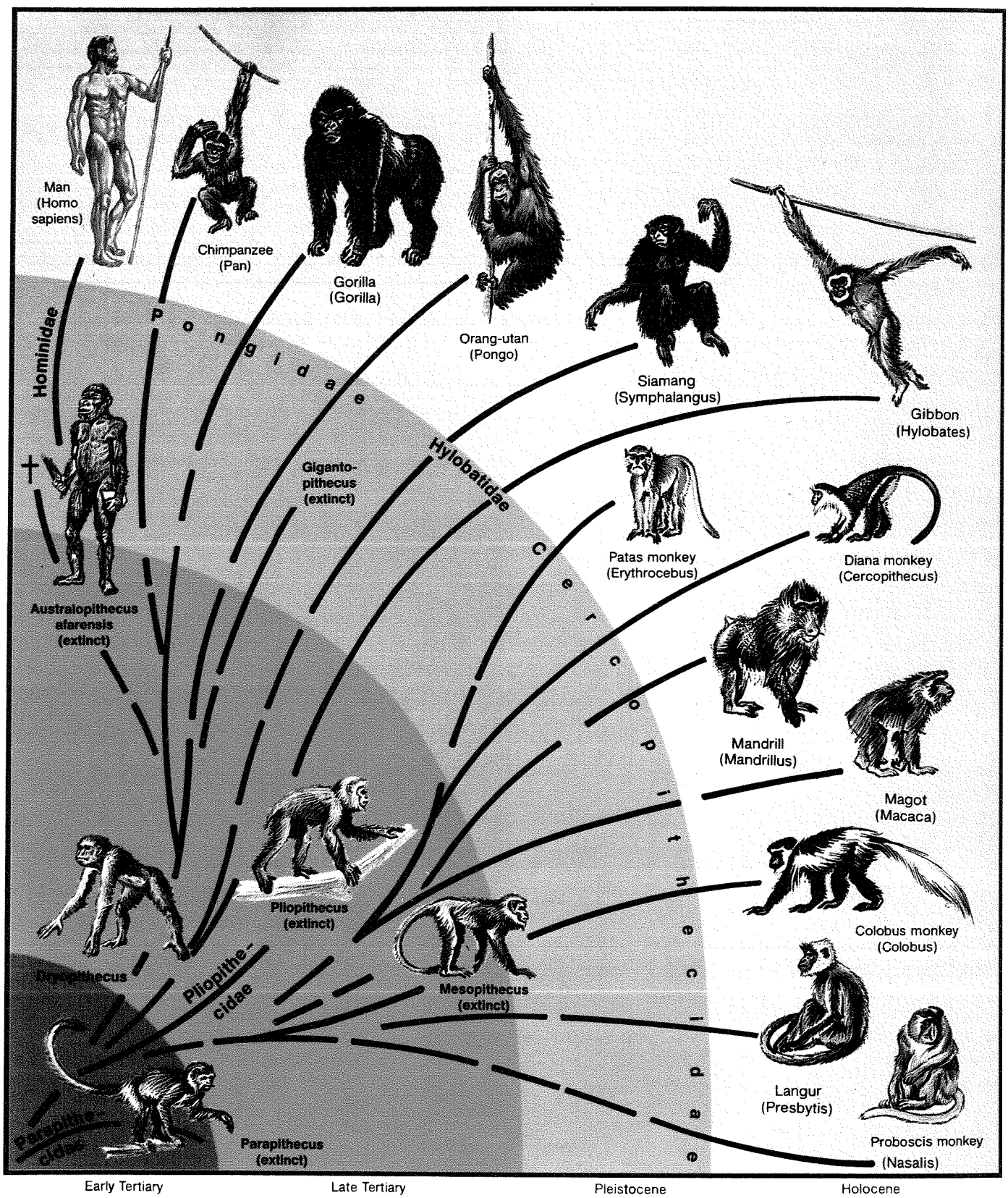
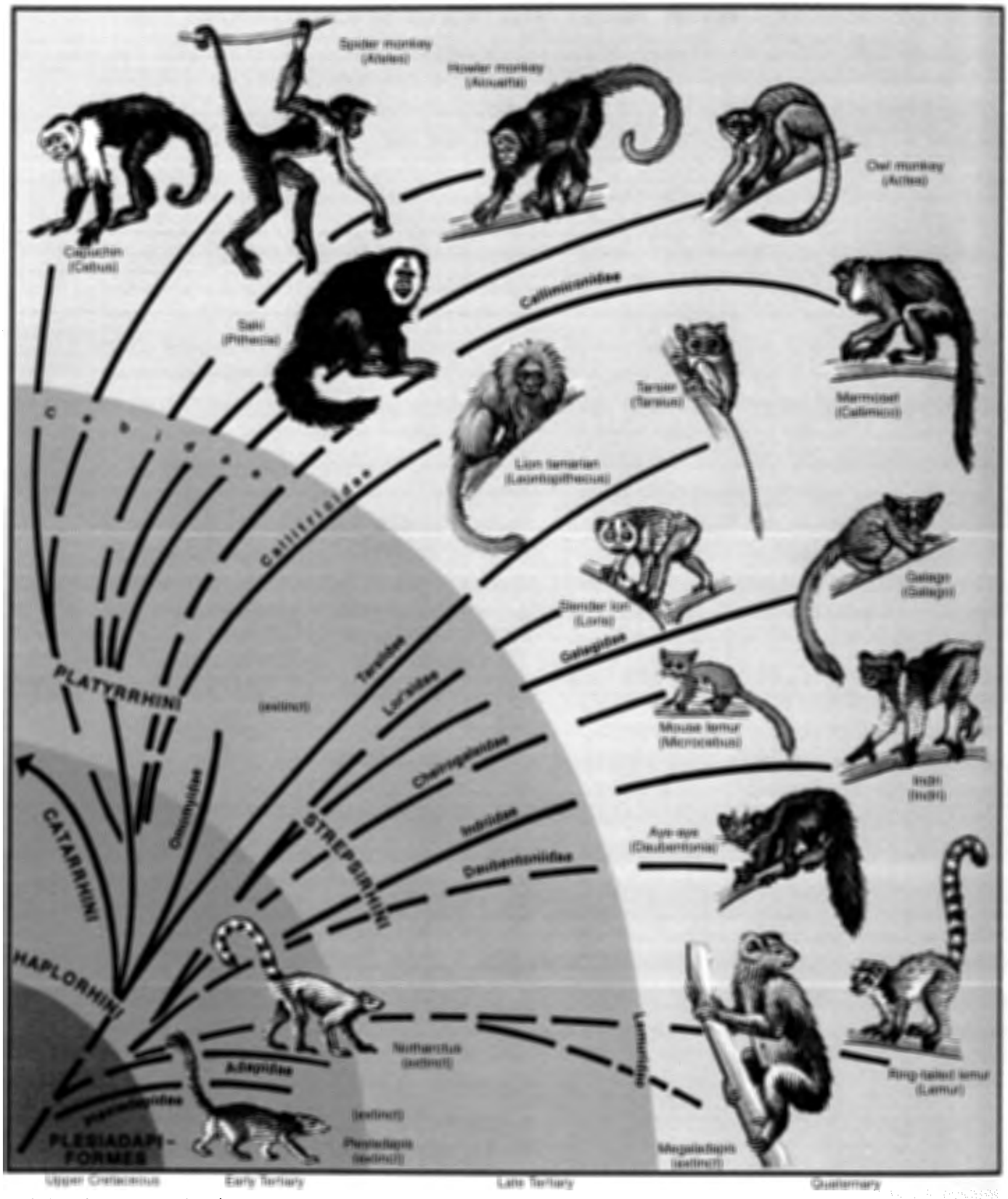
PRIMATE Global Captive Action Plan

Regional Captive Propagation Programs



Evolution of the Old World monkeys, apes, and humans. The siamang *Symphalangus* has recently been assigned by some authors to the genus *Hylobates (H. syndactylus)*.



Evolution of prosimians and New World simians. *Lepilemur* (sportive lemurs) and *Megaladapis* (giant lemur) are often regarded as belonging to separate families.

