, Thailand.* The Royal Thai Forest Department has requested the IUCN/SSC CBSG Office to prepare and conduct a Population and Habitat Viability Analysis (PHVA) Workshop in Thailand to resolve the growing crisis of too many captive gibbons in Thailand, the lack of a structured conservation program for the species, and the desire to have an integrated national conservation program for gibbons in place. Coordinating agencies include the Royal Thai Forest Department, the Zoological Parks Organization of Thailand, Mahidol University (Bangkok), and Wildlife Fund Thailand.

Malaysian Programs

- *Malayan Peacock Pheasants, Malaysia.* D. Bruning, Bronx Zoo, is coordinating an *in situ* conservation program for Malayan pheasants in peninsular Malaya. Several Malay staff have been trained in pheasant care in North America, while North American staff have assisted with trapping and captive propagation efforts in Malaya.

- *Fruit Bat Conservation, Malaysia.* The Lubee Founda-

tion, Inc. has a keen interest in the global conservation of fruit bats. Much of its focus is centered in the old world, especially Malaysia. Malaysia boasts of 18 species of megachiroptera, two of which are endemic and only two species receive some partial protection under the wildlife regulations. A list of other species can be obtained from J. Seyjagat, Lubee Foundation. A conservation priority for Malaysia would be to conduct a PHVA on Borneo species; a second recommendation would be to establish protected areas and to institute organized management for these areas.

Vietnamese Programs

- *Saigon Zoo, Ho Chi Minh City, Vietnam.* CBSG has received a letter of invitation from the Saigon Zoo to conduct workshops and develop a conservation masterplan for this zoo similar to the *Thai Zoo Masterplan for Conservation*. A CBSG project team will be organized as soon as funds are found to support the project.

- *Re-introduction of Sika Deer.* A Memorandum of Agreement on captive breeding and continual reintroduction of Vietnamese sika deer has been signed by various European zoos and Cuc Phuong National Park and has already resulted in the transfer of animals to Europe. A second MOA on the rescue of endangered primates has been signed in early 1993. It involves field surveys, field conservation efforts, rescue of animals from trade, and captive breeding (both *in situ* and eventually also *ex situ*) of leaf-eating primates and gibbons. A long-term field conservation program in Cuc Phuong National Park (which is the only protected area for Delacour's langur) has been in operation since 1992 with funding from the Frankfurt Zoological Society/Help for Threatened Wildlife. On-site investigations into building a small captive breeding facility at the headquarters of Cuc Phuong National Park will take place in September 1993 by a team of German and U.S. zoo personnel and Vietnamese colleagues.

As some rare leaf-eating monkeys have already been confiscated, a pressing need is finding an experienced primate keeper who is willing to spend at least two years in Cuc Phuong to look after these animals and to assist training of Vietnamese colleagues in captive management of these animals. A zoo to sponsor the employment of a keeper in the program is also sought. Institutions interested in these activities should contact: Roland Wirth, Franz-Senia-Str. 14, 81377 Munchen, Germany; fax: 49-89-7193327.

A *Vietnamese Conservation Newsletter* is being planned by Omaha's Henry Doorly Zoo.

Philippines Programs

- *Endangered Species Breeding and Conservation.* Presently there are integrated *ex situ/in situ* breeding and field conservation programs going on for the following endangered species: Philippine spotted deer, Visayas warty pig, dwarf fruit bat, white-winged fruit bat, and golden-crested fruit bat. All programs are based on Memoranda of Agreement (MOA) of various zoos with the Philippine government (DENR) and local partners (universities and NGOs). A MOA is also in place for Calamian deer and the project is presently being implemented. An EEP program for the Philippine cockatoo is in place, and

efforts to put this EEP program under the umbrella of a MOA with DENR are underway. More zoos to cooperate in these programs and help extend the funding base are sought.

Institutions interested in these activities should contact: Roland Wirth, Franz-Senia-Str. 14, 81377 Munchen, Germany; fax: 49-89-7193327.

Southeast Asian Programs

• *Asian Felids and Ursids*. L. Johnston, AAZPA Ursid TAG Chair, Omaha's Henry Doorly Zoo, has initiated a molecular DNA analysis of small Asian felids through the AAZPA Felid TAG (supported by funds from the Ralston Purina Big Cat Survival Fund, S. O'Brien, principal investigator). Both species of bears in Thailand and Malaysia will also be evaluated.

This report was submitted by R. Tilson and R. Wirth.

IUCN/SSC CBSG Thai Zoo Masterplan for Conservation

The *Thai Zoo Masterplan for Conservation* for the five zoos of the Zoological Parks Organization of Thailand was submitted on 10 August 1993 by the IUCN/SSC Captive Breeding Specialist Group (CBSG) to H. E. Minister Chinnawoort Soonthornsima (Minister of the Prime Minister's Office, Bangkok, Thailand) and Pol. Gen. Pratin Santiprabhob (Chairman of the Board, Zoological Parks Organization of Thailand). The Masterplan for Conservation was based on five visits of several weeks each, totaling 70 days in Thailand and an equal number of days at the CBSG Office, over the course of one year (1992/93). During these visits there were intensive analyses of data, discussions with board members and zoo staff, and on-site planning sessions and training workshops at Dusit Zoo (Bangkok), Khao Kheow Open Zoo (Chonburi), Chiang Mai Zoo, Nakorn Ratchasima Zoo (Korat), and the Songkla Zoo site.

The CBSG team members also visited Safari World (Bangkok), PATA Zoo (Bangkok), two Gibbon Rescue Centers in Bangkok, several Royal Forest Department Wildlife Centers, Sumutprakarn Crocodile Farm and Zoo, and Samphran Elephant Ground and Zoo. We discussed issues with individuals from the Siam Scientific Society, Mahidol University's Center for Wildlife Research, The Asia Foundation, Wildlife Fund Thailand, Thailand Institute of Scientific and Technological Research, the Zoo and Wildlife Veterinarians' Society, and the Royal Forestry Department.

The IUCN/SSC CBSG principal investigator was Ulysses Seal (Chairman of the IUCN/SSC CBSG) and the Project Coordinator was Ronald Tilson (Director of Conservation, Minnesota Zoo). Our principal Thai counterparts were Khun Usum Nimmanheminda (Director General of the Zoological Park Organization) and the Directors of the five National Zoos: Khun Sophon Dumnui (Khao Kheow Open Zoo), Khun Supoj (Chiang

Mai Zoo), Khun Prayud Navacharoen (Nakorn Ratchasima Zoo), Khun Somchai Kruea-net (Songkla Zoo), and Dr. Alongkorn Mahannop (Dusit Zoo). Khun Chaichana (Zoological Parks Organization) contributed significantly to the workshop process by translating many of our documents and discussions.

This Masterplan for Conservation was improved immensely by the skillful concept drawings rendered by Khun Sasipong Chatinan (Jet Stream Co.), Khun Weerapan Paisarnnan (P&L Design), and Keith Scarmuzza (P&L Design).

The first visit of the IUCN/SSC CBSG team in August 1992 was spent with Zoological Parks Organization staff at all five zoos in planning sessions that covered zoo concept design, program priorities, and exhibit critique. Integration of Thai zoo architects occurred at this time. Specifications for primate, hoofstock, and carnivore holding facilities at Khao Kheow were reviewed and revised. Groundwork for preparing collection plans at each zoo was begun. Information regarding national conservation strategies of Thailand was provided by the Royal Forestry Department, Siam Scientific Society, Mahidol University, and Wildlife Fund Thailand. For this first phase of the project, Michael DonCarlos (Minnesota Zoo, USA) and Ann Baker (Chicago Zoological Society, USA) joined the CBSG team.



The second visit occurred in October 1992. Four workshops with staff from all five zoos were held. The first was animal health programs, policies, buildings, and equipment. The second was collection plans and exhibit designs. The third was evaluations for hoofstock and carnivore programs and the fourth was review of the botanical garden plan for Khao Kheow. Groundwork for developing zoo masterplans was begun. For this phase of the project Michael DonCarlos, Paul Garland (Orana Park Wildlife Trust, New Zealand), Bruce Williams (Fossil Rim Wildlife Center, USA), and Douglas Armstrong (Henry Doorly Zoo, USA), joined the CBSG team.

The third visit of the CBSG Masterplan Team occurred during January - February 1993. A three-day workshop at Khao Kheow focused on training staff in the use of ARKS, or the Animal Record Keeping System. Other workshops focused on establishing individual animal identities and exhibit or holding locations at each zoo and expanding upon zoo collection plans at Khao Kheow, Nakorn Ratchasima and Chiang Mai. Zoo concept designs for Khao Kheow and Dusit were intensively reviewed. A major focus of this visit was the development of collection plans, exhibit designs, and management protocols and policies for birds. Schematics for the construction of animal hospitals were completed. For this phase of the project Graeme Phipps (Taronga Zoo, Australia) and Lee Simmons (Henry Doorly Zoo, USA) joined the CBSG team.

The fourth visit occurred during April 1993. The focus was five-fold: (1) to complete collection plans and continue developing masterplans for each zoo; (2) to complete exhibit designs as far as possible; (3) to provide additional training in veterinary

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procedures; (4) to introduce zoo staff to SPARKS (Single Population Analysis and Record Keeping System); and (5) to begin preparing Zoological Parks Organization staff for a Population and Habitat Viability Analysis (PHVA) Workshop in collaboration with the Royal Forest Department and Mahidol University. The latter was designed to address the growing problem of gibbons (*Hylobates* spp.) in Thailand. This is the first step in CON-LINK, which is the linking of conservation agendas of *in situ* and *ex situ* organizations in Thailand. During this phase of the project we were joined by Paul Garland, Graeme Phipps and Robert Cook (NYZS/Wildlife Conservation Park, USA).

A fifth visit was made by the CBSG Masterplan Team in July 1993 to confer with the Thai zoo architects and to consult with Zoological Parks Organization counterparts regarding scope and content of the Masterplan for Conservation. The focus of this visit was to complete the masterplan drawings, verify the collection plans, and refine the CON-LINK concept. This team was comprised of Ronald Tilson and Paul Garland.

The directions set forth in this *Thai Zoo Masterplan for Conservation* focus on change that will lead to a new and improved modern zoo system for Thailand. The Masterplan for Conservation is presented in a manner that is intended to be forthright, clear, and concise. The directions and priorities will assist the Zoological Parks Organization in making immediate and long-range decisions within the context of a comprehensive strategic conservation plan for endangered species of Thailand. This report specifies immediate recommendations regarding current and future development processes and gives comprehensive recommendations regarding development of each zoo. The recommendations in the report are integrated so that similar issues can have single resolutions, provide an economy of discussion, and move from analysis to decision.

The *Thai Zoo Masterplan for Conservation* completes the conditions of agreement between the Zoological Parks Organization and the IUCN/SSC CBSG. It provides the foundation upon which masterplanning and collection planning for each zoo can continue to be developed and implemented. When fully implemented the Zoological Parks Organization of Thailand will be nationally and internationally recognized for its conservation programs for endangered Thai wildlife.

On behalf of the IUCN/SSC CBSG members and Zoological Parks Organization staff that participated in the creation of this document, CBSG takes great pleasure in presenting this *Thai Zoo Masterplan for Conservation* to the Zoological Parks Organization and the People of Thailand.

Copies of the *Thai Zoo Masterplan for Conservation* can be obtained from Khun Usum Nimmanheminda, Director General of Zoological Parks Organization, Dusit Zoo, 71 Rama V Road, Bangkok 10300, Thailand (fax: +66-2-282-6125) or from the CBSG office.

This report was submitted by Usum Nimmanheminda, R. Tilson, P. Garland, and G. Phipps.

IUCN/SSC CBSG Orangutan PHVA Report

The first Population and Habitat Viability Analysis (PHVA) Workshop for Orangutans (*Pongo pygmaeus*) was held in Medan, North Sumatra, Indonesia on 18-20 January 1993. The PHVA workshop used computer models (VORTEX) to simulate the deterministic and stochastic, or random, processes that threaten small populations and explored what effects various management options may produce on the survival of the population. The workshop was conducted by Ulysses Seal, Chairman of the IUCN/SSC Captive Breeding Specialist Group (CBSG), and Ronald Tilson, Director of Conservation, Minnesota Zoo, and coordinated by the CBSG and the Indonesian Directorate of Forest Protection and Nature Conservation (PHPA). Widodo Ramono, Sub-directorate of Species Conservation, PHPA, Mike Griffiths, WWF-Gunung Leuser National Park, Sukianto Lusli, WWF-Kerinci Seblat National Park, and Jansen Manansang, Taman Safari Indonesia, were the organizers. Close to 40 people, primarily Indonesians and a significant number of orangutan field workers, were in attendance. Sponsors of the workshop included: the IUCN/SSC CBSG; Indonesian PHPA; Zoo Atlanta and the Orangutan AAZPA Species Survival Plan (SSP); Taronga Zoo and the Orangutan ASMP (Australia); and Jersey Wildlife Preservation Trust, U.K.

The workshop focused on the status of wild populations of orangutans on Sumatra and Borneo, with major emphasis on the Sumatran population (*Pongo pygmaeus abelii*). A Sumatran Tiger PHVA Workshop previously held in November 1992 had created a map-linked database that integrated vegetation types, satellite imagery, and land use patterns for the protected areas of Sumatra; the map for Gunung Leuser National Park proved invaluable for developing more precise estimates of the size and distribution of orangutan populations in the park. The following working groups were established: Sumatra, Borneo, Life History Characteristics, and Vortex Modeling. The workshop provided a unique opportunity to bring together field workers who have studied, or are presently studying, orangutans at Ketambe in Gunung Leuser National Park (Sumatra). These include Herman Rijksen, Jito Sugardjito, Carel van Schaik, Suharto Djojosedharmo, Tatang Mitra Setia, and Sri Suci Utami.

Estimates of habitat and population numbers for orangutans were derived in the working groups through consensus of the field biologists. Estimates for Sumatra were probably more reliable because of the database than they were for Bornean populations of orangutans. For Sumatra, the exact boundaries of orangutan distribution are not known, but there are several distinct populations, including the lesser-known Singkil population and the Sembabala-Dolok Sembelin population. The Greater Leuser orangutan population, which extends beyond the national park boundaries, is thought to cover approximately 11,710 km² and has two distinct populations. Using a correction or "safety" factor to derive population estimates, the western population is thought to number 5,700, and it is the most important orangutan population in Sumatra; the eastern population is thought to number 3,500. Within the more restricted boundaries of Gunung

Leuser National Park, the area covered by the western population is 5,570 km² and the corrected population size is about 3,450. The area covered by the eastern population is 2,957 km² and the corrected population size is about 2,400. The total number of orangutans in the park probably is about 5,800. The Greater Leuser populations were judged to be among the best in the world, in terms of numbers and potential for protection, and Gunung Leuser National Park was considered to be vital to the long-term survival of the Sumatran orangutan.

Long-term study and familiarity with Gunung Leuser National Park and surrounding areas made possible the identification of specific threats to its integrity, such as road construction and illegal encroachment and logging in lowland areas, and the effects that these acts would have on components of the orangutan population. The following are some of the recommendations made to safeguard the Greater Leuser population:

- Add forested lowland areas to the park wherever possible (lowland and swamp forests are optimum orangutan habitats);
- Restore the connection between western and eastern populations to create a larger unit, to minimize the effects of genetic erosion (the population should be no less than 10,000 to ensure the long-term survival of the species);
- Refrain from building roads dissecting the park; and
- Maintain an absolute commitment to protection of the park, establishing buffer zones wherever possible.