GLOBAL
CAPTIVE ACTION PLAN

for

PRIMATES

August 1992 Edition

Compiled by

Miranda Stevenson, Ph. D.
Royal Zoological Society of Scotland

Anne Baker, Ph. D.
Chicago Zoological Society

Thomas J. Foose, Ph. D.
Captive Breeding Specialist Group

Regional Captive Propagation Programs

SPECIES SURVIVAL COMMISSION

A Joint Endeavor of the

IUCN SSC Captive Breeding Specialist Group
&
Regional Captive Propagation Programs

CONSERVATION INTERNATIONAL

Sultanate of Oman

with Support from

the Sultanate of Oman through the Peter Scott Fund of the IUCN SSC &
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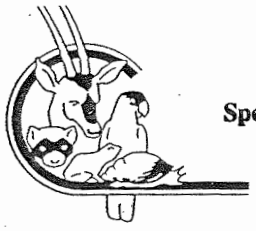

Conservation Breeding Specialist Group
Species Survival Commission, IUCN - The World Conservation Union
U.S. Seal, CBSG Chairman

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PRIMATE GLOBAL CAPTIVE ACTION PLAN

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PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 1

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

- A Global Captive Action Plan (GCAP) is initiated for Primates. The GCAP is a process to enable the Regional Captive Conservation Programs to coordinate development of their Regional Collection Plans in order to optimize utilization of captive space and resources worldwide for primate conservation.

- This first step in the development of a Primate GCAP is based on a Conservation Assessment and Management Plan (CAMP) that has been conducted for Primates (Stevenson et al. 1992).

- The Primate GCAP:
  1. recommends
     - A. which taxa in captivity should remain there;
     - B. which taxa in captivity need not be maintained there for conservation reasons;
     - C. which taxa not yet in captivity should be there to assist conservation efforts;
  2. proposes a level of captive breeding program in terms of genetic and demographic objectives, which translate into recommendations about global captive target populations;
  3. suggests how responsibilities for captive programs might be divided among the Regional Programs, which translate into recommendations for regional captive target populations;
  4. identifies priorities for technology transfer to and for financial and other support for *in situ* conservation.

- A total of 60 genera, 239 species and 512 distinct "taxa" (subspecies or species if no subspecies are contained therein) of primates are recognized for purposes of this GCAP:

Africa	18 genera	67 species	156 taxa
Madagascar	14 genera	31 species	49 taxa
Asia	13 genera	63 species	136 taxa
America	16 genera	77 species	172 taxa

- 138 of the 239 species (58%) and 221 of the 512 taxa (43%) are assigned by the CAMP to 1 of 4 categories of threat, based in large part on the recent Mace/Lande criteria:

Critical	59 taxa
Endangered	69 taxa
Vulnerable	93 taxa
Not threatened	291 taxa

- 229 taxa are recommended for 1 of 4 levels of captive program, which are explained in the text:

90%/100 I	77 taxa
90%/100 II	41 taxa
Nucleus I	40 taxa
Nucleus II	71 taxa

- In terms of the geographic distribution of origin of primate, the recommendations for captive programs are:

Africa	50 taxa
Madagascar	38 taxa
Asia	63 taxa
America	78 taxa

- All 60 genera of primates are represented in the recommendations for captive programs. 163 of the 239 recognized species of primate are represented in the recommendations for captive programs. 76 species are not represented in the recommendations for the captive breeding programs.

- 67 primate taxa which are not currently in captivity are recommended for possible captive breeding programs.

  However, captive programs for these taxa should be initiated only at the request and with the approval of the IUCN SSC Primate Specialist Group in accordance with a set of criteria that is being developed by the CBSG and the PSG.

- Approximately 16,000 living primate specimens are currently registered with ISIS. It is estimated that these 16,000 primate spaces represent about 50% of the captive habitat available for primates worldwide. Hence, it is estimated there may be 32,000 captive primate spaces worldwide.

- 32,000 primate spaces would permit a captive nucleus of about 134 individuals for each species and at least 60 individuals for all 512 taxa.

- Regional captive propagation programs are currently in progress for 43 taxa of primates in at least 1 Region of the zoo world. Global programs have been organized for 5 primate taxa.

- International and/or Regional Studbooks are being maintained for 47 primate taxa.

PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 2

GLOBAL CAPTIVE ACTION PLAN NARRATIVE

INTRODUCTION

This document is an initial outline of the Global Captive Action Plan for Primates. The GCAP is a process to enable the Regional Captive Conservation Programs to coordinate development of their Regional Collection Plans in order to optimize utilization of captive space and resources worldwide for primate conservation. Thus, this GCAP will be a living document that will be revised in an iterative and interactive process by the Regional Captive Conservation Programs of the zoo world with the facilitation of the IUCN SSC Captive Breeding Specialist Group (CBSG) and with input from field primatologist especially through the IUCN SSC Primate Specialist Group (PSG). Indeed, this first step in the development of a Primate GCAP derives in large part from a Conservation Assessment and Management Plan (CAMP) for Primates (Stevenson et al 1992) that has been developed by the IUCN SSC Captive Breeding Specialist Group in consultation with the IUCN SSC Primate Specialist Group and representatives of the Regional Captive Conservation Programs.

PREAMBLE

Problems of Small Populations

Reduction and fragmentation of wildlife populations and habitats is occurring at a rapid and accelerating rate. The results for an increasing number of taxa are small (i.e. a few tens to a few hundreds, or at best a few thousands) and isolated populations that are in danger of extinction.

In addition to the deterministic threats of habitat degradation and unsustainable exploitation, stochastic problems also can imperil the survival of small populations. Stochastic events are random and therefore difficult to predict. However, careful genetic and demographic management of small populations can moderate many of these stochastic problems. The problems of small populations apply to species in both the wild and in captivity. Much of the methodology for managing small populations being developed by the captive community may be useful for management of small populations in the wild.

Stochastic problems can be environmental, demographic, or genetic in nature. Environmentally, small populations can be devastated by catastrophes or decimated by less drastic fluctuations in environmental conditions that can impair survival and fertility of individuals. Catastrophes (e.g., droughts, floods, epidemics) are increasingly recognized as severe threats to small populations. Demographically, even in the absence of deleterious fluctuations in the environment, small populations may develop intrinsic demographic problems (e.g., biased sex ratios, unstable age distributions, or random failures in survival and fertility) that can fatally disrupt propagation and persistence. Genetically, small populations can rapidly lose heritable diversity that is necessary both for fitness under existing environmental conditions and for adaptation to changed environments in the future. The smaller the population and the more limited it is in distribution, the greater these stochastic risks will be. To be successful, conservation strategies and action plans for threatened taxa must be based on viable populations, i.e. sufficiently large and well distributed to survive stochastic risks as well as deterministic threats.

Management and Metapopulations

The first and foremost priority of any primate conservation strategy should be ecosystem preservation. Ideally, sufficient wild habitat should be protected and preserved. However, adequate habitat protection may not be feasible or sufficient. Management of wild populations and habitat may be necessary. Viable population strategies may often require that the taxa be managed as metapopulations, i.e. systems of disjunct subpopulations that are interactively managed with regulated interchanges among the subpopulations and with interventions within the subpopulations to enhance survival of the taxon. Moreover, in some instances captive programs also may be needed to augment wild populations.

Captive Components of Conservation Strategies

Viable metapopulations may need to include captive components (Foose et al 1987) (Figure 1). However, captive breeding should be only one component of a comprehensive conservation strategy. The paramount purpose of captive programs must be to assist survival and recovery of populations in the wild. Captive populations support, but do not substitute for, wild populations.

In general, captive populations and programs can serve four roles in holistic conservation strategies:

(1) Living ambassadors that can educate the public at all levels and can generate funds for *in situ* conservation.

(2) Scientific resources that can provide information and technologies beneficial to protection and management of populations in the wild.

(3) Genetic and demographic reservoirs that can be used to assist survival or recovery of taxa in the wild either by revitalizing populations that are languishing in natural habitats or by re-establishing populations that have become extinct.

(4) Limited but often catalytic and critical financial support for in situ conservation efforts, especially through "adopt-a-park" programs.

The third of these roles, captive propagation programs, may often be a benefit for the longer term as return to the wild may not be a prospect for the immediate future. However, 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. There may be many problems with such interchanges including epidemiologic risks, logistic difficulties, financial limitations, etc. However, based on limited but growing experience, these problems can be resolved if enough serious effort is exerted. The bottom line is that strategies and priorities should try to maximize options and minimize regrets. Captive propagation can contribute significantly to this goal.

The IUCN Policy Statement on Captive Breeding (IUCN 1987) recommends in general that captive propagation programs be a component of conservation strategies for taxa whose wild population is below 1000 individuals.

However, a captive breeding program for a taxon not currently in captivity should be initiated only after the proposed effort has been thoroughly evaluated against a set of established criteria that is mutually agreeable to the CBSG and the PSG. The IUCN SSC PSG and CBSG are encouraged to organize a group from their membership to formulate such a set of criteria and to recommend a process for evaluating proposed new captive breeding programs. The process should be as objective and rigorous as possible. It is already recommended by the CAMP and by this GCAP that a population and habitat viability assessment (PHVA) may be a valuable part of this evaluation process. The evaluation process must also be one that can be accomplished in an efficient, effective, and timely manner. Ultimately, the recommendation to actually initiate a captive breeding program for a taxon not in captivity should emanate from wildlife managers in the country of origin of the taxon and be conveyed to the captive community through the Primate Specialist Group.

Whenever possible it is recommended that captive programs be initiated in the country of origin. Country-of-origin programs: provide educational programs in the places where they are likely to have the greatest immediate impact; involve fewer stressful changes for the animals involved; and provide an opportunity to demonstrate to local officials the value of those species that are their natural heritage. Subsequently, the captive breeding program should probably be expanded to facilities outside the country of origin to achieve a population size and distribution that will maximize security of the taxon. Such expansion will also enhance the first two functions of captive programs described earlier.

STRATEGIC CONSERVATION ACTION PLANS

As natural habitats decline, a large and growing number of taxa will need assistance from intensive management action, including captive breeding programs. However, resources (space, funds, staff) are limited. Strategic priorities must be developed for resource allocation and program development. Developing these priorities is the purpose of Conservation Assessment and Management Plans (CAMPs), Global Captive Action Plans (GCAPs) and Regional Strategic Collection Plans (RSCPs).

IUCN Specialist Group Action Plans

At the global level, the Specialist Groups of the IUCN Species Survival Commission (SSC) and the International Council for Bird Preservation (ICBP) are developing action plans with both regional and taxonomic views. These action plans:

- review the status of conservation areas and activities within regions, and/or the conservation status of taxa within broad taxonomic groups; and
- recommend conservation actions.

Conservation Assessment and Management Plans (CAMPs)

Also at the global level, the IUCN SSC Captive Breeding Specialist Group (CBSG) is leading the development of Conservation Assessment and Management Plans (CAMPs). A Conservation Assessment and Management Plan

- reviews the wild and captive status of each taxon in a defined broad group of taxa (e.g. an order, family, subfamily, community);
- assesses the degree of threat for each taxon according to the Mace/Lande categories (Appendix 8);
- recommends intensive management and information collection action to mitigate threat: PHVAs, *in situ* management, conservation oriented research (surveys, taxonomy, etc.) captive breeding, genome banking.

The CAMP process is providing an opportunity to test the applicability of the Mace/Lande Categories for assessment of threat (Table 1). The Categories provide an estimate of the risk of extinction of taxa based on information about size, distribution, trend of their population, as well as conditions of their habitat. The proposed system defines three categories for threatened taxa:

Critical 50% probability of extinction within 5 years or 2 generations, whichever is longer.

Endangered 20% probability of extinction within 20 years or 10 generations, whichever is longer.

Vulnerable 10% probability of extinction within 100 years.

Camps are developed as collaborative efforts of the CBSG and the other Specialist Groups of the SSC and ICBP, wildlife agencies, and the Regional Captive Conservation Programs. A CAMP provides:

- a resource for the development of IUCN SSC and ICBP Action Plans;
- a strategic guide for intensive conservation action;
- the first step in the Global Captive Action (GCAP) process.

Global Captive Action Plan (GCAP)

A Global Captive Action Plan (GCAP) provides a strategic overview and framework for effective and efficient application and allocation of captive resources to conservation of a broad taxonomic group. A GCAP:

- recommends:
  a) which taxa in captivity should remain there;
  b) which taxa in captivity need not be maintained there for conservation reasons;
  c) which taxa not yet in captivity should be there to assist conservation efforts;
- proposes a level of captive breeding program in terms of genetic and demographic objectives which, translate into recommendations about global captive target populations;
- suggests how responsibilities for captive programs might be divided among the Regional Programs, which translate into recommendations for regional captive target populations;
- identified priorities for technology transfer to and for financial and other support for *in situ* conservation.

GCAPs are developed by a Working Group which consists of representatives of the Regional Programs, especially the Chairs and selected members of the Taxon Advisory Groups (TAGs), with advice and facilitation from the IUCN SSC Captive Breeding Specialist Group (CBSG). The GCAP Working Group will also normally include representatives of the range-country wildlife community and scientists who can resolve problems of systematics. A CAMP can provide the first step of the GCAP process. The GCAP is developed further in an interactive and iterative process involving the Regional Programs and their own Regional Strategic Collection Plans (RSCPs). The GCAP is a dynamic process and facilitative framework that assists the Regional Captive Conservation Programs in coordinating development of their Regional Strategic Collection Plans (RSCPs). RSCPs are developed in response to the conservation needs of taxa (as identified initially by the CAMP), but also in recognition of the circumstances and interests of the Regions. The Regional TAGs will most accurately assess captive holding/exhibit space in their regions using surveys and censuses to supplement studbook databases, ISIS records, national or regional inventories, etc. It is through the Regional Strategic Collection Plans and the programs developed thereunder that the recommendations of the Global Captive Action Plans will be realized. Hence the GCAP is a facilitation and forum for the regional programs to integrate themselves into the best global conservation effort possible.

Regional Strategic Collection Plan (RSCPs)

A Regional Strategic Collection Plan (RSCP) is a set of recommendations developed by a regional Taxon Advisory Group on the taxa in a defined broad group for which Regional Captive Propagation Programs (RCPPs) should be developed. A regional TAG will consider the recommendations of the CAMP and initial GCAP as one factor in preparing the first drafts of the RSCP. However, the RSCP also considers other factors such as the realities of space and resources in the region, as well as other interest the region may have in maintaining taxa. GCAPs and RSCPs are interactively and iteratively developed in an effort to maximize effectiveness in using captive space and resources for taxa in need of captive programs.

Taxon Advisory Group (TAGs)

A Taxon Advisory Group (TAG) is a committee which is formed within the organized regions of the zoo/aquarium world and which consists of zoo professionals and other experts. A primary function of a TAG is to formulate and implement Regional Strategic Collection Plans and, by extension, to further develop the GCAP. TAGs also recommend priorities for establishment of studbooks, development of Regional Captive Propagation Programs (such as SSPs, EEPs, etc), and research.

Regional Captive Propagation Programs (RCPPs)

A Regional Captive Propagation Program (RCPP) is one of the collaborative programs organized to breed and manage a designated, usually threatened, taxon within a region. Examples include AAZPA SSP programs in North America, EEP programs in Europe, JSMG programs in the U.K., ASMP programs in Australasia, SSCJ programs in Japan, IESBP programs in India, and APP programs in Sub-Saharan Africa. Other regions are initiating similar programs. RCPPs develop regional masterplans for propagation and management of specified taxa.

Global Animal Survival Plan (GASPs)

A Global Animal Survival Plan (GASP) is a program for management and propagation of a single taxon at the international level. A GASP provides the facilitating framework for the Regional Captive Propagation Programs to:

- adopt global goals, in part by considering CAMP and GCAP recommendations;
- divide responsibility, e.g. especially target population sizes, for achieving the global goals among the Regional Programs;
- arrange interactions, especially animal or germplasm exchanges, among the Regional Breeding Programs that will further global and regional goals.

Analogous to the RCPP, a GASP develops a global masterplan to guide propagation and management of the taxon at the international level.

Figures 2 & 3 depict the evolving relationships among these global and regional strategic conservation action plans.