A recommendation also was made to continue to keep poaching to a minimum because "the population is known not to withstand any significant poaching pressure."

For Borneo (Kalimantan, Sabah and Sarawak), the known distribution of orangutans comprises eight regions with currently isolated populations. No published or unpublished data are available on population numbers for any of these areas, with the exception of Gunung Palung, Kalimantan, where long-term research is being carried out by M. Leighton. For each region, the area in square kilometers and orangutan density based on habitat type were estimated, again using a correction factor to compensate for the inherent overestimation caused by studies being conducted in lowland prime habitat. An additional 5,000 km² was added to account for regions where significant orangutan populations may occur in unprotected or unidentified areas. The total area of orangutan habitat on Borneo was calculated at 22,360 km², and the estimate of total population numbers ranged from a minimum of 10,282 to a maximum of 15,546. These figures suggest a more serious decline in the Bornean population than was previously thought.

A degree of specificity comparable to that for Sumatra could not be achieved for Borneo in identifying threats to known populations, and an "estimate of impact" of a variety of threats on population survival was calculated instead. The primary recommendation stemming from this exercise was that protection of existing national parks and other protected areas should be improved. At least 60% of the present orangutan populations on Borneo could be protected by implementation of current authority or protection laws. As an adjunct to enhanced enforcement, logging and habitat degradation should be banned in parks



and proposed conservation areas, and funding should be secured for boundary demarcation.

The working group on Life History Characteristics relied primarily on unpublished data collected at Ketambe, Gunung Leuser National Park, and Tanjung Puting National Park, Kalimantan. The orangutan appears to be the ultimate K-selected species, in that survivorship is high, interbirth interval is long (mean: 8 years), and the female makes a high investment in her offspring. VORTEX modeling indicated that adult females are the most valuable

members of an orangutan population and that the death of an adult female has the greatest influence on increasing extinction rates of all life history variables. Infants in illegal trade may be thought of as representing dead females.

On the last day of the workshop, a comprehensive set of recommendations for the conservation management of orangutans were reviewed, intensively discussed, and consensus was reached. These recommendations covered the following issues:

- Management strategies for orangutans and protected areas occupied by orangutans in Sumatra and Borneo. As stated above, this included stronger protection measures for orangutans and forest, prevention of fragmentation (both species and habitat), and restoration of degraded habitat.
- Reintroduction of captive orangutans into wild populations has no conservation value in terms of enhancing population viability, and may even have negative effects through the introduction of diseases or inappropriate genetic subspecies.
- Establishment of new viable populations of ex-captive orangutans, in habitat formerly occupied by orangutans, but where they do not now occur, may contribute to the viability of metapopulations.
- Updated recommendations on medical procedures during quarantine for orangutans intended for reintroduction.
- Additional surveys and more comprehensive map-linked databases are needed for Borneo before an in-depth PHVA can be performed for Bornean orangutan populations.

At the request of the Sub-directorate for Species Conservation (PHPA), a series of guidelines concerning the reintroduction of orangutans was prepared. The Borneo Working Group had recommended reintroduction of orangutans into forests without wild orangutans (if possible) to protect/conservate worthwhile forests (production/protection forests).

The Sub-directorate was holding approximately 100 orangutans in anticipation of returning them to the wild. The problem of orangutan reintroduction was not addressed by a specific working group at the workshop, but questions concerning the captive population of orangutans (and reintroduction) should be examined at a workshop of the IUCN/SSC Reintroduction Specialist Group.

Following the workshop on 21 January, the Bohorok River Visitor Center in Gunung Leuser National Park was dedicated by WWF-Indonesia to the Directorate General of Forest Protection and Nature Conservation of Indonesia.

This report was submitted by R. Tilson and A. Eudey.

Orangutan GASP Report

Orangutans occur naturally as two distinct subspecies: *Pongo pygmaeus pygmaeus* on Borneo and *P. p. abelii* on Sumatra. Most recent estimates for the wild populations from the Population & Habitat Viability Analysis (PHVA) of January 1993 are:

Borneo (protected and unprotected areas): 10,830–15,546 in eight populations.

Sumatra (protected areas): 5,850 - 7, 779 in two populations.

There are presently 901 orangutans in captivity in 216 managed and unmanaged collections (380 Bornean, 309 Sumatran, 181 subspecific hybrid, and 31 unknown subspecies). Of these, 754 (83.7%) are housed in "managed" collections (facilities that are a part of a nascent or well-established regional cooperative breeding and management program). Because there is general agreement on the phasing out of the subspecific hybrid populations, this report will deal exclusively with the managed Bornean and Sumatran populations (i.e., we are excluding orangutans of either subspecies that are not part of a regional program). It should be noted, nonetheless, that there exist 115 subspecific hybrid orangutans in managed collections. Additionally, it is reliably estimated that there may be as many as 600 orangutans in captivity on Taiwan, a situation that is likely to affect the existing regional management programs.

Bornean		
	<u>Population</u>	<u>Number Facilities</u>
EEP (Europe & United Kingdom)	132 (52.80.0)	35
SSP (North America)	82 (36.46.0)	25
SSCJ (Japan)	41 (19.22.0)	18
SEAZA (SE Asia & Hong Kong)	84 (43.40.1)	8
ASMP (Australia & New Zealand)	7 (3.4.0)	2
TOTAL:	346 (153.192.1)	89
Sumatran		
	<u>Population</u>	<u>Number Facilities</u>
EEP	115 (44.71.0)	32
SSP	115 (50.64.1)	27
SSCJ	19 (7.12.0)	6
SEAZA	23 (9.14.0)	6
ASMP	14 (5.9.0)	3
TOTAL	286 (115.170.1)	77

Bornean Orangutan Overview

There are currently 346 recognized captive Bornean orangutans in regional management programs. If each region were to manage its Bornean orangutan collection separately, the result, according to the GENES and DEMOG analysis programs, would be as follows:

	<u>Population</u>	<u>% Heterozygosity Retainable</u>	<u>Program Length (yr)</u>
EEP	132	92	125
SSP	82	91	100
SSCJ	41	82	100
SEAZA/HK	84	81	100
ASMP	7	*	*
GLOBAL	346	96	175
* cannot be calculated.			

Clearly, the SSCJ, SEAZA/HK, and ASMP regional programs cannot manage viable populations of Bornean orangutans if managed as separate populations. The same is true for the Sumatran subspecies:

	<u>Population</u>	<u>% Heterozygosity Retainable</u>	<u>Program Length (yr)</u>
EEP	115	93	100
SSP	115	93	100
SSCJ	19	*	*
SEAZA/HK	23	*	*
ASMP	7	*	*
GLOBAL:	286	96%	125

* cannot be calculated

For both subspecies, the existing populations should be sufficient to maintain 96% of original heterozygosity over 125 years, if managed globally. It is presumed that the 900 individuals housed in captivity do represent global carrying capacity, and that the same is true of the 754 spaces occupied within managed regional programs. An important consideration is the fact that 115 of the 754 managed spaces are occupied by subspecific hybrid orangutans. This represents additional space for expansion of the Bornean and/or Sumatran populations, as the hybrid population decreases by natural attrition.

It is essential to remember that the figures above reflect the present global founder base; the average age of the founder population is 25 years. The average age of death over the history of the international studbook is 13.26 years, but the 90th percentile is at 31 years (i.e., 90% of all orangutans die before the age of 31). Thus, it can be expected that the majority of the remaining founders will die within the next five years. Such mortality will have a significant impact on subsequent genetic analyses of the global database.

Recommendations

- (1) A global captive management plan should be instigated in order to maximize the management and exchange of genetic material among regions, as well as within regions containing large enough populations (EEP and SSP).
- (2) With respect to the SEAZA region, we recommended that Dr. Rosemary Markham, the Australasian regional coordinator, liaison with the relevant South East Asian authorities in order to produce a comprehensive studbook and management plan for that region.
- (3) It is important that Southeast Asia, in particular the "home range" nations of Malaysia and Indonesia, take a more active role in the global captive management of this species.
- (4) Subspecific hybrids currently occupying zoo space should not be allowed to reproduce, nor should additional hybrids be produced from purebred animals.
- (5) It is essential that survey work in Borneo as recommended by the recent PHVA workshop, be undertaken to assess the status and viability of the wild populations.
- (6) A workshop should be set up to evaluate the effectiveness and conservation value of reintroduction.
- (7) The recommendations of the PHVA should be addressed and, to the extent possible, implemented, in a timely fashion. A follow-up PHVA should be convened in Indonesia for the Bornean subspecies.
- (8) The 1994 International Orangutan Conference in southern California should be used as an opportunity for additional discussion and progress toward the completion of the orangutan GASP.



This report was submitted by Lori Perkins, Zoo Atlanta.



Red Panda GASP Report

The GASP meeting first established the following principle: The mission of the GASP is to ensure red panda conservation. Participants in the discussion emphasized that the zoo component of the program is twofold:

- (1) to form a reservoir of animals for reintroduction/restocking purposes;
- (2) to raise public awareness of the red panda's threatened status in the wild, to stimulate interest in preserving the red panda, and to raise funds to support field conservation.

The meeting then reviewed the developments since the Washington panda meeting held in 1991. A field survey of red pandas was proposed in Washington. This is underway for the Nepal, Bhutan, Sikkim, W. Bengal, and Assam regions. A similar project has been established in China. A summary of the preliminary results will be included in the GASP document.

Many of the recommendations for captive management have also been undertaken. A research project has been undertaken to examine the problem of infant mortality. This will lead to concrete recommendations regarding the management of red pandas. These will be incorporated as a separate section in the husbandry and management guidelines. In addition, zoos with poor records of juvenile survival will be approached by regional coordinators to help define the problems. It must be emphasized that high rates of infant mortality are one of the major stumbling blocks to the captive breeding program.

The other major stumbling block to the captive program is low rate of reproductive performance. The regional coordinators will monitor reproductive success in their region and intervene to re-pair non-breeding animals. A proposal was accepted to establish a research project to determine if indicators of non-compatibility exist.

The husbandry and management guidelines have been revised at the request of the Washington meeting. It is suggested these should be included in the Appendix of the GASP document. The revised guidelines include:

- a new and improved protocol for autopsy reporting.
- revised nutritional guidelines. Given the problem of weaning mortality, special recommendations for the nutrition of weanling pandas have yet to be added to the general nutritional recommendations. However, will be incorporated in the Appendices of the GASP document.
- body size and body weight parameters have been established in order for zoos to be able to evaluate nutritional state. These will be included in the GASP appendices.

An international project to evaluate the efficacy of the various killed distemper vaccines has been established.

Since the Washington meeting, the Chinese regional studbook keeper has visited Rotterdam Zoo for training in the use of the studbook software and to discuss red panda husbandry and management. The Chinese red panda stocks are now registered in the international studbook.

At Washington, the responsibility of the zoo community for field research and conservation was emphasized. Since that time, the field survey work has been sponsored by members of the zoo community

It was also decided that an attempt should be made to change the CITES status of the red panda. A proposal to this effect was submitted for the Japan meeting, but unfortunately arrived too late for consideration. Nevertheless, contact with the Trade Specialist Group is still being maintained over this issue.

The red panda brochure, which was suggested by the Washington meeting, has been produced and is now available.

The global captive breeding masterplan for *A. f. fulgens*, which was produced at the request of the Washington meeting, was evaluated. The regional coordinators supported the proposals of this document and the first steps toward its implementation should take place later this year.

It was recommended that a similar document be produced for *A. f. styani* by the Japanese and Chinese regional coordinators in the next five years.

The red panda management group suffers from communication problems. To solve these, an annual newsletter is planned and will be initiated this year. The central red panda database should be made accessible to all regional coordinators. A bulletin board will be established in the next 12-18 months.

Group members recognized the need for two red panda PHVAs (possibly as part of regional PHVAs). The first should cover the Nepal, India, and Bhutan region and should be convened in the next two years. A similar meeting for the Chinese region should take place as soon as possible thereafter.

The group recommends the establishment of *in situ* breeding centers. One possible site is in India. Five possible zoos were indicated. Before these centers can be established, a training program for regional keepers/curators is recommended. The Indian zoo association will support the Indian component of such a program. A proposed date for the training program is autumn 1994. The first animals could then be transferred to the region in the winter of 1994-95.

This report was submitted by Angela Glatston, Rotterdam Zoo.

Tiger GASP Report



The *Tiger Global Animal Survival Plan (GASP)* is a strategy for the management of tigers at the international level that links *in situ* and *ex situ* conservation activities for the recovery and/or long-term maintenance of captive and wild populations. This document represents the first version of a *Global Animal Survival Plan (GASP)* for tigers under the aegis of the Captive Breeding Specialist Group (CBSG), Species Survival Commission of the World Conservation Union (IUCN). It is the result of

an international tiger workshop conducted 9-10 July 1992 at the Edinburgh Zoo, Scotland, and was revised at the Annual Meeting of the IUCN/SSC CBSG in Antwerp, Belgium on 3 September 1993.

The purpose of the *Tiger GASP* is to initiate a global captive conservation program for tigers by providing a strategic framework for the most efficient application, and most economic allocation, of zoo resources for the species. In part, it accomplishes its global responsibilities by:

(1) Adopting global goals for tigers, in part by considering recommendations from Conservation Assessment Management Plans and Global Captive Action Plans;

(2) Dividing responsibility for achieving minimum target population sizes of tigers among the regional programs;

(3) Arranging interactions for tiger or genome exchanges among regional management programs to achieve global and regional goals; and

(4) Developing a global masterplan to guide the propagation and management of tigers at the international level.

A primary focus of the *Tiger GASP* is on captive management programs that can serve as genetic and demographic reservoirs to support the survival and/or the recovery of wild populations in the future. Another focus is to identify where and how the global captive community can assist with the transfer of captive management information and technology to wild populations, and to develop priorities for limited financial support from the captive community for *in situ* conservation by linking *ex situ* and *in situ* programs.

Wild Tigers

The Tiger GASP recognizes the perilous state of wild populations of tigers throughout their natural range in Asia.

- There are five recognized subspecies of tigers that need conservation action: *Panthera tigris altaica* (Siberian), *P. t. amoyensis* (South China), *P. t. corbetti* (Indochinese), *P. t. sumatrae* (Sumatran), and *P. t. tigris* (Bengal).

- All five taxa are threatened with extinction. In terms of the new Mace-Lande categories and criteria of risk: three tiger taxa (South China, Siberian and Sumatran) are critical and two taxa are endangered (Indochinese and Bengal).

- Depending on the source, there are an estimated 4,400-7,700 tigers surviving in the wild today (3,000-5,300 Bengal, 800-1,400 Indochinese, 400-500 Sumatran, 250-400 Siberian, and fewer than 50 South China tigers), many of which live outside of protected areas and are unlikely to survive imminent habitat loss, alteration, or deterioration. Thus, 68% of the surviving wild tigers are Bengal and another 18% are Indochinese.

- The surviving wild tigers are confined to a minimum of 37 major protected areas in ten Asian countries.

Captive Tigers

Only two of the five recognized tiger subspecies are being managed in organized Regional Captive Propagation Programs. Thus, all five taxa also need captive conservation action.

- All five tiger taxa are present in captivity; there are

organized Regional Captive Propagation Programs for two taxa (Siberian and Sumatran tigers), but none have yet been developed for South China, Indochinese, and Bengal tigers.

- There are about 1,002 studbook-registered tigers in captivity: 514 Siberian, 243 Sumatran, 143 Bengal (another 38 white Bengal), 47 South China, 17 Indochinese, and 199 or more generic or non-studbook registered tigers. Studbook-registered specimens represent about 16% of the surviving tigers on the planet. A large number of unregistered tigers are kept in circuses, private facilities, and non-participating zoos, but are not part of regional captive programs and therefore are not included in any of these analyses.

- Combining wild and captive populations, there are more or less 5,600-8,900 tigers on the planet, and maybe as many as 10,000 if non-studbook registered tigers are included.

- About 280 captive facilities worldwide maintain specimens of at least one taxon of tigers: 164 facilities maintain Siberian, 74 Sumatran, 4 Indochinese, 15 Bengal, and 21 South China tigers.

- The rates of growth have been regulated for all taxa already in captivity to adjust to available space. Growth rates in captivity can be managed to exceed rates of wild tigers.

- The amount of genetic diversity retained in the captive Siberian and Sumatran tiger populations is high (>90%). The genetic foundation for the Bengal and Indochinese tigers in captivity needs enhancement if the captive population is to be a viable reservoir for the wild populations. The genetic foundation of the South China tiger population is very limited.

Global Animal Survival Plan

The *Tiger GASP* recommends a global minimal target population size of 250 tigers in captivity for each of the five taxa, and suggests how this number can be most satisfactorily distributed among various regional programs. Minimum target population sizes are defined as the smallest population size to meet the genetic and demographic objectives; actual population sizes in different regions may be much larger. This population size of 250 tigers for each taxon will be sufficient to preserve 90% of the genetic diversity of each population for 100 years.

As a first priority, captive management programs for each subspecies should be developed in its country of origin. For maximum security against unexpected risks, extension of the captive management program to at least one additional region outside the country of origin are also recommended for each taxon.

The *Tiger GASP* recognizes the value of genome resource banking and assisted reproductive techniques for enhancing populations of tigers both in captivity and in the wild. It also recognizes the value of results obtained in Population and Habitat Viability Analysis (PHVA) Workshops, which focus primarily on wild tiger populations. Only the Sumatran tiger has been the subject of a PHVA Workshop; the other tiger taxa are in need of similar workshops.

The *Tiger GASP* has been recognized as a strategic document to manage captive tigers on an international level by the

Tiger GASP...

Australasian ASMP, Indonesian PKBSI, Southeast Asian SEAZA, Indian IESBP, Japanese SSCJ, and North American AAZPA. With recognition from the European EEP, unanimous consensus of recognition for this document from all involved regional programs will be achieved.

The *Tiger GASP* will then be submitted to the IUCN/SSC for recognition; the Tiger GASP Committee will proceed with its implementation globally.

Progress Toward Goals*Sumatran Tiger Regional Captive Breeding Workshop, Indonesia*

An *in situ* regional captive breeding program for the Sumatran tiger was held in November, 1993. The goals were to: (1) initiate an *in situ* captive breeding program for this subspecies along the lines of the Tiger SSP's programs for tiger management in North America; (2) assist Taman Safari Indonesia (near Bogor, Indonesia) in the planning and construction of a captive breeding tiger facility, which could be also be used at a later date for other endangered species breeding programs; and (3) conduct a workshop on captive management protocols and genome resource banking (GRB) for the wild-caught and captive-born tigers.

This workshop was supported by contributions from AAZPA Sumatran Tiger SSP institutions, Taman Safari Indonesia, and the European EEP and JMSG. Workshop coordinators were R. Tilson and G. Brady (Tiger SSP), J. Manansang (Taman Safari Indonesia) and D. Ashari (Chairman, SE Asian Zoo Association). Results of this workshop are presented in *Tiger Beat*, 6(1), March 1993.

Sumatran Tiger PHVA, Indonesia

A PHVA for the Sumatran tiger was held in Padang, West Sumatra, Indonesia in November 1992. The goals of the workshop were to: (1) conduct a metapopulation and habitat viability analysis (en route to developing a Geographic Information System, or GIS) for all populations of Sumatran tigers; (2) formulate management strategies with risk assessments to prevent extinction and achieve the objective of maintaining viable, self-sustaining populations within the historic range of this subspecies; and (3) prepare a report of the analyses and results of the meeting with recommendations for achieving these goals.

This workshop was primarily supported by funds from the AAZPA Ralston Purina Big Cat Survival Fund, and secondarily from the Minnesota Zoo, WWF-Indonesia, the Indonesian Directorate of Forest Protection and Nature Conservation (PHPA), and the European EEP (London, Arnhem, and Chessington Zoos). Workshop coordinators were R. Tilson (IUCN/SSC CBSG Global Tiger Coordinator and AAZPA Tiger SSP Coordinator), Komar Soemarna and Widodo Ramono (PHPA), Sukianto Lusli (WWF-Indonesia), and U. Seal (IUCN/SSC CBSG).

Workshop results are available in *Tiger Beat*, 6(2), June 1993.

1993 IUCN/SSC CBSG Meeting, Antwerp, Belgium

Outstanding issues of the *Tiger GASP Review Document* were resolved by representatives from the IUCN/SSC Cat Specialist Group, International Tiger Studbook, Japanese SSCJ, India Zoo Authority, Thai Zoological Parks Organization, Indonesian PKBSI, European EEP, and the North American AAZPA.

- S. Christie will present the revised *Review Document* to the EEP Meetings in November 1993 for recognition.

- S. Sharma has agreed to appoint a Bengal Tiger Species Coordinator to initiate the captive breeding program in India.

- P. Jackson and R. Tilson will approach the Chinese CAZG to initiate a captive breeding program for the South China tiger in China.

This report was submitted by R. Tilson and K. Traylor-Holzer, Minnesota Zoo.

Report of the Invertebrate Working Group

The following report represents a summary of the key issues discussed at two Working Group sessions. The group discussed the relevance and practicality of applying the CBSG conservation models such as CAMPs, GCAPs, and GASPs to existing and possible future target invertebrate conservation programs. It was agreed that such models are equally applicable to invertebrate species. The only significant difference is the more frequent need to manage invertebrates as populations rather than as individuals. We also agreed that in some instances invertebrate studbooks are valid candidates for inclusion in the register of studbooks.

The meeting then turned its attention to the question of why there has been repeatedly such a low level of overall delegate representation and participation in the Invertebrate Working Group sessions over the last few years. Attention was given to how this state of affairs might be improved. There was general agreement that under the present arrangement of concurrent working group sessions, it is all but impossible for the vast majority of CBSG delegates to participate, no matter how interested delegates may be (and many people are interested, and have valuable expertise to contribute) in a working group devoted to taxa such as the invertebrates so long as parallel meetings are in progress which involve their core interest taxa groups. Since vertebrate and invertebrate working groups are timed so as to run entirely concurrently, this situation can only continue.

As an aid to providing delegates with greater opportunity to cross-fertilize between core interest groups and non-core interest groups, such as invertebrates, we would urge that future annual CBSG meetings ensure a programmed time (perhaps only one hour's length, hopefully longer) at which nothing but subject matter of "cold blooded" content will be discussed (this includes reptiles and fish as well as invertebrates).



Avian Working Group Report

A prime concern is that CBSG has not yet gained access to the world constituency of invertebrate conservationists and other sources of invertebrate expertise. The result is that input is not available to make recommendations for taxa for which the CBSG process can help. By setting up a more welcoming structure at CBSG, we can then go back to the world constituency and tell it that it will be worthwhile for it to take part in the CBSG process.

The suggestion was also raised that the present, all-embracing, Invertebrate Group should aim to establish specialist taxonomic propagation groups (along the lines of the SSC invertebrate groups) as soon as is possible, so as to be better placed to carry out the Group's stated conservation objectives.

The meeting was most anxious to make clear that these comments are not in any way a criticism of CBSG. Rather, they are simply an observation that the present arrangement is clearly failing to produce the positive results we all wish to see realized.

Program Developments

The *Partula* Propagation Group is holding a two-day workshop in February, 1994 (to be held at London Zoo) with the intention of conducting a GASP exercise for the captive and remaining wild taxa. The breeding program currently maintains 29 *Partula* taxa. Strong CBSG participation is requested.

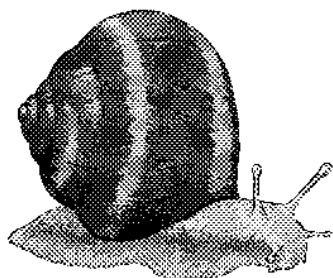
Operative versions of the CERC I *Partula* colony management module have begun to be distributed to participating collections.

The captive-breeding and establishment program for the British population of the Field cricket, *Gryllus campestris*, was successfully taken through to the field release phase. The two newly-established colonies have raised the total number of British wild colonies to three, which should have doubled the total wild population. The second release phase of the program is scheduled for mid-September, 1993. A report is being prepared for CBSG.

The CBSG's CAMP and PHVA workshop on the biota of St. Helena reviewed 59 of the Island's 383 invertebrate endemics. PHVAs were run for the Giant Earwig, *Labidura herculeana*, and the arid variety of the Blushing snail, *Succinea sanctaehelenae*.

A number of *in situ* and *ex situ* recommendations have been made. A ZSL survey of the plains and peak forest invertebrate endemics is scheduled for October, 1993, incorporating further taxa data for the invertebrate CAMPs.

This report was submitted by Mike Brambell, Chester Zoo, U. K.



The Avian Working Group reviewed the Avian CAMP Workshops that have been conducted and/or published in the past year, including the Columbiformes, Galliformes, Gruiformes, and Hawaiian Forest Birds.

Recommendations for new CAMPs were reviewed, with regard to the priorities set at last year's meeting. Good progress has been made on moving forward with CAMPs for two of the four taxonomic groups identified as high priority last year. A Cracid CAMP will take place in September 1994 in Houston. The Megapode CAMP was held in conjunction with the Galliformes CAMP organized by the World Pheasant Association here in Antwerp earlier this year. Two other groups are still identified as high priority - Musophagidae and Rhamphastids. Recommendations for future taxa for CAMP workshops will be developed in conjunction with BirdLife International Specialist Groups.

For taxonomic groups for which CAMPs have already been conducted, people (primarily TAG chairs within the various organized zoo regions) were identified as contacts to assist in moving the GCAP process forward.

Chelle Plasse from the Houston Zoo reported on the progress of the AAZPA Hawaiian Forest Bird surrogate program. Currently, approximately 50 birds comprising four species are held in five institutions. This program has been developed in conjunction with the U. S. Fish & Wildlife Service (USFWS) in an effort to develop captive husbandry techniques for Hawaiian Forest Birds.

During the Hawaiian Forest Birds CAMP, all 52 Hawaiian Forest species were categorized as threatened.

One major step forward with Hawaiian Forest Birds took place this year. The USFWS contracted with the San Diego Zoo, the Peregrine Fund, and Greenfalk Consultants to assist in artificial incubation, hand-rearing, and hacking out of 'Alala or Hawaiian Crow chicks. Seven eggs were removed from nests in the wild, with the hope that the wild birds would double clutch; all seven eggs hatched and chicks have been successfully hand-reared. Through application of techniques developed within the captive community, the 'Alala population has increased from just 12 birds to 19 in one season.

Natasha Schishakin reported to the group on the Spix's macaw PHVA and program. The PHVA report will be distributed in October. One of the most important recommendations coming from the workshop was the recommendation that one of the captive birds be released to join the last remaining Spix's macaw in the wild. It was decided that if the Spix's macaw is ever to have a successful reintroduction program, that the "cultural" knowledge of the species will need to be maintained.

One important agenda topic was how to make communication within the Avian Advisory Group and interested parties more effective. One area that will bear consideration in the future is a more active effort to educate and involve the private sector

Avian...

in new and ongoing programs and in building bridges for improved communication. The CBSG will be attending and conducting workshop sessions at the International Aviculture Society meeting in January 1994.

A final agenda item discussed was the question of permanent and semi-permanent marking of birds. There was a general suggestion that all TAGs and SSPs address the questions concerning identification of specimens.

This report was submitted by Susie Ellis, Avian Working Group Co-chair.

Arabian Peninsula Bustard Working Group Report

There are many different breeding programs of bustards, but the current focus of this group is breeding bustards in the Arabian Peninsula. At National Wildlife Research Center, Taif, Saudi Arabia, the houbara bustard has been bred successfully for three generations. The reintroduction program was started this year. Fifty birds have already been released at the Mahazat As Said Reserve. Two hundred eighty-five chicks hatched this year with 85% fertility, 65% hatchability. One hundred birds will be released next year and it is planned to release 1,000 birds annually within the next seven years.

Kori bustards were bred in 1991 and 1992 at Al Areen Wildlife, Bahrain. They also started the captive breeding program of the houbara bustard a few years ago and their future plan is to release some birds in their former habitat for the reintroduction program.

At Al Ain Zoo, Abu, Dhadbi, several species of bustards have been bred successfully including boubara, kori, white-bellied, buffcrested, and lesser. Information and data regarding this matter will be requested from the National Avian Research Center, Abu Dahabi.

At the Dubai Zoo there is no breeding program of houbara bustard at this time, but it is planned in the near future.

At this time, it is not known if there are any Arabian bustards in captive breeding or in private collection. In fact, very little is known about this species of bustard. In southwest Saudi Arabia, the population has declined to almost zero and in recent years only a few bird sightings have been recorded. The decline is due to excessive hunting and habitat deterioration. The Arabian bustard status in Yeman is not known yet.

The Bustard Working Group recommends the following:

(1) Immediate attention should be given to the Arabian bustard by conducting surveys, visiting and inspecting, and researching the southwest Arabian Peninsula and initiating a captive breeding program as soon as possible.

(2) Sharing information between the captive breeding centers in the region.

(3) Identifying the species at breeding centers and at the private collectors.

(4) A regional studbook is needed.

(5) A Bustard manual should be written in both English and Arabic languages.

(6) Interested parties can contact the Grassland and Steppe Bird Specialist Group of Bird Life International Council (ICBP) and any other groups that are working to breed or conserve bustards.

(7) Future study and work is needed on the bustard.

This report was submitted by Abdul-Wahed Al-Saihati.

Report of the Behavioral Advisory Group

The Behavioral Advisory Group (BAG) was initiated last year in order to encourage the consideration of behavioral fitness in breeding programs in line with genetic fitness and to assist species coordinators in implementing behavior in their breeding programs.

It should be realized that conservation of behavioral skills necessary for survival in nature can not be done by genetic management alone. Many behavioral traits cannot develop unless encouraged by specific environmental factors (social as well as physical).

Moreover, many of the problems faced in breeding programs (bad breeding performance, non-compatibility between individuals, high aggressiveness, etc.) are behavioral in origin and should be managed as such. Wherever possible, behavioral ecological solutions should be found to the problems rather than trying with more complicated methods such as hormone treatment, artificial insemination, etc.

The BAG should be considered as an advisory group for behavioral matters in line with the TAGS for the different taxa. Thus, it will have an educational and an advisory function as well as an analyzing function.

The BAG will be structured on a regional basis with sub-groups in the SSP, EEP, etc. in order to get as close to the users



(mainly species coordinators) as possible. The main tasks of the BAG will be:

(1) To establish a network of behavioral experts representing all regions. This has already been going on for a year and is slowly progressing.

(2) To work out a set of guidelines of how to implement the behavioral aspect in breeding programs.