This document represents an outline of the Primate Global Captive Action Plan. It consists of:

- ***the recommendations from the Primate CAMP;***
- ***a set of tables summarizing the current status of captive programs for primates***
- ***a set of tables to provide a facilitative framework for further development of the GCAP, including:***
  - ***selection of taxa for captive propagation programs by the Regions***
  - ***division of responsibility for the captive programs among the Regions***
  - ***hence, establishment of global and regional target populations***
  - ***assessment of global and regional space resources and needs, including expansion objectives***
  - ***prioritization of protected areas for support by the captive community through "adopt-a-park" programs.***

PRIMATE CAMP & GCAP PROCESS

Background and Workshop

Primates are one of the first groups of vertebrates for which the kinds of strategic conservation plans just described are being developed. Earlier attempts at preparation of a Primate Global Captive Action Plan (Stevenson et al. 1990) had involved representatives of the captive community, utilizing published material for information on status and prospects of taxa in the wild, e.g. IUCN SSC Action Plans from the Primate Specialist Group (Eudey 1987 for Asia, Oates 1985 for Africa) and the World Conservation Monitoring Center (Lee et al. 1988 for Africa; Harcourt & Thornback 1990 for Madagascar; IUCN 1990 for the world). These Action Plans as well as other overviews of primate conservation needs by members of the Primate Specialist Group (Mittermeier et al. 1986) are extremely useful and reflect the high level of activity of the PSG. Nevertheless, it was concluded that there needed to be more direct interaction and input from field biologists in the Global Captive Action Plan process.

Indeed, when this strategic planning process was initiated by CBSG, the purpose was to produce a Global Captive Action Plan. However, it rapidly became clear that there was a need for a broader approach that assessed the status of taxa in terms of population and habitat viability and recommended intensive conservation action, which might include a captive breeding program. As a result the CAMP process has evolved and is now distinguishable from the GCAP process.

The CAMP reviews the wild and captive status of each taxon of primate and assigns each to 1 of 4 categories of threat according to the Mace-Lande definitions: Critical, Endangered, Vulnerable, Not Threatened (Table 2). A total of 222 primate taxa have been placed in a category of threat using the Mace-Lande criteria: 59 Critical, 71 Endangered, 92 Vulnerable. Thus, 43% of the 512 recognized primate taxa are threatened.

For taxa placed in a category of threat, recommendations are formulated for the kinds of intensive action, including captive breeding, that would be beneficial:

- Population and Habitat Viability Assessment (PHVA),
- More intensive *in situ* management which may include
  (1) habitat protection and improvement
  (2) genetic management intervention
  (3) demographic and genetic reinforcement
- Problem-oriented conservation research including
  (1) surveys
  (2) taxonomic research
  (3) husbandry research
- Captive breeding programs

The Primate CAMP recommends (Table 3):

- 137 taxa for Population and Habitat Assessment/Conservation Management Plan (PHVA) Workshops,
- 37 taxa for more intensive *in situ* management,
- 193 taxa for problem-oriented conservation research (Table 4)
- 229 taxa for 1 of 4 levels of captive breeding programs (Table 5)

90%/100 Years I	77 taxa
90%/100 Years II	40 taxa
Nucleus I	41 taxa
Nucleus II	70 taxa

The CAMP can provide a first step in the Global Captive Action Plan process.

Where captive programs are indicated, there is an attempt to propose the level of captive programs required, reflecting status and prospects in the wild as well as taxonomic distinctiveness. The level of captive program is defined by its genetic and demographic objectives which translate into a target population size that will be required to achieve these goals. 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 incipient nuclei or reduced gene pools that can be expanded later if needed. Computer models and software exist (Ballou 1991) to establish rough targets now.

The general scheme used in the primate action plan is:

Mace/Lande Category	Captive Recommendation	Level of Captive Program
Critical	**90%/100 Years I**	Population sufficient to preserve 90% of the average heterozygosity of the wild gene pool for 100 years, developed as soon as possible (1-5 years).
Endangered	**90%/100 Years II**	Population sufficient to preserve 90% of the average heterozygosity of the wild gene pool for 100 years but developed more gradually (5-10 years).
Vulnerable	**Nucleus I**	A captive nucleus (probably between 50-100 individuals) to always represent 98% of the wild gene pool. This type of program will require periodic, but in many cases modest immigration/importation of individuals from the wild population to maintain this high level of genetic diversity in such a limited captive population. Models are currently being developed to indicate the level of immigration and size of nuclei that will be necessary to achieve specified objectives. Reproductive technologies will facilitate this strategy.
Safe	**Nucleus II**	A well-managed captive nucleus (25-100) for taxa not of conservation concern but present in captivity or otherwise of interest to captive collections.
	Elimination	Taxa are not of conservation concern and are not otherwise of interest for captive breeding. The population should be managed to extinction.

This scheme, especially the nucleus populations, are predicated on the concept that captive populations can be treated as an integral part of the metapopulations being managed by conservation strategies and action plans. Further, the scheme proposes that animals or their genetic material be interchanged as needed between captive and wild populations. Basically, the nuclei would be small populations in captivity that would need to be subsidized genetically, and perhaps demographically, from the wild while natural populations are still large enough to fulfill this function without significant detriment (Not Threatened = Safe, Vulnerable). This system would normally require the addition of several wild-caught individuals per generation to the captive nucleus. If and when the wild populations declined into a greater state of threat (i.e. Endangered), this subsidization would cease and the nucleus could be expanded into a full program that ultimately would reinforce (subsidize) the wild population.

A very preliminary review has also been conducted of all taxa currently in captivity on a taxon-by-taxon basis to determine if the population should be expanded, reduced, or stabilized. The most conclusive result so far is the recommendation that a few taxa be eliminated from captivity.

The primary focus of the Primate 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 Plan also attempts: (1) to identify where and how the captive community can assist with transfer of intensive management information and technology to the wild; and (2) to develop priorities for the limited financial support the captive community can provide for *in situ* conservation under the Adopt-A-Park programs.

TAXONOMY

Primate taxonomy is still poorly resolved. It has not been possible to use any one classification system for the entire order. In general, there has been an attempt to be as compatible as possible with the classifications used in the Action Plans and other publications of the IUCN SSC Primate Specialist Group.

Much research, in both the field and the laboratory, is needed to resolve the many taxonomic problems. Two major kinds of taxonomic problems may be distinguished. One comprises cases where the relationships among populations in the wild is not clear. The other concerns captive populations which are of unknown or mixed origin. Taxonomic research is needed to resolve both kinds of problems.

Amid these uncertainties, the most conservative approach in terms of risk assessment and management recommendations is initially to recognize the maximal distinction among possible "subspecies", or in better terminology geographically defined populations, until taxonomic relationships are better elucidated. Splitting rather than lumping maximizes preservation of options. Taxa can always be merged (lumped) later if further information invalidates the distinctions or if biological or logistic realities of sustaining viable populations precludes maintaining taxa as separate units for conservation.

For the purpose of this global assessment, it has seemed useful to analyze primate taxa in terms of both geographic distribution and taxonomic group. Geographically, the Order is divided into 4 regions: Africa, Madagascar, Asia, and the Americas (i.e., Central and South America). This division will in many respects reflect the realities of implementing action plans in both the wild and captivity and conforms with the system being used by the Primate Specialist group for its Action Plans. For a different perspective, the primates are divided into 10 broad ecological-taxonomic groups: Madagascar prosimians, Non-Madagascar prosimians, African cercopithecines, Asian cercopithecines, African colobines, Asian colobines, cebids, callithricids, hylobatids, and pongids. This division is based on a combination of ecological factors that relate to the realities of the kinds of captive space (habitat) that is available for primates. These factors include size (small, medium, large), diet (e.g. folivores, frugivores, omnivores), schedule (nocturnal, diurnal), and zoogeography.

The classification used in this Plan for African primates has been based largely on Oates (1985). There are major problems for the classification of red colobus and guenons. The logic presented by Oates for red colobus has been adopted here. The guenon classification conforms to the system suggested by Lernould (1988). Hence, the generic name used is what is termed "subgenus" by Lernould and the specific name is what he terms "species".

The classification of the Galaginae is currently under review. Since species and even genera are under question, it was impossible to enumerate most subspecific forms. The classification, including generic nomenclature, of Nash et al. (1989) has been adopted for the present.

The classification used by Harcourt and Thornback (1990) has been adopted, with modification, for Malagasy primates. *Lemur catta* is recognized as the sole species in the genus *Lemur*. The species *fulvus*, *macaco*, *cornatus*, *mongoz* and *rubriventer* are placed in the genus *Eulemur* (Simon and Rumpler 1988; Macedonia and Shedd, in press).

The classification for Asian primates used in this Plan has been based largely on is presented in Eudey (1987). The Asiatic colobines are another taxonomic mire. The nomenclature used here adheres to Eudey (1987) but with reference to Napier (1985) and with Whitten et al. (1984) consulted for additional information on Sumatran taxa.