(3) To improve the awareness of the importance of considering behavioral fitness in breeding programs. This can be done by presenting papers and arranging workshops at regional and global CBSG meetings, TAG meetings, etc.

(4) To analyze existing breeding programs in order to identify common behavioral problems and to encourage appropriate research to solve these problems.

(5) To assist species coordinators in identifying and handling specific behavioral problems in their program.

Some behavioral areas needing special attention were already identified. These were: environmental enrichment, social competence and social stimulation, hand rearing and its effects on fitness, the effect of interaction with keepers, introduction of new animals, seasonality in behavior, and interactions with other species.

Last, but not least, it should be stressed that the establishment of the Behavioral Advisory Group is not to downgrade the genetic management in breeding programs, but to upgrade the use of behavioral management to the same level.

This report was submitted by Bengt Holst, Zoologisk Have, Copenhagen.

Disease and Health Working Group Report

In the past year, the primary activity of the CBSG's Disease and Health Working Group has been the production of the International Conference of Implications of Infectious Diseases for Captive Propagation and Reintroduction Programs of Threatened Species (Oakland, California, USA, November 1992), and the production and distribution of its working papers (now available through the CBSG office and published in the September issue of the *Journal of Zoo and Wildlife Disease*). Organized by Dr. Peregrine Wolff, the meeting was designed to meet a perceived lack of knowledge and standardized procedures in the area of disease and reintroductions. Five working reports resulted:

(1) Monitoring, investigation, and surveillance of diseases in captive wildlife;

(2) Monitoring, investigation, and surveillance of disease in free-ranging wildlife;

(3) Infectious disease considerations in reintroduction programs for captive wildlife;

(4) Risk assessment and population dynamics;

(5) Diagnostic technology.

The first two topics emphasize the establishment of basic protocols and standards for veterinary advisors to Regional Conservation Management Plans (RCMPs) and wildlife groups to apply to their species in question. The last topics emphasized identification of explicit technology resources, both in existence and that need to be designed, to meet these diagnostic needs.

The group also identified an overriding need for veterinary advisors to be appointed to RCMPs and wildlife groups. Such advisors are crucial to the goal of monitoring disease in each species and taxon group. In North America, this directive has resulted in the formation of a Veterinary Advisors' Group (VAG) under the auspices of the Animal Health Committee of the American Association of Zoological Parks and Aquariums (AAZPA). In the past year, the AAZPA's Wildlife Conservation and Management Committee (WCMC) has accepted the need for Veterinary Advisors appointed to each Species Survival Plan (SSP) and Taxon Advisory Group (TAG). It is hoped that similar activities will occur in each RCMP, and during our meeting it became clear that continued efforts for coordination of these efforts and distribution of these protocols is necessary.

A corollary of the need for Veterinary Advisors is the availability of a pool of trained veterinary personnel. One proposal is the identification of institutions either willing or already participating in training programs for zoo and wildlife veterinarians in these programs in developing countries. An initial effort should be the distribution of a questionnaire to zoological institutions in North America, Europe, Australia, and elsewhere. In the U.S., the American Association of Zoo Veterinarians (AAZV) will be approached as to their willingness to participate in this process. It is hoped that such training will supplement, but not replace, *in situ* training programs. Although it is anticipated that initial funding for these programs will come from either the participant or a supporting agency, identification of such programs may also assist in the identification of other funding sources (e.g., US-AID, EEC training funds).

Finally, the need for a CBSG policy on animal welfare was raised a possible issue for the Disease and Health Group to address. After discussion, it was determined that animal welfare is a broad issue subject to many interpretations and any response should be based on a well thought out, clearly written protocol. On a broader level, the group felt that although animal health is integral to animal welfare, many other disciplines should be included. In that light, we felt that guidance of the CBSG Steering Committee was necessary before this issue was addressed further. Such guidance might include:

(1) Appropriateness of the topic and scope of this discussion within CBSG.

(2) Which pre-existing group or ad hoc committee should address this topic.

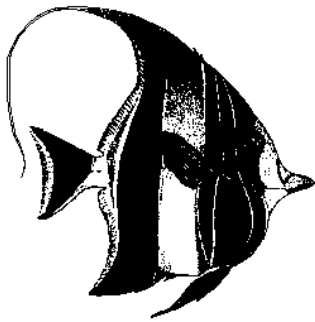
To that end, Suzanne Jackson will be asked to address the question to the CBSG Chair and Steering Committee.

This report was submitted by R. Eric Miller, St. Louis Zoo.

Report of the Fish Working Group

Having noticed that the composition of the Fish Working Group varies markedly from CBSG meeting to CBSG meeting and that it is mainly an ad hoc committee without established agenda or framework, it is suggested that, in order for this working group to function as a more productive and effective agency, the International Aquariology Meetings serve as a better forum in the future to discuss the issues pertaining to the breeding of endangered aquatic fauna.

The needed framework for such discussions could originate from the activities of existing regional working groups or unions such as the Freshwater Fish Taxon Advisory Group of the AAZPA, EAZA, the European Union of Aquarium Curators, and others to be identified or organized.



The regional working groups should convene at the 4th International Aquariology Meeting in 1996 with proposals and/or reports on their regional activities to be made to the CBSG. The recommendations made by the Rio Conference on the role of aquaria in conservation of endangered aquatic organisms should be

endorsed and more widely communicated.

The participants of this working group have the impression that even regional organizations are not properly informed on the threats to local fish fauna and so propose that available data from other sources should be collected and that contacts with ichthyological societies, fisheries departments, etc., be strengthened and exploited to the profit of conservation. Resources to do this should be made available.

There is a need to obtain a comprehensive overview of the status of a given regional aquatic fauna before any conservation priorities can be set by this or any other conservation organization. The working group recommends that CBSG strongly urge the organizers of the 4th International Aquariology Congress to provide enough time for working groups to address these issues.

Increased regional coordination of interested parties as exemplified by the activities of the AAZPA Freshwater Fish TAG in North America, will contribute to worldwide conservation efforts. The host of the next European Meeting should formalize the program, making time available to address this item.

The participants of the Fish Working Group urge CBSG to invite the other regions to organize similar groups with the goal of meeting with the others at the 4th International Aquariology Meeting.

This report was submitted by Paul van den Sande, Antwerp Zoo.

Marine Mammal Working Group Report



Management groups are in place for each marine mammals species in captivity in the U.S.

Studbook petitions have been approved by the American Association of Zoological Parks and Aquariums (AAZPA) Wildlife Conservation and Management Committee (WCMC) for three marine mammal species maintained within North American zoological facilities: the bottlenose dolphin (*Tursiops truncatus*), the gray seal (*Halichoerus gryphus*), and the West Indian manatee (*Trichetus manachus*).

Studbook petitions are currently in preparation or have been submitted for harbor seal (*Phoca vitulina*), the northern fur seal (*Callorhinus ursinus*), California sea lion (*Zalophus californianus*), and the California sea otter (*Enhydra lutra*) and they will be or have been filed with the AAZPA WCMC. All demographic information has been graciously prepared (and is yet unpublished) by Dr. Debbie A. Duffield, N. Dimeo-Ediger, E. Dery Shell, and P. Goldie of Portland State University.

Tursiops truncatus

A studbook was approved on June 15, 1992 by the AAZPA WCMC. J. Pete Schroeder, Sea World of Florida, is the studbook keeper. The first edition of the studbook will be produced in the near future.

Walrus

A studbook petition for walrus was disapproved by the AAZPA WCMC.

California Sea Lion

A studbook petition is currently under preparation by Robert G. Wiese, Assistant Director Conservation and Science, AAZPA.

West Indian Manatee

A studbook petition was approved on October 6, 1989. C. Lex Salisbury, General Curator, Lowry Park Zoological Garden, is studbook keeper for this species and the first edition of the studbook has been published.

Gray Seal

A studbook was approved by the AAZPA for the gray seal. Steve Taylor, Curator Aquatics, Louisville Zoological Gardens, is presently compiling data.

Monk Seal

There have been a number of committees set up to address the critical population and continued survival of the Mediterranean monk seal. This problem has been the subject of deliberations and recommendations of the SSC Seal Specialist Group and a French Internal Scientific committee which met in July 1993.

Funding has been made available to the National Park of

Port-Cros to provide for a study to evaluate the issues related to removing monk seals from the wild and the feasibility of a captive breeding program to help the seal. The study is aimed at developing an action plan by 1996. A survey in September will be carried out to determine the population size and feasibility of capturing seals for a breeding program. At this time, it appears that the existing facilities and personnel at Marineland of Antibes are most appropriate for an initial trial to develop husbandry and handling techniques.

Again, the CBSG Marine Mammal Group encourages this rescue program and endorses the recommendations of the International Scientific Committee, which met in Paris in July 1993, to save the monk seal by establishment of protected zones in the wild and initiation of a captive breeding project.

The Marine Mammal Group also encourages the IUCN to help bring together all interested groups to endorse a unified effort on behalf of the monk seal. This solution still appears to need strong urging and support to overcome the inertia associated with such a multi-national endeavor.

Harbor Porpoise

Harbor Porpoise populations in various parts of the world (North Sea, the Gulf of Maine, Puget Sound, and the Bay of Fundy) have decreased over the last 5–10 years. The Vaquita (Gulf of Mexico) population may be extinct. The ocean is becoming a hostile environment, particularly for near shore marine mammal populations.

Baiji

The Mammalogical Society of China, the IUCN/SSC Cetacean Specialist Group, and the IUCN/SSC Captive Breeding Specialist Group held a collaborative PHVA Workshop on 1-4 June 1993 in Nanjing, China. The workshop was hosted by the Bureau of Fisheries Management and Fishing Port Superintendence of China, Nanjing Normal University and sponsored by Sea World Inc.

A set of recommendations is currently being implemented with the assistance of the newly-formed Ocean Park Conservation Foundation (Hong Kong). Participation in the program is being requested of oceanariums worldwide, by sponsoring their personnel experienced in husbandry and life support system maintenance and laboratory analysis, to insure adequate facilities are in place by the time Baiji are captured.

Qiqi, the only Baiji in captivity, remains healthy allowing emphasis on a breeding research program of semen collection and cryopreservation. A high priority is being placed on conducting a survey of the entire Yangtze River known to be the Baiji's range. Because the Baiji remains critical, plans are being made to prevent the Finless Porpoise (*Neophocoena*) from suffering the same fate. A detailed report on the Baiji appears in Volume 4 No. 4 of the *CBSG News*.

Toothed Whales Living in the Black Sea

The population of toothed whales of the Black Sea is highly threatened by extinction in the next decade. Their present

number and the existing infrastructure in Ukraine allows creation of captive breeding programs and gamete-banks which might save the majority of the genetic diversity of the three species for the future.

The international recognition of the highly endangered status of those animals might help in support and fund raising to achieve the goals mentioned above.

Tursiops Breeding Investigation

The Royal Zoological Society of Antwerp (Belgium) stresses the need for a worldwide scientifically-based research program with its main goal being to ameliorate the breeding of this species in European facilities. The coordination of this work can be done by this institution. The CBSG Marine Mammal Group advises a workshop to be held in February/March 1994 where a worldwide selected group of specialists can recommend future approaches towards this research program.

The EEC bottlenose dolphin studbook will be expanded to become a European Regional Studbook. A regional studbook keeper will be appointed taking into consideration the criteria specified by the proposed EEC regulation.

This report was submitted by Pete Schroeder, Schroeder Research Associates.



Genome Resource Banking Working Group Report

Genome Resource Banking involves the organized collection, storage, and use of biological materials (usually gametes, embryos, tissue and blood products) for the purpose of contributing to conservation. Genome Resource Banks (also known as GRBs) could have far-reaching implications for many rare species. A repository of cryopreserved sperm and embryos could be used as a hedge against losing more genetic variation from both captive and wild populations. It is envisioned that gene diversity could be spread more effectively and efficiently among captive populations and between wild and captive populations by shipping germ plasm rather than living (and stress-sensitive) animals. In the future, it may even be possible to artificially inseminate wild females living in fragmented forests using sperm from vigorous males living in other regions. In addition to boosting gene diversity, another by-product would be leaving the free-living population in the wild to protect native habitat. The GRBs also will allow the number of animals needed in captivity to achieve target levels of gene diversity to be reduced, thus freeing valuable space for other species at risk for extinction. Finally, a GRB also includes other biomaterials including tissues that can be used to establish cell lines and produce DNA that is useful for answering questions about subspecies, genetic variation, and offspring parentage. Blood products, like serum

Genome...

and plasma, are useful for measuring hormones and especially for studying and solving disease problems. There is a need to develop GRBs for rare species, but each program must be systematic and scientifically-oriented to ensure that there is a conservation impact. For this reason and because of the major potential advantages of GRBs for species preservation, the CBSG is exploring avenues for the organized global and regional establishment of this new conservation approach.

This year's GRB working group committee consisted of representatives of three regions, North America, Europe, and Africa. Specific interests within the group were diverse, ranging from the preservation of sperm to tissue samples including feather pulp. The range of species interest also varied from psittacine birds to Southeast Asian pigs. An overview was provided by the working group leader into the important reasons for developing a detailed GRB action plan. Concerns and discussion topics focused upon taking the next practical step and included: developing action plans within regions; identifying regional coordinators for GRB programs; CITES restrictions for the international shipment of fresh biomaterials (needed for systematic and paternity assessments); and more involvement by wildlife managers, especially veterinarians, in developing and implementing the GRB action plan.

Specific recommendations by the working group:

(1) There is a need to establish a Global Genome Resource Banking Coordinator and Committee under the auspices of the IUCN/SSC's Captive Breeding Specialist Group (CBSG). This is essential because there is a need for: (a) a venue to allow inter-regional communication, because it is anticipated that for GRBs to be effective, the Action Plan must be oriented to global needs and because biomaterials will inevitably need to be exchanged among regions; and (b) ensuring uniformity in biomaterials collection, storage and use. The global exchange of these products only will be successful if biomaterials from a given species are processed using consistent methodology.

(2) There is a need to identify a GRB Program Leader within each region. These individuals will be responsible for the initial response to the development of GRB Action Plans by the species propagation committees or taxon advisory groups. It is recommended that each Regional GRB Program Leader serve on the Global GRB Committee. The Regional Coordinator may seek action planning advice from the Global GRB Committee or draft action plans independently. However, to ensure global cooperation and to identify other partners in other regions, all action plans should be circulated for comments to the Global GRB Committee. It is recommended that these Regional GRB Program Leaders be identified for at least three regions in the coming year.

(3) As soon as a Global GRB Coordination Committee and Regional Program Leaders are identified, there is a need to hold a general meeting to begin to discuss specific issues that will dictate the success of GRB efforts in general. Specific high priority topics will include discussing the details of the strategies

associated with the prototype Tiger GRB Action Plan recently completed by the CBSG in cooperation of the American Association of Zoological Parks and Aquariums. There is a need to determine if the issues affecting the development of a specific GRB will remain similar across taxa or will require major modification. Other issues identified in the working group requiring detailed attention included: (a) CITES complications when it is necessary to immediately ship fresh biomaterials (e.g., tissue that is shipped from one country to another to answer an important parentage question; this problem appears especially prevalent in Europe); and (b) improving the degree of interest among zoo veterinarians who will be key players in ensuring the timely collection of biomaterials. These and many other issues could benefit from an organized discussion carried out by interested global and regional GRB enthusiasts.

One final achievement of this working group was identifying strong regional interest in Africa for establishing GRBs. Tentative plans were made to organize a session devoted to GRB development at the 1994 regional PAAZAB meeting that will include participation by Global (CBSG) GRB Coordination Committee members.