Mittermeier et al. (1988) provides the basis for the classification used for American primates. Hershkovitz (1977) provides most of the detail for the classification of the Callitrichidae. For the purposes of this assessment, *Callimico* has been included in the Callitrichidae. As justified by Mittermeier et al. (1988), the taxa in the genus *Leontopithecus* are considered species and a new species *caissara* has been added.

In all cases, the references cited above can be consulted for further discussion and justification of the classification and nomenclature used.

Using the classifications as described, 239 species and 512 "taxa" (i.e., subspecies or species if no subspecies contained therein) are currently recognized by this Conservation Assessment and Management Plan. While there may be considerable agreement on the number of species, probably no one will agree precisely with the "taxa" number. Many will consider the number too high. However, as emphasized throughout this document, the CAMP will be an continuing and evolving process. The classification will adapt in response to new information.

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SECTION 3

RECOMMENDATIONS

GENERAL RECOMMENDATIONS

- Any and all taxa that are maintained in captivity should be managed as populations. Therefore there should be studbooks, coordinators, masterplans and/or taxon advisory groups for these taxa. Moreover, primate spaces as well as the animals themselves should be managed.

- *Captive breeding programs recommended for taxa not currently in captivity should be initiated only after the proposed effort has been thoroughly evaluated against a set of established criteria that is mutually agreeable to the CBSG and the PSG.* The IUCN SSC PSG and CBSG are encouraged to organize a group from their membership to formulate such a set of criteria and to recommend a process for evaluating proposed new captive breeding programs. The process should be as objective and rigorous as possible. The CAMP and this GCAP recommended that a population and habitat viability assessment (PHVA) may be a valuable part of this evaluation process. The evaluation process must also be one that can be accomplished in an efficient, effective, and timely manner. Ultimately, the recommendation to actually initiate a captive breeding program for a taxon not in captivity should emanate from wildlife managers in the country of origin of the taxon and be conveyed to the captive community through the Primate Specialist Group.

- Proposals to move additional founders into captivity for taxa with captive programs already in progress should be based on a thorough analysis of both the captive and wild populations in the context of a metapopulation strategy for the taxon. This process of analysis should ideally involve ideally field biologist members of taxonomic SSC Specialist Group as well as managers of the taxon in the captive community. Decisions to acquire needed founders should be collaborative efforts of the countries of origin, the SSC Primate Specialist Group, and the captive community.

- Where feasible, captive programs should maintain maximal discrimination of described subspecies as long as possible while taxonomic clarification is pursued. In other words, for the short term, splitting is better than lumping relative to subspecies. They can be merged or eliminated later if necessary for viability of species or other higher priority taxa. The problem of how to manage existing "generic" populations may often be difficult.

- The Global Captive Action Plan initially is based only on biological factors; adjustments for other realities and constraints including political will be the purview of implementation process which will be the responsibility of the Regional Collection Plans.

- The various Regions need to compile better estimates of the captive habitat available. Most useful measures of space will be relative to the captive ecologies.

- Since there is need for strategic program development and resource allocation on a global and regional basis, the GCAP encourages the further development of Primate Taxon Advisory Groups (TAGs) in all Regions of the worldwide captive community.

SPECIFIC ASSESSMENTS AND RECOMMENDATIONS

- The Maps in Figures 4 and 5 provide an overview of the assessments and recommendations of the Primate CAMP and GCAP.

- The Mace/Lande categories of threat assigned by the CAMP to primate taxa are presented:
  - by continent in Table 2A and
  - by broad ecological-taxonomic group of primate in Table 2B.

- Overviews of intensive action recommendations for primates are provided:
  - by category of threat in Table 3A;
  - by geographic region of origin in Table 3B;
  - by broad taxonomic group in Table 3C.

- Research is recommended for 193 taxa as presented:
  - by category of threat in Table 4A;
  - by geographic region of origin in Table 4B;
  - by broad ecological-taxonomic group in Table 4C.

  The need for more taxonomic research is identified for 136 taxa.
  The need for husbandry research is identified for 47 taxa.

- A total of 229 primate taxa are recommended for captive programs as presented:
  - by category of threat in Table 5A;
  - by geographic region in Table 5B;
  - by broad ecological-taxonomic group in Table 5C.

- An overview of the threat assessments and captive recommendations for primates is provided:
  - by continent in Table 6 and
  - by broad ecological-taxonomic group of primates in Table 7.

- A summary of the level of captive programs recommended for primates is provided:
  - by continent in Table 8 and
  - by broad ecological\taxonomic group in Table 9.

  Of the total of 229 captive programs recommended:
  - 77 are for 90%/100 I;
  - 41 are for 90%/100 II;
  - 40 are for Nucleus I;
  - 71 are for Nucleus II.

- An overview of primates in captivity, both present and proposed, is provided:
  - by continent in Table 10 and
  - by broad ecological\taxonomic group in Table 11.

- The names of the taxa and level of program recommended by the CAMP by region of origin are provided by:
  - Table 12 for Africa
  - Table 13 for Madagascar
  - Table 14 for Asia
  - Table 15 for The Americas

- A total of 229 primate taxa are recommended for captive programs. All 60 recognized genera of primates are represented in the recommendations for captive programs. However, only 163 of the 239 species are represented; 76 species are not currently represented among the taxa recommended for captive programs (i.e., no subspecies within these species is being recommended for a captive program.) A list of these taxa is provided in Table 16.

- Of the 229 taxa recommended for captive programs:
  - 163 (71%) are represented in captivity now although not necessarily by an adequate number of founders;
  - 67 (29%) are not yet represented in captivity. These taxa are identified by name and region of origin in Table 17

- Of the 217 taxa currently represented in captivity, 59 (27%) are not taxa recommended for captive programs. However, only 6 of these taxa are recommended for active elimination from captivity because of very dubious taxonomic status or because the taxon was not placed in a category of threat and very few individuals are present in captivity. The larger number 59 is obtained by subtracting the taxa definitely recommended for captive programs that are in captivity now from the total taxa in captivity now. A taxon in captivity are assigned to Nucleus II when there appear to be a "viable" number in captivity in the judgement of the working group even though the taxon is not assessed as threatened by the Mace/Lande criteria. If the number of individuals of a taxon in captivity does not appear "viable", the taxon is not recommended for a captive program.

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SECTION 4

OVERVIEW OF PRIMATES IN THE WILD AND IN CAPTIVITY

OVERVIEW OF PRIMATES IN THE WILD AND IN CAPTIVITY

Figure 6 provides an overview of the geographical distribution in the wild of the 239 species and 512 taxa (subspecies or species) being recognized by this GCAP.

Table 18 provides a very crude overview of the of the estimated global capacity for primates in "zoos". These estimates do not include laboratory primates or spaces. Approximately, 16,000 primate specimens are registered with ISIS. Some crude extrapolations based on estimates of the percentage of world zoos participating in ISIS as well as comparisons of ISIS and Studbook populations for selected primate taxa suggest that the global captive capacity for primates is approximately twice the number registered with ISIS. Thus, a crude conclusion might be that there is perhaps currently captive habitat for 32,000 primates around the world.

One interesting possibility suggested by these data is the possibility that there may be enough captive habitat, if well managed, to consider maintaining a nucleus of about 134 individuals for each of the 239 species or at least 60 individuals of each of the 512 taxa, or of everything for which a need or desire to have in captivity can be anticipated. However, larger populations (e.g. 200+) will often need to be maintained in captivity for many primates to achieve genetic and demographic objectives required by the conservation strategies for these taxa. Obviously, one larger population will occupy the captive habitat available for several nuclei.

In the absence of truly reliable data, 32,000 may be an overestimate of the captive spaces available for primates worldwide, especially if the quality of the habitat is considered. More detailed surveys conducted by Regional Taxon Advisory Groups of the zoo world will provide much needed additional information for further development of strategic plans at both the captive and the regional level.

A complication for captive programs is the presence of a number of populations of unknown or mixed origins as far as recognized subspecies are concerned. These "generic" populations are identified in Table 8. Captive programs are recommended at the Nucleus II level for most of them. The two exceptions are *Colobus guereza* at Nucleus I and *Pan troglodytes* at 90%/100 Yrs. I. In both cases, there is optimism that further investigation would permit individuals to be identified to the subspecific level.

There currently are captive propagation programs for 43 taxa of primates in progress in at least 1 region of the zoo world (Table 19). Global captive propagation programs have been organized for 5 primate taxa (Table 20). International and/or Regional Studbooks are being maintained for 47 taxa of primates in captivity (Table 21).