This report was submitted by Onnie Byers, CBSG, and David Wildt, National Zoo.

Annual Report on International Studbooks and Registers

This annual survey of International Studbooks and Registers, for August 1992 to August 1993, is the 10th annual survey prepared for CBSG and updates the previous survey produced for the last CBSG annual meeting in Vancouver. Since that survey, there have been a further five studbooks endorsed by IUDZG and IUCN/SSC. They are: Golden-crowned sifaka, *Propithecus tattersalli*; Verreaux's sifaka, *P. verreauxi verreauxi*; Coquerel's sifaka, *P. v. coquereli* (Studbook Keeper - David Haring, Duke University Primate Center); Decken's sifaka, *P. v. deckeni*; and Diademed sifaka, *P. diadema diadema* (Studbook Keeper - Karen L. Corbett, Riverbanks Zoological Park). As of August 1993 there were 120 International Studbooks and five Registers.

Changes of addresses and changes of Studbook Keepers include:

Kiwi: transferred to Tracy Johnson, Curator, Rainbow and Fairy Springs, POB 25, Fairy Springs Road, Rotorua, New Zealand.

Wattled Crane: new address - Frederick B. Beal Curator of Birds, Franklin Park Zoo, Franklin Park, Boston, MA 02121, USA.

Crowned Pigeons: new address: David L. Wetzel, General Curator, Roger William's Park Zoo, Roger Williams Park, 1000 Elmwood Avenue, Providence, RI 02095-3600, USA.

Spix's Macaw: transferred to Natasha Schischakin, Houston Zoological Gardens, (Herman Park), 1513 North MacGregor, Houston, TX 77030, USA.

Golden Conure: change of title: Alan Lieberman, Curator of Herpetology, Zoological Society of San Diego, POB 551, San Diego, CA 92112-0551, USA.

Emperor Tamarin: change of address: Lee Nesler, Pittsburgh Zoo, POB 5250, Pittsburgh, PA 15206-0250, USA.

Black-headed Lion Tamarin: change of address: Dr. Claudio Valladares Padua, Av. dos Operarios 587, 13416-410 Piracicaba, Sao Paulo, Brazil.

Pileated Gibbon: change of title: Dr. Christian R. Schmidt, Deputy Director & Curator of Mammals and Birds, Zoologischer Garten Zurich, Zurichstrasse 221, CH-8044, Zurich, Switzerland.

Polar Bear: transferred to Frau Dr. Karin Linke, Curator of Mammals, Zoologischer Garten Rostock, 0-2500 Rostock 1, Rennbahnallee 21, Germany.

Tigers: transferred to Dipl.-Biol. Peter Muller, Director, Zoologischer Garten Leipzig, D-04105 Leipzig, Pfaffendorfer 29, Germany.

Clouded Leopard: transferred to Norah B. Fletchall, Assistant Director, John Ball Zoological Gardens, 1300 W. Fulton St. NW, Grand Rapids, MI 49504, USA.

Przewalskii Horse: transferred to RN Dr. Evzen Kus, Zoologicka Zahrada Praha, U Trojskeho zamku 120/3, 171 00 Praha 7-Troja, Czech Republic.

Sumatran Rhinoceros: change of address: Dr. Tom Foose, The Wilds, 85 E Gay St. Suite 603, Columbus, OH 43215-3118, USA.

Black Rhinoceros, White Rhinoceros, Guar: transferred to Dipl. Biol. Reinhard Frese, Zoologischer Garten Berlin, Hardenbergplatz 8, D-10787, Berlin.

Lowland Anoa: transferred to Dipl. Biol. Gerd Notzold, Zoologischer Garten Leipzig, 0-04105 Leipzig, Germany.

Studbook transfers awaiting confirmation:

Puerto Rican Crested Toad: to Ann Day (St. Louis).

Golden-headed Lion Tamarin: to Mrs. Helga De Bois (Antwerp).

Bettong: to Ms. Mascha Lissowsky (Erlangen) with Priv Doz Dr. U. Ganslosser, EEP Coordinator Bettongia, Institut fur Zoologie, Universitat Erlangen-Nurnberg.

Drill: proposed that Dr. Cathy Cox (Los Angeles) should become Co-Studbook Keeper.

Malayan Tapir: proposed transfer to Rick Barongi (San Diego).

Barasingha: Studbook Keeper Dr. Schaaf has resigned and a new Keeper is sought.

Recommendations

Following correspondence with the respective keepers, I suggest a number of deletions from the official list:

White Eared Pheasant: with the majority of the population in private collections, the data are difficult to obtain and would be of limited value. In terms of expense and time, the task is not worthwhile. The World Pheasant Association is to make regular censuses of threatened pheasant species and these should be sufficient to monitor population trends.

Pere David's Deer: as data can be obtained from ISIS, IZY, and regional and national inventories, an International Register is considered no longer essential although the situation should be reviewed periodically.

Wood Bison: the Register Keeper has suggested this deletion as the situation has changed considerably over the last few years. This subspecies is no longer considered to be endangered and has been downgraded to threatened status. A number are now held in private facilities, and obtaining accurate data would be virtually impossible and would be a waste of time and money.

Takin: there has been little sign of activity since the Studbook was initiated in 1985, probably due mainly to parochial problems and language difficulties. Wu Jia-Yan, the Studbook Keeper, will concentrate on collecting data in China.

I also wish to recommend that in future approval for transfers and changes of keepers are not sought from the two International bodies, IUDZG and IUCN/SSC, unless there is a potential problem which has been brought to the attention of the International Coordinator. At present, obtaining approval can take over two months and this is after the national or regional association has given its approval. In the vast majority of cases, there is no problem with proposed transfers or changes in keepership, though it should be emphasized that they should all come to the coordinator for official endorsement.

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

CBSG Office Notes...

E-mail Available

The CBSG Office now has E-mail capability. For those wishing to use this computer communications, the address is:

cbsg@maroon.tc.umn.edu

New Banking Information

Banking information for the CBSG Office has been changed. Please send wire transfers to:

FIRST BANK NA ABA No. 091000022

for credit to CBSG Account No. 1100-1210-1736

CBSG Schedule/Publications List

The CBSG Schedule and Publication List are now available for those with access to the ISIS bulletin board. Call 1-612-432-9292 and access the file "CBSGSCHE" or "CBSGPUBL" as appropriate.

Conservation Assessment and Management Plans (CAMPs) Progress Report

The Conservation Assessment and Management Plan (CAMP) program continues to grow. Since the last CBSG annual meeting, CAMPs have been held for Columbiformes, Galliformes, Caprinae and Tragulidae, and Small Carnivores including Procyonidae, Mustelidae, Lutrinae, Viverridae, and Herpestinae. In addition to taxon-based CAMPs, two regional CAMPs were also held, one for Hawai'ian forest birds and one for St. Helena Island. From the beginning of the program in its current form in 1991 to date, more than 20 CAMPs have been conducted.

The CAMPs are assessing the degree of threat for every taxon within the broad taxonomic groups or regions considered. The CAMP process is being used to assign each taxon to a category (Critical, Endangered, Vulnerable, Safe) by applying the definitions proposed by Mace-Lande in 1991 (Figure 1). Criteria that are used to assign taxa to these categories are based on population estimates, estimates of effective population size, rate of population decline, catastrophe, or habitat change, exploitation, and introduction of exotics. The IUCN is developing a new set of categories of threat, as published in the last issue of *SPECIES*. These criteria are now being revised again for review by the IUCN General Assembly in early 1994.

Based on these assessments, recommendations are proposed for intensive conservation action and information-gathering priorities. These actions include: population and habitat viability analyses (PHVAs), more intensive *in situ* management, captive breeding programs, and conservation-related research.

The CAMP process is central to establishment of global priorities for intensive conservation action. CAMPs provide a global framework for intensive management in the wild and captivity. Wildlife agencies and regional captive breeding programs can use the CAMPs as guides as they develop their own action plans.

The CAMPs held after December 1992 saw several changes

in CAMP spreadsheets. One change was that a column for data quality was added to indicate the confidence with which workshop participants reported population data. The Hawai'ian Forest Birds CAMP was a turning point in the development of the CAMPs with respect to the management recommendations that are generated. At this meeting, primarily attended by wildlife managers, recommendations for management were merged with research recommendations in a new category called research management, to more fully integrate recommended research and management actions and known threats. Research management can be defined as a management program which includes a strong feedback between management activities and evaluation of the efficacy of the management, as well as the response of the species to that activity.

The categories within the research management category have now evolved to be: taxonomic and morphological genetic studies; translocation; survey (i.e., search and find); monitoring (to determine population information); habitat management (management actions primarily intended to protect and/or enhance the species' habitat such as forest management); and limiting factors management ("research management" activities on known or suspected limiting factors. These are management projects that will have a research component to provide scientifically defensible results); limiting factors research (research projects aimed at determining limiting factors. Results from this work may provide management recommendations and point out future research needs); and basic life history studies.

Figure 2 shows recommendations for intensive action from all the CAMP workshops, with new categories nested within old categories. Research management recommendations from the CAMPs held after December 1992 are shown in Figure 3.

Derivatives of the CAMP process are the recommendations for captive breeding which form the foundation for development of regional strategic captive collection plans and global captive action plans (GCAPs), which eventually develop into GCAPs, which will be discussed by Dr. Onnie Byers (see page 30). A level of captive breeding program is also recommended for those taxa selected for this intensive management action.

For captive recommendations, the level of captive program is defined by genetic and demographic objectives and thus the target population required to achieve these objectives. The recommendations for levels of captive programs have also evolved along with the CAMP process and are now more streamlined:

Intensive - a captive population should be developed and managed that is sufficient to preserve 90% of the genetic diversity of a population for 100 years (90%/100). This kind of program should be developed within 3-5 years. This kind of program can be viewed as an emergency program based on the present availability of genetically diverse founders. This category has basically lumped the 90/100 I and 90/100 II categories

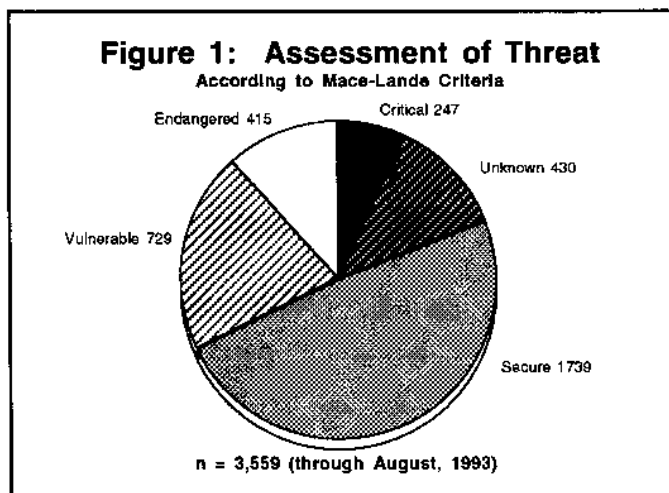
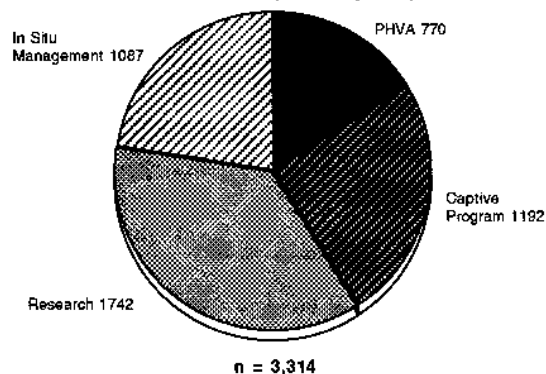


Figure 2: Recommendations for Action
From CAMP Workshops through August, 1993



formerly used.

Nucleus - Initiate a captive program in the future. A captive population should be developed and managed that is a nucleus (smaller than that needed for the Intensive program), organized with the aim to represent as much of the wild gene pool as possible and to provide the potential for expansion into an intensively managed population if needed. This program may require periodic exchange of genetic material between the captive and wild population as indicated by appropriate analyses.

Other captive recommendations include:

No - a captive program is not currently recommended; and

Pending - a captive program is not currently recommended but may be reconsidered pending further data.

Recommendations for captive programs for CAMPs held to date are presented in Figure 4, with the exception of Galliformes, Cervids, and Marsupials.

A category for level of difficulty of captive husbandry has also been added, with a ranking from 1-3, with 1 being the least difficult and 3 being the most difficult. This aids in captive program recommendations and may prompt recommendations

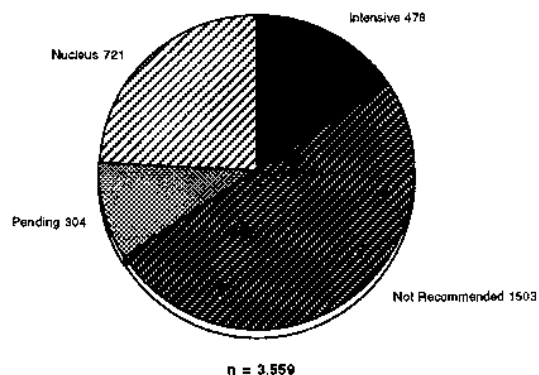
for surrogate work or application of captive techniques to field situations.

After compilation at an initial Workshop, draft CAMPs are reviewed first by meeting participants, and then: (1) by distribution to 100-200 wildlife managers and researchers and to regional captive programs and institutions worldwide for comment; (2) at regional review sessions conducted at CBSG meetings and workshops, utilizing local expertise. The CAMP review process allows extraction of information from experts worldwide. CAMP review documents are continuously evolving as new information becomes available, changes occur, and priorities shift. The current CAMP and GCAP process will continue both by its application to new groups of taxa and the refinement of the ones already under way.

Taxon-based CAMP Workshops scheduled through 1994 include: storks, ibises, and spoonbills; raptors (possibly); Heteromyid and Sciurid rodents; and Insectivores and Pangolins. Regional CAMPs scheduled thus far through 1994 include Indonesian primates; Panama endemics; Brazilian Primates; and Costa Rican endemics. As mentioned earlier, the CAMP pro-

Figure 4: Captive Program Recommendations

From CAMP Workshops through August, 1993

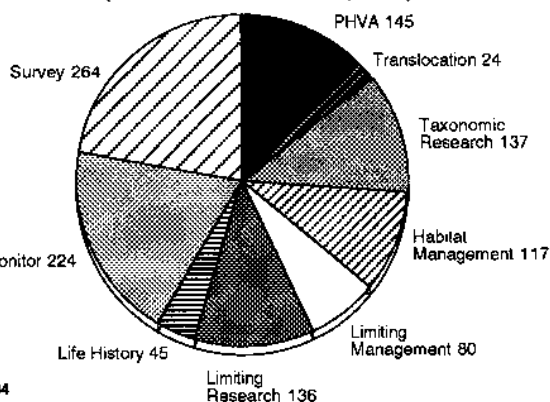


gram is increasingly evolving toward regional CAMPs as most of the major taxonomic groups of concern are covered. The CAMP process serves and has been recommended by the SSC as the first step in the development of Taxonomic Action Plans both within the SSC and within BirdLife International. The CAMP process has already laid the groundwork for a number of these Plans which are currently under development.

The long-term impact of the CAMP process on global priority setting has the potential to be quite profound, particularly with its evolution toward a regional approach. Within the near future, wildlife and zoo animal managers worldwide will have a set of comprehensive documents at their disposal, collaboratively and scientifically developed, which establish priorities for global wild and captive species management and conservation. Ultimately, the CAMP process may facilitate the wise worldwide use of limited resources for species conservation.

This report was submitted by S. Ellis, O. Byers, and U.S. Seal.

Figure 3: Research Management Recommendations
(CAMPs Since December, 1992)





Global Captive Action Plans (GCAPs)



Global Captive Action Plans (GCAPs) are developed out of Conservation Assessment and Management Plan (CAMP) workshops. The GCAPs summarize the captive status and management priorities for taxa recommended by CAMPs for captive populations. This system proposes that captive populations should be treated as an integral part of the metapopulations being managed by conservation strategies and action plans. Viable metapopulations often may need to include captive components. The IUCN Policy Statement on Captive Breeding recommends, in general, that captive propagation programs be a component of conservation strategies for taxa whose wild population is below 1,000 individuals. It is proposed that captive and wild populations should and can be intensively and interactively managed with interchanges of animals occurring as needed and, as feasible, after appropriate analysis. There may be problems with such interchanges including epidemiological risks, logistic difficulties, financial limitations, etc. But with effort, these can be resolved based on limited but growing experience. The bottom line is that strategies and priorities should try to maximize options and minimize regrets.

Captive populations are a support, not a substitute, for wild populations. A primary focus of the GCAP is on captive propagation programs that can serve as genetic and demographic reservoirs to support survival and recovery of wild populations in the future. The purpose of these GCAP workshops is to provide strategic guidance for captive programs at both the Global and Regional level in terms of captive breeding. The GCAP workshops include consideration of how the various Regional programs for each group of taxa might interact and combine to form truly global efforts. An important aspect will be the establishment of target population size goals (i.e., how many individuals to ultimately try to maintain) on a global basis and in each of the regions. More specifically, GCAPs recommend which taxa are most in need of captive propagation and hence:

- (1) which taxa in captivity should remain there,
- (2) which taxa not yet in captivity should be there, and
- (3) which taxa currently in captivity should no longer be maintained there.

There will be multiple genetic and demographic objectives depending on the status and prospects of the taxon in the wild and hence different captive population targets: some taxa need large populations for a long time; others need small nuclei or reduced gene pools that can be expanded later if needed. Adjustments to current sizes of captive populations will be a result of these recommendations.

The GCAP provides a strategic framework within which Global priorities can be established and the Taxon Advisory Groups in the various organized regions of the zoo and aquarium world can formulate and implement their own Strategic Regional Collection Plans.

Eight GCAP workshops were conducted during the course of the CBSG annual meeting. The taxa considered and the working group leaders were:

<u>TAXA</u>	<u>GCAP Leaders</u>
Antelope	Karen Sausman
Caprines	Larry Killmar
Cervids	Jim Dolan
Cranes	Claire Mirande
Felids	David Wildt
Primates	Miranda Stevenson
Rhino	Tom Foose
Small Carnivores	Roland Wirth and Angela Glatston
Ursids	Lydia Kolter and Leslie Johnston

Reports from most of these groups have been made available for this issue of *CBSG News* and follow this introduction.

This report was prepared by Onnie Byers, CBSG.

Ursid GCAP...

for collecting genetic, demographic, and spatial/behavioral data which will be analyzed to provide target sizes for core populations. These data should become available within 12-16 months after appointment of each keeper. Co-chairs of the Ursid GCAP will be available for training, implementation and if necessary for analyzing the data. Other issues addressed at this meeting were as follows:

- Global guidelines for management and husbandry of each species will be developed and circulated for revision by the regional TAGs.
- The total space currently available for bears should be preserved for this taxa in the future. It may be allocated in different ways to improve habitat quality, but not by the replacement by other taxa.
- WSPA representatives reported on LIBEARTY activities in Greece and Turkey.

Recommendations*Tremarctus ornatus:*

Manage the species as a viable population under a global management program (90%, 100 Y). An International studbook exists. Regional programs are strong in North America and Europe. These two regions should assist in the development of a strong regional program in South America.

Helarctos malayanus malayanus:

Manage the species as a viable population under a global management program (90%, 100 Y). Develop four regional management core groups: Southeast Asia, Australasia, Europe and North America. A Regional Studbook exists for North America and Australasia. Develop studbooks for the remaining two regions. Develop an International Studbook for the species, with the possibility of the Australasian region managing the program.

Helarctos malayanus euryspilus:

No management designated at this time. Propose further investigation by the Bear SSC and Ursid GCAP members to assess the population and whether captive breeding is warranted.

Melursinus ursinus ursinus:

Manage the species as a viable population under a global management program (90%, 100 Y). Initially develop two regional management core groups: India and North America. European population should be combined and/or managed together with the North American population. Determine whether Japan would be able to manage a core group. Develop an International studbook for the species, with North America initially managing the program.

Melursinus ursinus inornatus:

No management designated at this time. Propose further investigation by the Bear SSC and Ursid GCAP members to

assess the population and whether captive breeding is warranted.

Selenarctos tibetanus:

Manage animals of unknown subspecies designation in Europe and North America primarily for conservation education programs. However, the flexibility should exist to replace these animals with known subspecific animals to enhance programs in other regions. For example, if the countries in Southeast Asia decide to manage their subspecies in a core management program, it would be possible for Europe or North America to help provide spaces. Recommend contraception* for animals of unknown subspecies.

Selenarctos tibetanus tibetanus:

See above

Selenarctos tibetanus japonicus:

Manage animals as a core population only in Japan.

Selenarctos tibetanus formosanus:

Currently manage captive animals for education conservation programs. Replace existing Asiatic black bear subspecies with *S. t. formosanus*, as the need arises. Conduct further investigation by the Bear SSC and Ursid GCAP members to determine the best approach to manage this population *in situ*.

Selenarctos tibetanus ussuricus:

Manage animals as a core population only in the former Soviet Union.

Selenarctos tibetanus gedrosianus, janiger:

No management recommended at this time.

Selenarctos tibetanus mupinensis:

The Netherlands Zoo Federation will be contacting the Chinese zoos to learn more about the situation of the captive population in zoos.

Ursus americanus:

Manage only for conservation education in North America. Contracept animals currently in captivity to inhibit further reproduction. In regions which are holding *Ursus americanus*, replace with species of interest for that region.

Ursus arctos arctos:

Manage as core population in Europe. Studbook-like data have been recorded for the Scandinavian population. For the future, registration is planned for the region. Contracept animals of unknown subspecific designation and use for conservation education programs. When the occasion arises replace with bears of known subspecies.

Ursus arctos yesoensis:

Manage animals as a core population in Japan. A studbook needs to be developed for this program. It is strongly recom-

mended that only JAZGA members participate in the management of this subspecies. Should cease breeding other subspecies of brown bear held in zoos.

Ursus arctos horribilis:

When availability of animals arises, maintain for conservation education programs in North America.

Ursus arctos middendorffi:

When availability of animals arises, maintain for conservation education programs in North America. European populations should not be expanded and if new animals are required, exchanges should take place with North America.

Ursus arctos syriacus:

Recommendations pending further investigation.

Ursus arctos leuconyx:

No management designated at this time.

Ursus maritimus:

Manage the species as a viable population under a global management program (90%, 100 Y). An international studbook and regional studbooks in North America and in Japan exist.

*Contraception : Individuals of unknown sub-species should be prevented from further breeding. Advantages and disadvantages of different methods will be provided to regions.

This report was submitted by Leslie Johnston, Omaha's Henry Doorly Zoo.



Small Carnivore GCAP Report

The meeting acknowledged the problems regarding taxonomy in the taxa considered in this GCAP. The CAMP had resulted in some species being recommended for management where no subspecies was indicated. The meeting resolved that breeding groups comprised of mixed subspecies should only be used for research (determining husbandry and management techniques) or educational purposes. Following is a review of CAMP recommendations:

Mustelids:

The following species are no longer recommended for captive management: *G. gulo. spp*, *Galictis v. canaster*, *G. v. vittata*; *Spilogale pygmaea* is no longer recommended for an immediate captive breeding program. The decision to breed this species in captivity depends on the results of further field data.

Eira barbara is recommended for immediate captive man-

agement as a surrogate population for *E. b. senex*. This latter program should begin as soon as possible after husbandry and management problems have been resolved. The *E. barbara* and *E. barbara senex* programs should be confined to North, Central, and South American regions and possibly other threatened subspecies once the taxonomy of these is clarified.

The *Mustela lutreola* program (essentially the north/eastern European form) should be expanded as soon as possible. A captive population of 100+ should be provided. This program should essentially be confined to Europe. A program for *M. l. turovi* should be established as soon as possible.

The *Mustela nigripes* program should continue and should be confined to North America. *Vormela peregusna* (no known subspecies) are already in captivity and should be used as a model for the husbandry of *V. p. peragusna*. This should be a European region program.

The *M. flavigula* specimens of no known subspecies should be used as a model for the husbandry of *M. f. robinsoni*.

The group supports the continued development of the *Martes pennanti* program in North America.

Viverrids:

It was suggested that program for *A. binturong whitei* should be delayed until more information on the validity of this taxon is available and that for *Poiana r. liberiensis* be delayed until conservation status is clearer.

For *Viverra civettina*, the group recommends that the possibility of establishing a joint program for this species in Europe and India should be investigated.

A similar suggestion was made for *Viverra megaspila* for North America and Thailand.

It was suggested that research into the captive breeding potential for *Osbornictis piscivora* be evaluated by White Oak, USA who have other research projects running in the regions where this taxon is endemic.

An immediate start on the program for *Chrotogale owstoni* in Europe, Vietnam, and possibly Australia was recommended. An eventual captive population of 100+ is proposed.

The possibility of establishing an immediate captive research program for *Cynogale bennetti* should be examined. The research phase of the program would need 10 animals. An eventual population of 50 is proposed.

The *Cryptoprocta ferox* program should be continued. It should be centered in the European region. Should fresh founders become available they should be included in the population.

The possibility of establishing a captive program for *Eupleres g. major* should be discussed with the Madagascar FIG. This program should be concentrated in USA and Madagascar.

Herpestinae:

Only two taxa of this group were recommended for captive management, *Liberiitis kuhni* and *Mungodictis decemlineata*. The other herpestines that were recommended for captive management by the CAMP remain for future consideration depending on further information.

*Carnivore GCAP...**Procyonidae:*

Most of these programs will be essentially confined to North, Central, and South America. *P. lotor*, and *N. nasua* are not recommended for captive management.

It is suggested that the current *Bassariscus astutus* population be managed and used for research into developing husbandry and management techniques. In the future, these could be replaced by rarer subspecies when and if these become available. This should remain a North American program.

A similar recommendation is made for *Nasua narica*. Some could also be replaced by *Nasua nelsoni* in this species. Much of this program should be confined to North and Central America. The current captive population of *Potos flavus* should also be managed for husbandry and management research and investigation into (sub)specific variation.

The group felt it might be useful to manage the *P. cancrivorus* population in South America. The three island forms of raccoon should have captive management programs established *in situ*. This should be established as soon as possible. Help and assistance from North American zoos should be available.

Currently only few species of small carnivores are maintained in large numbers. Where this is the case and where these species are common in the wild, it is recommended that their numbers be reduced and that their spaces used for more endangered species. In Europe, mustelid spaces should be given to the *Mustela lutreola* and *Vormela peregusna*.

The binturongs currently in captivity should be replaced by *A. b. whitei* if a program for this latter taxon is eventually approved.

Common herpestines could be replaced by *Liberiitis kuhni* and *Mungodictis decemlineata* at a future date.

This report was submitted by Roland Wirth, Germany, and Angela Glatston, Rotterdam Zoo.



Rhino GCAP/GASP Report

Over the last year, the endangerment/extinction crisis for rhinos has intensified significantly with the situation for African black rhino particularly deteriorating and prospects for all other species becoming more precarious. Only 11,000 rhino of all kinds survive in the wild with over half of them being the southern white rhino. These rhino exist in about 40 key populations and areas in just eight countries: four in Africa (Kenya, Zimbabwe, Namibia, and South Africa); four in Asia (India, Nepal, Indonesia, Malaysia).

Efforts by the captive conservation community for rhino are becoming more critical than ever. About 10% of all rhino

surviving on the planet now exist in zoos; again, over half of them are southern white rhino. Twenty-five percent or more of the world's rhino are under some kind of intensive population management.

The global captive programs for rhinos comprise both a GCAP and GASP since the process is: (1) developing general recommendations for captive conservation activities for the family and (2) attempting to integrate the regional programs for each of the species.

An initial GCAP/GASP workshop was conducted in London in May 1992 and a draft GCAP/GASP document was produced through a review process so that a first edition was presented at the CBSG meeting in September 1992. During the last year, the regions of the captive conservation community have further developed their programs with reference to this GCAP/GASP which is now reciprocally being adjusted to reflect these further developments at the regional level. The Rhino GCAP/GASP consists of both *ex situ* and *in situ* efforts.

At this Antwerp GCAP/GASP workshop, *ex situ* and *in situ* working groups were in session and four major issues were considered:

(1) The existing GCAP/GASP was reviewed and refined, e.g., regional target populations were revised.

(2) The *in situ* crisis for rhino was considered and options for support from the captive conservation community were further developed.

(3) A number of specific problems for various regional programs requiring assistance from other regions were considered and recommendations for solutions proposed, e.g. the need for more black and white rhino to reinforce the foundations of the regional programs for these species in Australasia.

(4) Ways were explored to proceed with better development of the both the *ex situ* programs at both the regional and global level and of the *in situ* programs.

In terms of *ex situ*, captive propagation and research programs are in progress for four of the five species: Black, White, Indian, and Sumatran.

(1) The program for the India/Nepalese Rhino (*Rhinoceros unicornis*) seems to be doing well. Captive husbandry for the species seems successful and the population is growing.

(2) The program for the Southern White Rhino (*Ceratotherium simum simum*) has the potential for success in captivity with husbandry of the species apparently adequate but currently the captive population is not self-sustaining and efforts are in progress to remedy this situation.

The situation for northern white rhino (*Ceratotherium simum cottoni*) in captivity continues to be critical but more intensive management measures are intended by the two institutions with this subspecies. Efforts by the captive conservation community to assist the single small wild population continue with a new "adopt-a-park" program underway. The possibility of creating a new sanctuary for the species in Africa outside Zaire to be populated by rhino from captivity supplemented by a few from Garamba has not proven feasible.

(3) The captive population for Black Rhino (*Diceros*

bicornis) appears to be just self-sustaining with major husbandry/health problems continuing but active research in progress. A major international workshop on diseases of black rhino has recently been conducted.

(4) The captive program for Sumatran Rhino (*Dicerorhinus sumatrensis*) is not yet succeeding with both high mortality and total lack of reproduction to date. Two high priorities for this species seem to be:

- (A) more consolidation of the rhino in captivity;
- (B) greater emphasis on intensive management including captive propagation in the range states and natural habitat.

In terms of *in situ* activities, a number of programs to provide both financial and technical support for various species are occurring, but much more is needed. A number of financial options are under consideration that may enable the captive conservation community to provide substantially more funds for conservation in range states. These include:

(1) Options that will emphasize intensive protection and management programs and are envisioned to entail an increasing role for private efforts to supplement governmental activities, which are sorely over-extended.

(2) Options that will also attempt to link the "adopt-a-park" approach with some mechanisms that may enable captive conservation institutions to more feasibly recruit funds to provide this support.