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SECTION 5

FURTHER DEVELOPMENT OF THE GCAP PROCESS

FURTHER DEVELOPMENT OF THE GLOBAL CAPTIVE ACTION PLAN PROCESS

Regional Roles in Global Programs

- The various Regions of the captive community worldwide need
  - to select the taxa for captive propagation programs,
  - to establish global demographic and genetic objectives (i.e. target populations) for each program and
  - to decide how to divide responsibilities for these global goals among the Regions.

Tables 23-38 are provided as a facilitative framework to initiate this process.

- Establishing target populations will also entail assessment and management of the number of captive spaces and facilities involved in the programs to accommodate the target populations.

Tables 39-54 are provided as a facilitative framework for this process.

Basal Stock

- The GCAP process will probably also direct more attention to basal or representative stock, i.e. in the worst case that everything is lost in the wild over next century are there taxa that might be basis for general restoration/re-radiation in the future.

Genome Banks and Methodologies

- The GCAP process should consider how genome banks and reproductive technology might be incorporated into the conservation strategy for various taxa.

Strategic Priorities for *In Situ* Support

- While the primary emphasis of the GCAP is on captive propagation programs, the process will also attempt to develop strategic priorities and coordination for the limited funds that the captive community may be able to provide for support of *in situ* conservation action.

Table 55 is provided as a possible facilitative framework for such a process.

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SECTION 6

CAMP\GCAP WORKING GROUP REPORTS

AFRICA

Working Group: *Fred Koontz, Jean-Marc Lernould, John Oates, Dave Ruhter, Miranda Stevenson, Tom Struhsaker.*

Table 12 presents lists of the African primate taxa recommended for each of the 4 levels of captive program. Figure 7 depicts the captive breeding recommendations for African primate taxa in terms of level of program and other continents.

As indicated in Figures 11 & 12, fewer taxa have been recommended for captivity both in relation to total number of taxa from the region and number of taxa currently in captivity for Africa when compared to the other continents.

Group Commentary and Recommendations

(1) Taxa that are in captivity, and are Critical, Endangered, or Vulnerable are recommended for 90/100 I or II. Taxa not in these threat categories, but with existing captive populations of sufficient numbers are recommended for Nucleus I or II. Taxa not threatened, but with very low captive numbers are listed as eliminate (by phasing out). It is important to note that nucleus plans should be managed carefully, as conservation status can change rapidly in Africa.

(2) Hybrid issue: This needs to be resolved by the zoo community, however, it is the consensus of the group that hybrids should be avoided. For some taxa with low numbers, animals that need social partners might be housed with contracepted members of another subspecies.

(3) It is suggested that *Arctocebus* be considered for a captive breeding program, due to its taxonomic distinctiveness and thus scientific study value.

(4) It is suggested that a trial program for one of the red colobus be conducted to serve as a model for more at risk species.

(5) Some taxa, e.g. *Procolobus badius temminckii* may need trial husbandry projects before the full captive programs recommended as required can be implemented.

(6) Zoo biologist are encouraged to consider training programs for African zoo managers and keepers.

MADAGASCAR

Working Group: *David Anderson, Ingrid Porton, Russ Mittermeier*

Table 13 presents lists of the Madagascar primate taxa recommended for each of the 4 levels of captive program. Figure 8 depicts the captive breeding recommendations for Madagascar primate taxa in terms of level of program and other continents.

Group Commentary and Recommendations

(1) 29 taxa are classified as critical, endangered, or vulnerable and therefore require an organized captive breeding program (90%/100 I or II or Nucleus I to retain 98% of wild gene pool requiring interaction with the wild.)

(2) 9 taxa are recommended for a Nucleus II program: 8 taxa because captive populations already exist. Studbooks should be maintained for all these taxa and these populations should be responsibly managed (eg. genetically appropriate breeding pairs, stabilization of population growth, etc.). It is suggested that a Nucleus II program also be initiated for one *Lepilemur* species, none of which are now in captivity.

(3) 11 taxa are classified as not in need of captive breeding programs at this time. These include: 6 of the 7 *Lepilemur* species; 3 taxonomically controversial subspecies (*Varecia varecia subcinctus, V. v. editorum, Eulemur fulvus mayottensis*); the abundant *Cheirogaleus major* of which there are none in captivity, and *Hapalemur griseus occidentalis*.

(4) **Taxonomy Research:** The taxonomy of many of the Madagascar prosimians remains unclear. Detailed genetic studies complemented with field information on population distributions, ecology, and behavior are essential to the resolution of these issues. The following taxonomic questions should receive priority because these taxa are already maintained in fairly large captive populations and the resolution of the species/subspecies question may impact on the direction of the existing captive breeding strategies.

(A) *Varecia*: *Varecia varecia* has variously been divided into 2 or 4 subspecies - *V.v. rubra*, the red and black form, and *V. v. variegata*, *V.v. editorum*, and *V.v. subcinctus*, the black and white form. Research on whether the black and white form is 1, 2, or 3 subspecies should be carried out as soon as possible.

(B) *Eulemur fulvus*: *Eulemur fulvus* has been divided into 7 subspecies. Five of the 7 share the same chromosome number (*E.f. collaris* & *albocollaris* do not). Two taxonomists believe *E.f. mayottensis* is actually *E.f. fulvus*. Resolution of the subspecies issue will directly impact the direction of the captive management program for this group.

(C) *Lemur catta*: Recent taxonomic revisions identify *Lemur catta* as the sole species in the genus *Lemur*. The species *fulvus*, *macaco*, *coronatus*, *mongoz* and *rubriventer* are placed in the genus *Eulemur* (Simon & Rumpler 1988, Macedonia & Shedd in press).

(D) *Propithecus*: Validation of the subspecies designations within *P. diadema* and *P. verreauxi* is required (especially if *P.v. deckeni* and *P.v. coronatus* are indeed separate subspecies).

Of lesser priority are the following:

(E) *Phaner*: *P. furcifer* has been divided into 2 and 4 subspecies. Determine if subspecies designations appropriate.

(F) *Lepilemur*: The taxonomy of *Lepilemur* has not been satisfactorily resolved. Some taxonomists classify the lepilemurs as distinct species whereas others classify the different forms as subspecies within *L. mustelinus*.

(5) **Husbandry Research:** Three taxa are targeted for more intense captive management programs: *Indri indri*, *Avahi*, and *Propithecus diadema* have never been successfully managed in captivity. Trial husbandry programs for these species are required prior to the initiation of a captive breeding program. Such trial husbandry should initially commence at one of the zoos in Madagascar.

Although a captive breeding program is not suggested for any of the *Lepilemur* taxa, a trial husbandry program for *Lepilemur mustelinus* is suggested due to the fact that no *Lepilemur* have been successfully maintained in captivity. It is preferred that such a program be conducted in Madagascar on an opportunistic basis should a confiscated individuals be available.

A number of species have been maintained in captivity in very small numbers (Allocebus, *Phaner*, *Hapalemur simus*, *Hapalemur aureus*, *Propithecus tattersalli*, *Propithecus verreauxi*, and *Daubentonia*). Husbandry protocols for these taxa are important.

ASIA

Working Group: *Gerry Binczik, Ardeth Eudey, Leslie Johnston, Jean-Marc Lernould, Christian Schmidt, Ron Tilson, Kathy Traylor-Holzer, Wendy Turner.*

Table 14 presents lists of the Asian primate taxa recommended for each of the 4 levels of captive program. Figure 9 depicts the captive breeding recommendations for Asian primate taxa in terms of level of program and other continents.

Group Commentary and Recommendations

(1) Of a possible 150 taxa of primates in Asia, 125 are considered of which 30, 22 and 18 taxa are designated as critical, endangered and vulnerable, respectively. Captive breeding plan recommendations for these taxa have been included in this document.

(2) Asian primates, in general, have been a neglected taxa in zoological collections. Recommendations need to be made to increase zoological space available to Asian primates to reflect the serious conservation problems they face in the wild.

(3) However, many taxa currently maintained in captive facilities are those designated as not in need of immediate attention. For these taxa, such as *Nycticebus coucang*, *Macaca fuscata*, *Hylobates lar* and *Hylobates syndactylus*, it is recommended that only a nucleus of 25-50 individuals be maintained in order to increase captive space available for species of greater conservation priority. This recommendation also includes taxa such as *Loris tardigradus* and *Semnopithecus entellus* where some subspecies are at risk but origin of captive stock is unknown.