(3) Priorities are:

- (A) Black Rhino:
 - (a) IPZs and Private Conservancies in Zimbabwe;
 - (b) Private conservancies and efforts in Namibia;
 - (c) Programs in South Africa.
- (B) Sumatran Rhino: Intensive management programs in Indonesia and Malaysia.
- (C) These two browsing species are receiving priority because they are the rhino for which successful *ex situ* programs have been the most difficult to develop.

Technical support includes PHVA Workshops that will be conducted over the next 12 months for Sumatran rhino in Indonesia (November 1993) and for Indian rhino in India (December 1993). Major objectives of the Rhino GCAP/GASP for the next year will be:

(1) Attempts to develop a secure financial base for *in situ* activities by various fund-raising activities and partnership programs.

(2) Further development of masterplans within the regions, especially for species and regions where they do not yet exist:

- (A) EEP: Black and Indian. The EEP has decided it is premature to develop a masterplan for white rhino in Europe until more research is completed more information is compiled, and options for additional founder stock are explored.
- (B) ASMP: Black
- (C) SSCJ: Black, White, Indian/Nepalese
- (D) SEAZA: Sumatran
- (E) IESBP: Indian

(3) Activation of an executive committee for the GCAP/GASP consisting of the Regional TAG Chairs and a global coordinator for each of the four species who will be selected by vote of the existing regional coordinators for each species respectively. Major functions for this executive committee will be to work on global masterplans for each species and the attempts to develop funds and programs for more *in situ* support.

This report was submitted by T. J. Foose, International Rhino Foundation.

Primate GCAP Report



This GCAP workshop is embryonic. The role of the working group is to assemble information so that we can decide when and if we should hold a full primate GCAP meeting and the processes that have to be carried out and the stages that have to be reached before this meeting is organized.

Aims

The aims of this GCAP are:

(1) To understand fully the GCAP process: this was outlined by the staff of CBSG prior to the working group meeting and is also outlined in the manual.

(2) To understand exactly what background information is required and from how many regions.

(3) To produce a draft document from the meeting which will outline the goals that need to be achieved.

Tables were provided with crude information on the regions of North America and Europe and accurate information on Australia. Discussions took place on how best to obtain information from the missing regions. Japanese delegates were able to immediately provide data from Japan.

There were studbooks for black lemur, ruffed lemur, lion-tailed macaque, gorilla, chimp, concolor gibbon, mandrill, and orangutan.

Regional Data

Following is a summarization of the status of primate data from the world's regions:

(1) China: A data source needs to be located.

(2) SEAZA: Ron Tilson provided data from Thailand. Australasia (SEAZOOS) had some data from a survey carried out four years ago.

(3) Central and South America: there were data from Brazil.

(4) Madagascar: Data were available, but these should be included with Africa.

(5) Africa: John Spence would provide what data he had for African zoos.

(6) India: Sally Walker suggested recommending to the Central Zoo Authority that there was a need for the information

Primate GCAP...

on primates in captivity in India. Mr. S. C. Shama, Member Secretary, was present at the meeting and would be approached.

(7) North America: The Regional Collection Plan for Madagascar was finished and it is to be used as model. Regional Collection Plans for New and Old World Primates are to be finished shortly.

(8) Europe: A space survey is being analyzed by German Primate Center and it is to be ready for TAG meeting in December. A Regional Collection Plan is then to be developed.

(9) Australia: A Regional Collection Plan was developed.

Decisions

There was no thought of holding a full GCAP until the latter three regions had finished their RCPs. These RCPs are to be distributed to each region for comment and comparison before making a decision on whether to hold a GCAP. The regions are asked to:

- (1) Define the numbers of a species in each region;
- (2) Consider implementation of contraception if too many individuals;
- (3) Target possible numbers in each region based on space survey;
- (4) Provide justification for a GCAP.

A report including the information and comments from each region will be produced and a decision will be made on GCAP recommendations. If recommended, an agenda for comment with possible dates and location will be produced.

This report was submitted by Miranda Stevenson, Edinburgh Zoo.

Felid GCAP Report



The working group involved in the Felid GCAP represented the following geographic areas: North America, Central America, Europe, Arabia, Africa, Asia, Japan, and Australasia. The group's primary objective was to begin defining regional responsibilities based upon suspected global needs as outlined in the original Felid CAMP document produced jointly by the CBSG, the IUCN/SSC's Cat Specialist Group, and the American Association of Zoological Parks and Aquariums Taxon Advisory Group. This document, most recently updated in March 1993, had been prepared with a strong presence by North Americans. Therefore, the first agenda item was to re-visit the 'global recommendations for captive breeding' which prioritized various felid species/subspecies living in five major geographic regions (Africa, Asia, Europe, North America, South America).

The following recommendations were made:

- (1) For Africa, remove caracal and serval from the list requiring captive breeding.

- (2) For Asia, add Arabian leopard and Javan leopard.

(3) For Europe, 'downlist' *Felis silvestris grampia* from 'critical' to 'endangered'; remove *Lynx lynx* from the priority list.

(4) For North America, remove pumas, Canadian lynx and bobcats from the priority list.

(5) For South America, a high priority should be molecular systematics of jaguars. There was considerable disagreement about the need for jaguar captive breeding that only will be resolved after the molecular taxonomy and systematics of this species is understood.

All other recommendations were left unchanged. Therefore, there now is regional consensus that 28 of the 36 wild species of felids should be maintained in captivity. These 28 species represent a total of 43 species/subspecies including the following numbers from each geographic region: Africa, $n = 4$; Asia, $n = 22$; Europe, $n = 3$; North/Central America, $n = 4$; and South America, $n = 10$. There was an unfortunate inverse relationship between geographic needs and working group constituency. For example, the species requiring the most intensive captive breeding management exist in Asia and South America which had very limited representation at this meeting or within the working group.

The next step in the GCAP exercise was to begin to define regional interest which later will evolve into developing more rigorous regional responsibilities. Spreadsheets were constructed and each of the eight geographic regions were asked to include the following information: interest in each specific species/subspecies on the global priority list, the current number of animals of this species/subspecies now maintained in captivity in that region, and the eventual target number desired in the regional population. At the time of completing this exercise, 38 of the 43 high priority species/subspecies had been identified by one or more regions as being desirable for captive breeding. Those not included were the Indochinese tiger, South China tiger, Iriomote cat, Chinese desert cat, Sri Lankan leopard, and Texas Jaguarundi. Spreadsheet data were provided to Dr. Onnie Byers of the CBSG for further analysis and distribution.

Dr. Stephen O'Brien of the National Cancer Institute and his colleagues recently have completed detailed molecular analysis on leopard systematics. He provided a written report which was distributed to the working group.

The recognized subspecies groups which now are being recommended as formal subspecies are: (1) *Panther pardus pardus*, Africa; (2) *P. p. saxicolor*, Central Asia; (3) *P. p. fusca*, India; (4) *P. p. kotiya*, Sri Lanka; (5) *P. p. delacouri*, South China; (6) *P. p. melas*, Java; (7) *P. p. japonensis*, North China; and (8) *P. p. orientalis*, Amur.

In order to involve South Americans interested in felid conservation, it was suggested that a regional Felid CAMP be organized and held at the next annual CBSG meeting to be held in Sao Paulo, Brazil (26-28 August 1994). This would be a great opportunity to involve South American biologists.

This report was submitted by David Wildt, National Zoo.

Crane GCAP Report



Approximately 12 captive-crane managers and several individuals interested in conducting GCAPs for other bird species met at the CBSG annual meeting in Antwerp. Two follow-up meetings were held within the next week with representatives of the European and North American Crane TAGs to broaden input and participation. The goals of these meetings were: (1) to summarize and evaluate data on the captive status of cranes, (2) to review CAMP recommendations, and (3) to develop strategies to achieve the CAMP recommendations.

A considerable amount of work had already been accomplished on organizing captive management of cranes. Several workshops have been held including the Crane CAMP, five PHVAs (Whooping, Red-crowned, Siberian, Mississippi Sandhill, and Wattled Cranes), and two GASPs (Red-crowned and Siberian Cranes). International studbooks exist for six of the fifteen species and regional studbooks exist for these species plus two more. Four regions (Europe, including Russia and the U.K., North America, Japan, and China) have established species management plans covering six species. Crane Taxon Advisory Groups (TAGs) have been officially established in Europe and North America. Japan and China are developing similar mechanisms for coordinating work for all cranes within their regions and with other crane advisory groups. Representation from Africa will also be sought through the Pan African Association of Zoological Gardens. Additional useful data were obtained through the new ISIS TAG Report, ISIS abstracts, and the African Crane and Wetland Training Workshop.

The CAMP recommendations for captive breeding as part of a conservation strategy were reviewed. The CAMP results were based solely on the status of each individual taxa which included potentially isolated populations and subspecies. The GCAP participants felt that on the basis of optimizing use of captive resources, the level of management for separate populations and subspecies should be examined in light of conservation needs based on species status. The recommendations of the GCAP for changes in level of captive management are:

- (1) Hold decision on the establishment of the African population of Demoiselle Cranes until surveys are completed.
- (2) Decrease level captive management from I-2 to nucleus for the Asian population of Demoiselle Cranes.
- (3) Change Cuban Sandhill Crane from I-1 to pending results of survey. Plans to initiate surveys were discussed.
- (4) Change Okefenokee population of Florida Sandhill Crane from I-2 to no program.
- (5) Change Indian Sarus Crane from I-2 to nucleus.
- (6) Change Brolga Crane from I-2 to nucleus.
- (7) Change Eurasian from I-2 to no program.
- (8) Change the Japanese population of Red-crowned Crane from I-2 to pending genetic analysis of population differences.

Priorities were determined for the establishment of captive programs. The eight taxa which were assigned A priority already

have programs well underway. The three taxa assigned B priority are currently under development. The eight taxa assigned C priority are already well represented in captivity and should have their populations loosely managed to insure adequate preservation of genetic variability and to manage population growth.

Current population sizes for each taxa by regions were estimated. Data are minimal estimates. The number are fairly accurate for the endangered cranes. Estimates for more abundant species are likely to be underestimates due to unknown numbers in private collections.

World captive population targets were established based solely on conservation need. A number of captive populations exceed the number of managed individuals required to meet conservation objectives. It is acceptable to the GCAP participants for individual regions to choose to maintain populations of these cranes beyond global targets for education and display. However, the populations should be monitored and reallocation of breeding spaces to endangered taxa with similar captive ecologies should be considered by the TAGs. Taxa other than cranes needing more intensive captive management should be considered.

For the ten taxa recommended for Intensive-I management, five species have adequate numbers of founders, but population sizes should be increased. Three taxa have numbers higher than necessary if the populations are well-managed. Two subspecies of Crowned Crane may have adequate numbers but identification of which subspecies are held needs to be completed. For the seven species recommended for I-2 management, the two priority species need to have populations increased. Four others have populations exceeding targeted numbers. Two nucleus populations need to be increased and one population is very high. Only two of the five populations recommended for no captive program have small numbers in captivity.

In summary, adequate captive stock are available for all programs except possibly Asian Sarus, Brolga, and the species with status pending. *With these few exceptions, no wild birds or eggs should be collected for captive breeding programs.* Some egg collections may be appropriate for releases.

Preliminary regional target populations to achieve these world goals have been submitted for North America, China, Africa, and Australasia. The Europeans and Japanese have indicated they are working on targets for their regions. It needs to be determined whether other collections in Asia will function separately or collaborate with another region such as Japan or China. Most taxa of cranes can be easily bred if current knowledge on facilities, husbandry, and reproductive management are applied. However, additional husbandry research is needed for the West African Crowned, Wattled, Siberian, Mississippi Sandhill, Hooded, Whooping, and Black-necked Cranes.

International studbooks need to be established for the West African Crowned, Blue (Stanley), Asian Sarus, and Brolga Cranes. Global Animal Survival Plans should be established for Wattled, White-naped, Hooded, and Black-necked Cranes. Whenever possible, international studbooks or GASPs should be

Crane GCAP...

coordinated by the country of origin. For well-represented species requiring management, it may be appropriate to establish studbooks for core populations with known genealogies. Regional management plans were recommended for West African Crowned, Blue, Australian Sarus, Asian Sarus, Brolga, and Eurasian Cranes.

Release programs are underway for Siberian, Mississippi Sandhill, Asian Sarus, Whooping, and Red-crowned Cranes. Release are under discussion for West African Crowned, the African population of Demoiselles, and Blue Cranes. A PHVA is planned for the Asian Sarus Crane.

A draft document is being prepared. This will be broadly circulated for input especially to captive crane specialists who were unable to attend. Anyone wishing to receive a copy should contact the CBSG office.

This report was submitted by Claire M. Mirande, International Crane Foundation.

Cervid GCAP Report

In March of 1993, a Cervid CAMP was convened in San Diego to generate CAMP assessments and recommendations as well as to generate interest among zoos in these Artiodactyls. One purpose was to demonstrate that cervids had more endangered, threatened, and vulnerable forms when compared to bovids, although cervids are less well-represented in captivity. Prior to World War II, there were comprehensive collections in both Europe and North America. A majority of the cervids, principally antelopes, were eventually replaced by bovids. The great variability among the bovids may have played a role in replacing cervids in zoological collections because the cervids are a rather uniform group of animals as a whole.

Geopolitical divisions after World War II made the acquisition of a number of cervid species and subspecies extremely difficult. This also played a role in the reduction of varieties found in zoological collections. With the political changes that have taken place over the last few years, it is now possible to acquire cervids that have been absent from collections for many years, as well as some which were almost unknown outside of their range states. Attention must now be given to their conservation and captive propagation because of the increased pressure that this family is under as a result of the breakdown in adequate protection (particularly in the Republics of the former Soviet Union), loss of habitat, poaching, and the introduction of exotic cervids into indigenous cervid habitat.

Items of Concern

As has been pointed out in the minutes of the Caprine

Workshop, the ISIS taxonomy still remains a problem which often prohibits the accurate entry of data. However, errors have been made in entering data, whereby animals have been put under the wrong taxonomic units. If ISIS entries are made by a clerical person who does not have adequate training, they should at least be assisted by the appropriate curator in order to ensure that ISIS receives data input as accurately as possible.

Current and Target Populations for Zoological Gardens

At the San Diego meeting, projected targets were established not only for North America, but also for the other regions of the world. It may have been presumptuous to make decisions for other parts of the world; therefore, input from members of the zoological community in regions outside of North America would be most appreciated.

Space Allocation

A survey was mailed to all North American institutions that are members of AAZPA to ascertain the amount of space for cervids available in their collections. The results were extremely discouraging, with few institutions prepared to make room for captive breeding programs, the one exception being *Pudu pudu*.

There are, nevertheless, a large number of spaces in North America occupied by species or subspecies whose captive propagation serves no conservation purpose. It was suggested that the following cervids be managed to extinction in North American collections:

- All numbers of the genus *Odocoileus*
- All wapiti listed in ISIS as *Cervus elaphus canadensis*, a subspecies which has been extinct for over 150 years
- All sika listed in ISIS as *Cervus nippon*
- *Dama dama dama*
- *Axis axis axis*
- All red deer listed in ISIS as *Cervus elaphus*

It was suggested that the following cervids be managed to extinction in European collections:

- All wapiti listed in ISIS or inventoried as *Cervus elaphus canadensis*
- All sika listed in ISIS as *Cervus nippon*
- *Dama dama dama*
- *Axis axis axis*
- All *Cervus elaphus* of European or Middle Eastern origin
- *Capreolus capreolus*

This report was submitted by Jim Dolan, Zoological Society of San Diego.