(4) For taxa which are designated as Critical, Endangered or Vulnerable but have low numbers in captivity, it is recommended that more individuals of these same taxa be moved into captivity as founders. For other closely related taxa which are not present in captivity, it is recommended that no individuals be acquired to initiate captive breeding programs until or PHVAs are completed and recommend such action. Examples of such taxa include *Tarsius syrichta* and *Trachypithecus francoisi francoisi.*

AMERICAS

Working Group: *Anne Baker, Bill Konstant, Russ Mittermeier, Frank Princee, Ann Seefeldt*

Table 15 presents lists of the American primate taxa recommended for each of the 4 levels of captive program. Figure 10 depicts the recommendations for American primate taxa in terms of level of program and other continents.

Group Commentary and General Recommendations

(1) Recommendations are developed using the following process:

(A) Taxa are assigned to one of three categories of threat (Critical, Endangered Vulnerable) using the Mace/Lande criteria. A numerical rank is assigned to each category: 1 for Critical, 2 for Endangered, and 3 for Vulnerable.

(B) Taxa are ranked with respect to taxonomic distinctiveness. A rank of 1 is assigned to species in monotypic genera or in genera that included only Critical, Endangered, or Vulnerable species. A rank of 2 is assigned to species or subspecies that are Critical, Endangered, or Vulnerable, but whose conspecifics are not assigned into one of these categories.

(C) Taxonomic rankings are combined with numerical ranks to establish priorities for captive breeding programs. For taxa with a combined rank of 2 or 3, 90/100 I programs are recommended. For taxa with a combined rank of 4, 90/100 II programs are recommended. For taxa with a combined rank of 5, Nucleus I programs are recommended.

(2) Of the 172 American taxa, 78 are recommended for consideration for a captive breeding program: 18 in the 90/100 I category; 23 in the 90/100 II category; and 9 in the Nucleus I category. Those taxa (28) already in captivity which are not assigned to one of these categories should be managed at the "Nucleus II" level.

(3) At least one representative of each of the American genera is recommended for consideration for a captive breeding effort.

(4) Taxa that are "Critical" or "Endangered" under the Mace/Lande criteria, and which are not presently in captivity, should not be moved into captivity until an analysis of the impact of such action on the wild population has been completed. PHVA workshops are recommended for the following regions:

Top priority

(A) A PHVA workshop that includes as many as possible of the "90%/100 years" taxa in the Atlantic Forest region of Brazil. These are:

Callithrix flaviceps
Brachyteles arachnoides
Alouatta fusca fusca
Cebus (apella) xanthosternos
Cebus apella robustus
Callithrix aurita
Callicebus personatus personatus
Callicebus personatus melanochir
Callicebus personatus barbarabrownii

(B) A PHVA workshop that includes as many as possible of the "90%/100 years" taxa in the Amazonian region. These are:

Lagothrix lagotricha lugens
Lagothrix flavicauda
Ateles belzebuth marginatus
Ateles fusciceps fusciceps
Cacajao calvus calvus
Chiropotes albinasis
Chiropotes satanus satanus
Chiropotes satanus utahicki
Saguinus bicolor bicolor
Callithrix argentata intermedius

Medium priority

(C) A PHVA workshop that includes as many as possible of the "90%/100 years" taxa in the northern Colombia/Panama region. These are:

Ateles geoffroyi azurensis
Ateles belzebuth hybridus
Ateles fusciceps robustus
Alouatta coibensis coibensis
Alouatta coibensis trabeata
Aotus lemurinus lemurinus
Aotus lemurinus griseimembra
Saguinus oedipus

Lowest priority

(D) A PHVA workshop for the Central American region when Ateles taxonomy has been resolved.

(5) Taxonomic uncertainties are compounded in captivity by the inability to identify animals as to subspecies, and sometimes even to species. Recent taxonomic changes (Hershkovitz 1977) causes individuals that were formerly identified as one species or subspecies to be identified as some other species or subspecies under the revised taxonomy. There are a number of captive populations for which taxonomic identify of individuals needs to be verified. Highest priority in this regard are: *Aotus* spp, *Callicebus* spp, *Lagothrix lagotricha* ssp, *Ateles geoffroyi* ssp.

(6) Husbandry research and the establishment of husbandry protocols is especially important for the following taxa: *Brachyteles arachnoides, Alouatta coibensis, Lagothrix lagotricha.*

(7) An important component of a captive propagation program would be the establishment of a captive population in the country of origin. Accomplishing this will require support from zoos outside of the country and from national and international non-governmental organizations (NGOs). The need to provide long term assistance should be anticipated, but in diminishing amounts as within country support increases. Money invested can often attract local money because financial support serves as a form of recognition and "stamp of approval".

(8) All American taxa in captivity should be managed to some goal. The regional taxon advisory groups (TAGs) will need to evaluate the taxonomic, demographic, and genetic status of all captive populations, and to develop target populations based on the results of this evaluation.

(9) Studbooks will be necessary for all populations that are to be managed in captivity.