Futures Search...

Critical issues were grouped into themes influencing CBSG activities. The themes were formulated as: (1) fostering a global vision, (2) management of relationships between stakeholders, (3) need for decision-making tools functional in a global network, (4) threat evaluation and priorities for resources, (5) follow-up on the implementation of Workshop recommendations, (6) response to philosophical challenges and opposition to (a) the role of zoos and captive breeding in conservation and (b) the use of risk assessment tools applied to ecological problems based on currently available and always inadequate data, (7) improve perceptions of the process and its uses, and (8) institutional survival and funding.

Priorities for Action

Our highest immediate priorities for CBSG core functions and for implementation of the priorities developed in the Futures Workshop are: (1) add another Program Officer with responsibility for the PHVA Process, (2) develop the CBSG Financial Plan, (3) further integrate CBSG products, processes, and programs into the SSC and IUCN programs and securing IUCN financial support, (4) initiate a newsletter for the Regional Conservation Coordinators as a means of communicating results of the CAMPs and GCAPs, (5) secure support funding for the CBSG Newsletter, (6) develop and conduct the first Facilitators Training Workshop, (7) seek the participation of other information contributors to the Global Directories, (8) identify and appoint regional vice-chairs, (9) continue to expand participation in regional CBSG meetings, (10) translate several manuals into Thai, Indonesian, Spanish, French, and Chinese, and (11) produce a more frequent newsletter for contributors to provide a more information about ongoing activities, reports of workshops, and planned activities.



Ulie S. Seal, Chairman

MAY WE DISCUSS ANOTHER ISSUE?



The *CBSG News* is currently distributed to a network of over 7,000 CBSG members and conservation professionals in 170 countries. In order to keep up with increasing expenses for the printing and distribution of the *CBSG News*, we are asking for contributions from readers in hard-currency countries who feel they can afford to help us defray these costs. If you would like to assist the CBSG with these expenses, please take a moment to fill out the coupon below. *Suggested contribution is \$25 (U.S.).*

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NEWS



Newsletter of the International Species Information System

Vol. 3, No. 2

Updating the Institution / Geography List

ISIS is preparing to offer an updated institution / geographic file for ARKS and SPARKS. The new file contains many additional facilities and recognizes more synonyms. It includes changes made to keep up with political events of the last few years, including the unification of Germany, the breakup of the former Soviet Union, and of the former Czechoslovakia. It also includes a small number of changes which bring it closer to following the studbook convention of using city names for zoological institutions wherever possible - i.e. Columbia will be the preferred and printed mnemonic for Riverbanks Zoological Park. It also updates the "flags" that indicate that a facility is a member of ISIS - and hence their Vendor Specimen ID is a required field on acquisition of a specimen from them.

This update has been requested by many ARKS and SPARKS users. It is taking some time to prepare, because it is more complex than it might seem. First, the update process must save any changes you have made to your own list (we do this by using an update program to scan your list, moving items changed/added by you to a separate file, replacing the old institution list file with our new one, and then add your changes and additions back into the new one). Second, this will be the first time we have ever *changed* institution names and codes for zoological facilities. This means actually changing *your* data - as these names and/or numeric institution codes are stored in your records. Animals that were recorded at Riverbanks will now be recorded at Columbia; records referencing the Leipzig Zoo, formerly in East Germany, will now reference the Leipzig Zoo, Germany. The old institution codes will be retained in the institution list for historical reference, as synonyms for the new ones. No historical information will actually be lost - the date of a transaction plus a history book will always tell the curious which political entity was relevant.

Because the update programs will change your institutional or studbook data to this extent, we are spending considerable time and effort on their development and testing. We will of course recommend that you do a Backup immediately prior to running the update program - in case you don't like the results for some reason.

The new institution and geographic list file (INSTLIST.DBF) is larger than your current one. The difference is only significant for ARKS users. You will now need an additional 1 to 1.5 megabytes of hard disk space to run ARKS.

We plan to distribute these new files and accompanying update programs during the next few months - by sending them to you as we return your monthly disk and mailer.

New Bank Electronic Routing Number!

Effective 14 June 1993, the routing number for paying ISIS bills by inter-bank wire transfer, has changed (this change is due to purchase of our bank by another bank). When using the inter-bank wire, please note the following on your materials:

The First Bank Minneapolis (Nat'l Assoc.) ABA#: 091000022
Int'l Species Information System (ISIS) Account#: 110006149774



SPARKS

SPARKS version 1.2 was distributed to all registered users in May. The new version is our first in FOXPRO - the "Xbase" dialect which ISIS has adopted for all systems. This update contains several enhancements and several small "bugfix" items. On modern computers (386 or 486, 4MB of RAM) this new SPARKS is several times faster than the previous Quicksilver SPARKS 1.11. The Minnesota Zoo, which updated their Tiger studbook computer from a 286 to a fast 486, and changed from SPARKS 1.11 to SPARKS 1.2, reports nearly *100 times* faster performance! Their new computer is 20-30 times faster than their old one, and in addition the new SPARKS runs 2 - 4 times faster than the old SPARKS version on such machines. This update to 1.2 was funded in part by an IMS grant to Riverbanks Zoo, Columbia, SC - to whom we're grateful.

SPARKS 1.2 was carefully designed so that it *will run* on any PC with 640 K RAM, however we do not recommend it. On start-up the program checks the machine and runs either a "conventional" memory version, for machines with less than 4MB of RAM, or an "Extended" memory version, for qualifying machines with 4 or more MB of RAM. Though it will run, we have received reports that some features of SPARKS 1.2 are noticeably slower than SPARKS 1.11 on 8088 PC's and 80286 "AT-class" machines. Unfortunately, there does not seem to be much we can do about this.

New features in 1.2

- FOXPRO-based speed
- New "browse windows" for specimen data and institution list
- Modern printer install (pick from a supplied list of printers)
- Batch data validate now built in to data-entry menus

Bug fixes in 1.2

- Fecundity value calculation when view is set has been revised - it now gives lower values.

Reported bugs in 1.2

- Saving a deferred report to a file - when prompted for a file name, if you enter a name (i.e. TEMP) without a period or file extension the report is saved as TEMP.DBF - some users had trouble finding it in their directory, or worried that it somehow had

become a database. In fact, the report contents are fine, just saved under a modified default file name with an incorrect extension. The work-around solution is to be sure to use a period or a full extension when specifying what file name to save a report to (i.e. TEMP. or TEMP.RPT). This has been fixed for version 1.3 (see below).

- "Database not ordered" - this message appears when running a report *after* doing Institution List browse or maintenance. The work-around solution is to simply exit SPARKS and start it again. This has been fixed for version 1.3 (see below).
- "Sagging window" - when in Data Entry and you go to edit "Event" transactions some users have reported that the browse window that contains the transaction records is hidden. If you look at the very bottom of your screen you will see a bar with "MOVES" in the middle of it. This is the top of the browse windows that you should see. All that is needed is to move this window up, and some will have to resize the window. Type Control+F7 to move the window and Control+F8 to resize the window, after you have repositioned the window with your cursor keys (→,←,↑,↓) hit enter.

Make sure that you don't cover up the bar that tells you what the function keys do!

Future plans . . .

Ver. 1.3 in development

Thanks to the Riverbank Zoo's IMS grant, ISIS has programmer resources to add several additional "studbook" features to SPARKS. These are now being added to the FOXPRO version. They include mailing labels, flexible pagination, fast on-screen browse of an institution's current inventory, etc. SPARKS version 1.3 is planned for release in the 4th quarter of 1993.

ISIS TAG Report - bugfix

ISIS now offers "TAG Reports" on request. These provide powerful global and regional overviews of the status of each taxon within a Genus or Family. We have detected a small (5%) error in the census figure these reports contain - they have shown a census about 5% below that shown in the ISIS Abstracts for the same date. With the help of Frank Princee of the Dutch Zoo Foundation and EEP Office (who wrote the TAG Report calculation routines), we have corrected this small discrepancy. Anyone wanting a TAG Report - or a slightly corrected one - please contact ISIS.

ARKS 2 Problem for a few

About 30 members who received their first-ever ARKS system between June 1992 and February 1993 are affected by a bug which causes Special Data comment text lines to save and print only the first half (30 characters) of each line, group counts to be limited to 9, and taxon reports to show some incorrect removal dates. The problem has been traced to an error in the data structure established by the ARKS 2 extract programs on our new ISIS 3 database, and has been corrected. A special program, "FIXIT", has been developed which fixes this problem. If your ARKS 2 system exhibits this problem, and you have not already received FIXIT, please contact ISIS.

DOS 6.0 and BACKUP

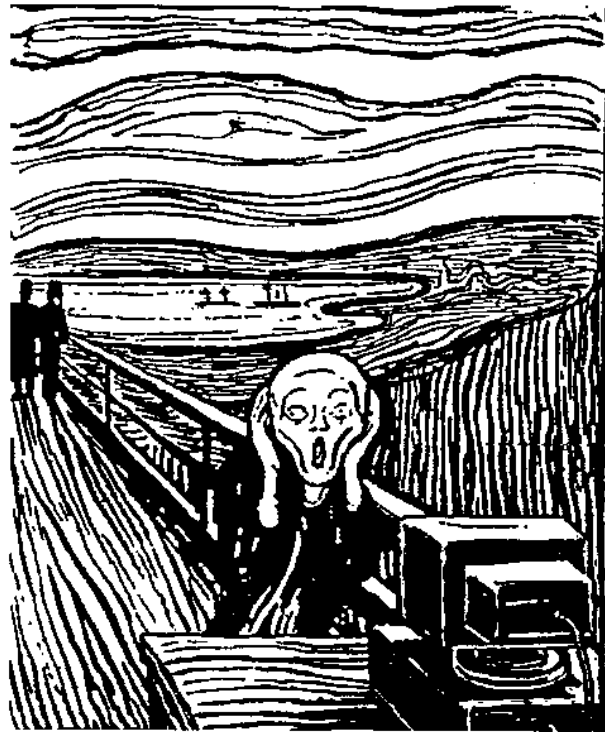
The current ARKS Backup and Restore utilities do not work with MS-DOS 6.0. The current ARKS utilities use DOS' BACKUP and RESTORE commands, these commands no longer exist in MS-DOS 6.0. Therefore, we have rewritten the ARKS' Backup and Restore utilities for those users with MS-DOS 6.0. Users with any version of DOS can change to these new utilities because they are DOS *independent*. Backups with these new utilities will also use fewer diskettes.

These rewritten utilities make use of the PKZIP and PKUNZIP utilities and a utility called SLICE.COM to do a backup or restore of your ARKS data.

To obtain and implement these new versions of BACK and RESTORE contact the ISIS office or download them from our bulletin board [(612)432-9292 settings of N,8,1].

BACKUP!

Regrettably, a member zoo recently lost part of their ARKS collection data due to a failure to backup ARKS routinely - and to check the backups made. The data lost was Special Data comments, and Enclosure log - as these are not sent to ISIS. The institution had been sending monthly files to ISIS regularly, so we were able to send them a new ARKS system containing all of their other specimen data, through the end of the previous month. At the time their hard disk failed, they had just one real backup on hand, several months old and by unfortunate coincidence damaged and unreadable. The ARKS backup procedure had, for some reason, stopped functioning, although it wrote one empty disk each time they ran the ARKS Backup utility.



Do you have a good recent backup?!

We very strongly urge that you make backups frequently (at least weekly), that you keep the last several backups, that you *permanently archive* (in a different location) one set of backup disks at least 4 times a year, and that you be skeptical - periodically try restoring from the backup set you have just made, and be on the alert for signs that your backup system is not functioning.

In the eight years since we first released ARKS, only a handful of the 400 member facilities who now depend on it have lost any data due to computer failure. This is a testimony to many responsible people routinely running backup procedures, since the expected lifetime of the average hard disk is about 3 years. We frequently hear of, or assist with, restoration of ARKS and SPARKS data from a recent backup after a computer hard drive failure. We hope the weekly backup reminders from ARKS have also helped. However, even a handful of losses is too many. Please remember that it seems as if computers have a special circuit which detects vulnerability - they seem to fail the day before you had finally planned to find time for that backup!



Australasian visitors to ISIS

Christine Hopkins, ASMP Coordinator based at Sydney, and Kevin Johnson of Melbourne Zoo, soon to be ASMP database manager, visited ISIS for a busy two weeks at the beginning of May. The purposes of the visit were to develop closer coordination, and to look for ways to better integrate ISIS 3 and ARKS systems with the newly rewritten (in FOXPRO) Australasian regional planning system, REGASP2. REGASP offers several functions, most notably a way for individual institutions to share their individual future collection plans at the species level, in the context of any coordinated plans that may exist for the species.

Several good ideas were developed over many hours of discussion, along with better coordination and understanding on many issues. Kevin also contributed significantly to advance user-testing of the emerging ARKS 3 software.

Dam/Sire Spec ID and Inst on Loans, etc.

Thanks to the American Registrar's Group, we became aware last Fall that some records-persons have adopted the practice of recording their own institution's Spec ID paired with the loaning-institution's institution name - so that ARKS 2 Reports will show both their own specimen identifier, and the loaning institution, conveniently. Those doing this were aware that it was not consistent with the instructions for ARKS 2 or ISIS, but did not see that there would eventually be a problem.

Unfortunately this practice creates *mixed* pairs of the critical data used for specimen identification at ISIS - the combination of Spec ID, Institution, and taxon is what ISIS uses for uniquely identifying a specimen.

The result of this practice is that ISIS may be unable to reliably trace the pedigree for such animals. As specimen history and ancestry are in growing demand, this likely means extra work later on "cleaning up" these scrambled entries.

ARKS 3 reports do a better job of reporting the loaning institution .

ISIS and CITES

The national governments who are parties to the Convention on International Trade in Endangered Species (C.I.T.E.S.) adopted some interesting resolutions at their meeting in Kyoto, Japan, last summer. The resolutions call for: (1) use of transponders to mark live animals in trade under Appendix I, and trade for exhibition under Appendix II, (2) adopt the CBSG standard for transponders, and (3) propose that ISIS contract with CITES to provide a registry and database services on these transpondered live animals in trade under CITES.

ISIS already has a database tracking some transpondered live animals shipped internationally, so this proposal is an expansion of our existing work, not a radically new initiative. We are presently discussing a possible contract with the CITES Secretariat in Geneva, Switzerland. We are particularly interested in looking for possible ways such an arrangement might eventually reduce paperwork for institutions which have already shared their information on a specimen, through registering it with ISIS. There does seem to be an opportunity to use the new ISIS 3 central database to develop evidence that many more species are "reliably bred to the F₂". This would simplify the permit process for international movement in these cases, so we are pursuing this.

Transponder Data

ISIS has now received about 2700 transponder records, and the number is now rising more rapidly. These promise to be very useful for tracing specimens, but some recording consistency within and among institutions will be required. We encourage simple entry of the transponder's code (ARKS 3 will have a separate field for the location of the implant). However, a scan of the 2700 records received so far shows some users are entering transponder numbers in ways that will be make them hard to use for tracing. The problem entries include:

- "#" as a prefix
- "CHIP" as a prefix
- "Brand name" as a prefix
- variably placed internal spaces and hyphens

- #7F7E406468
- CHIP 001B FCDC
- AVID7F73350D4B
- 7F7E6C6C19 versus 7F7E-6C6-C19, etc.