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SECTION 7

FIGURES

FIGURE 1

METAPOPULATION

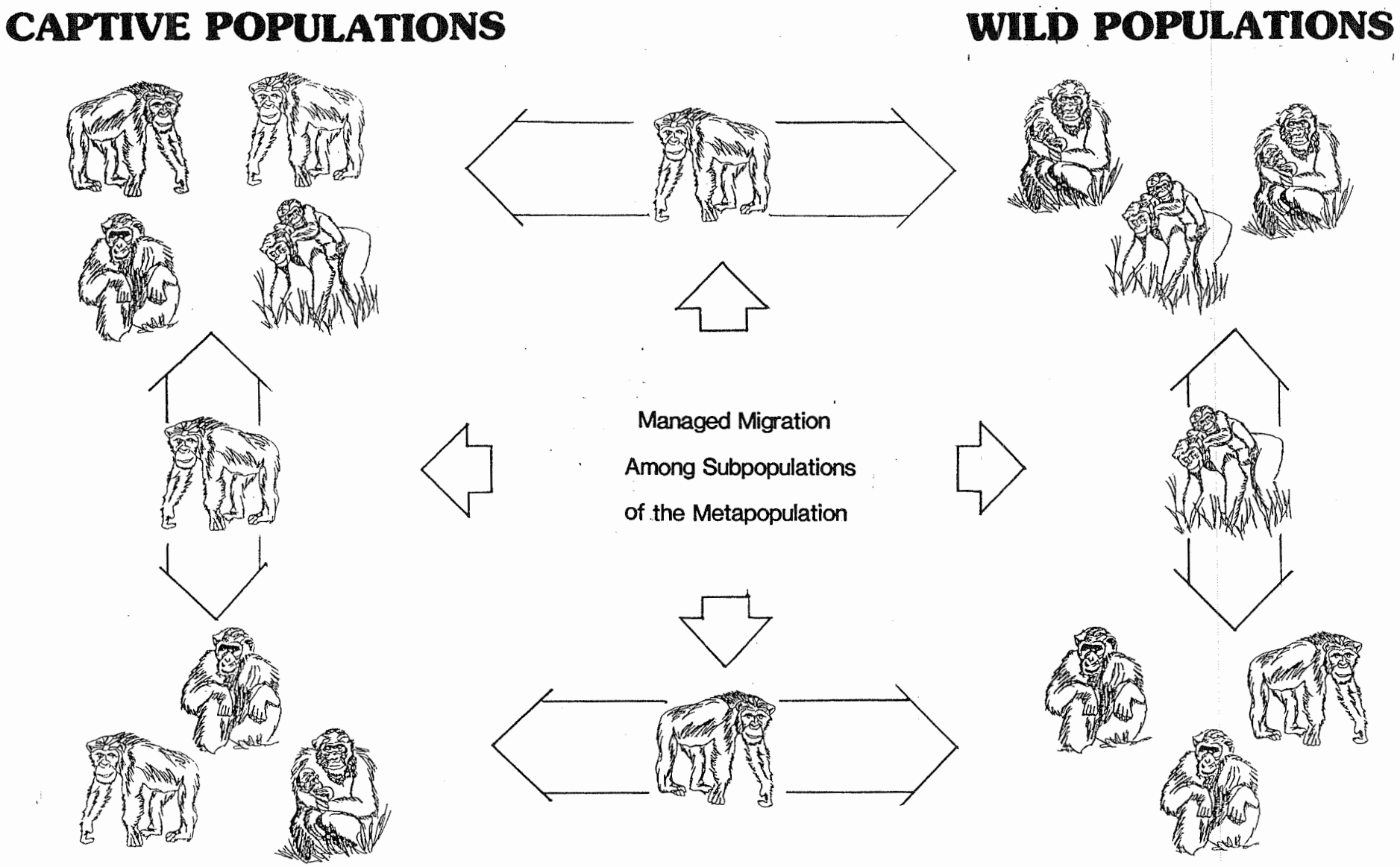
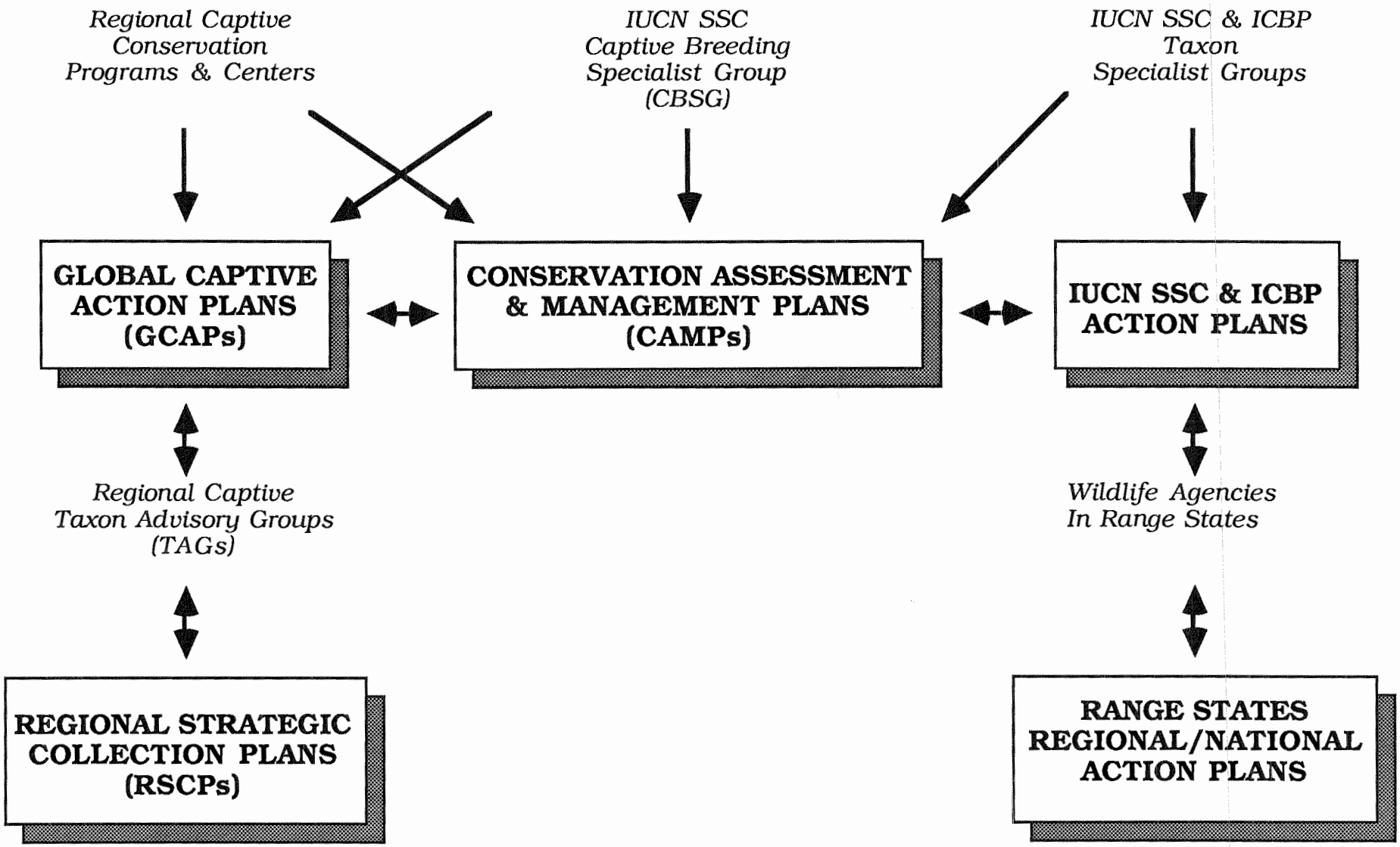


FIGURE 2

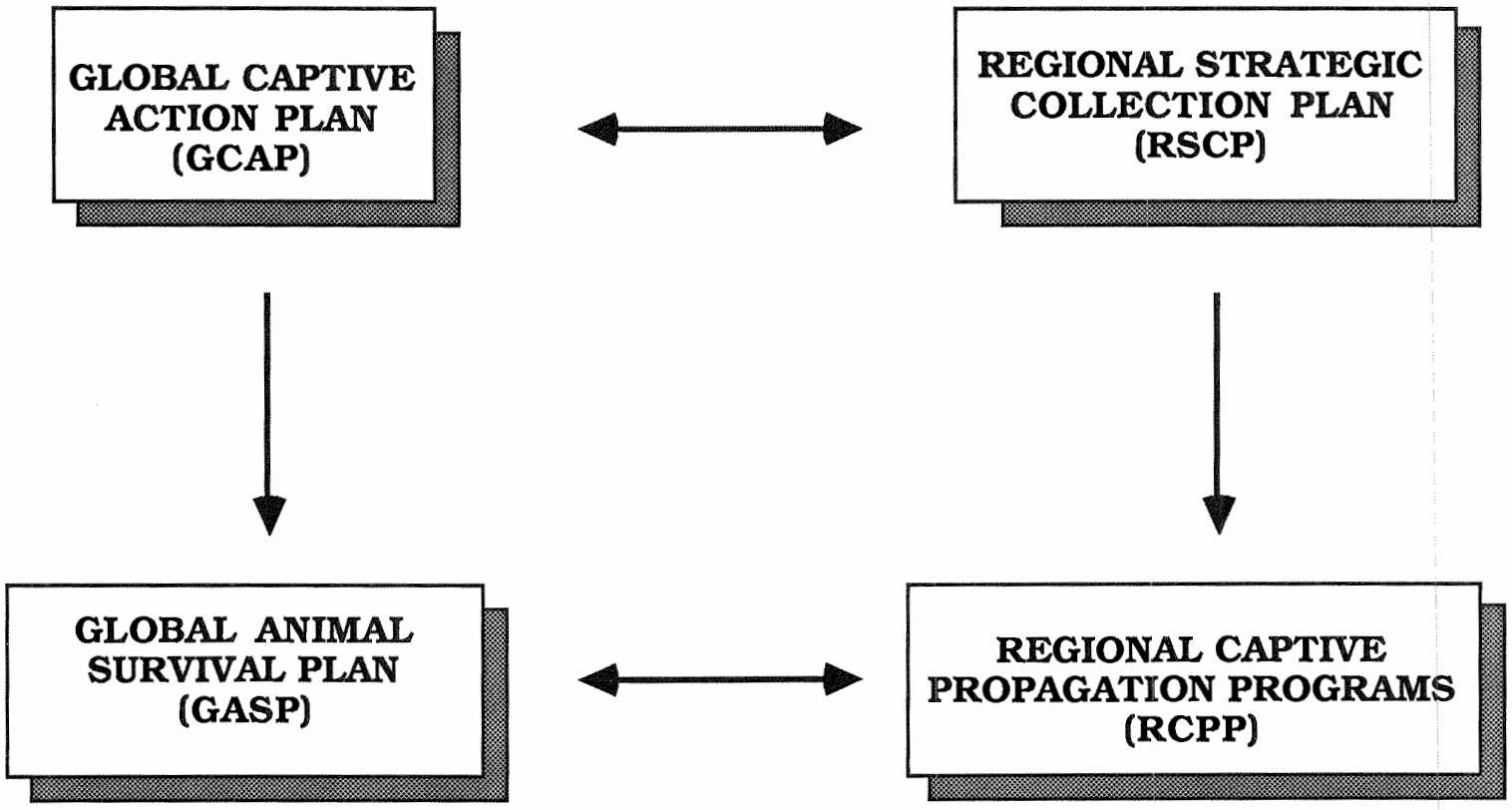
GLOBAL AND REGIONAL STRATEGIC CONSERVATION ACTION PLANS



T.J.F./CBSG
1 August 1992

FIGURE 3

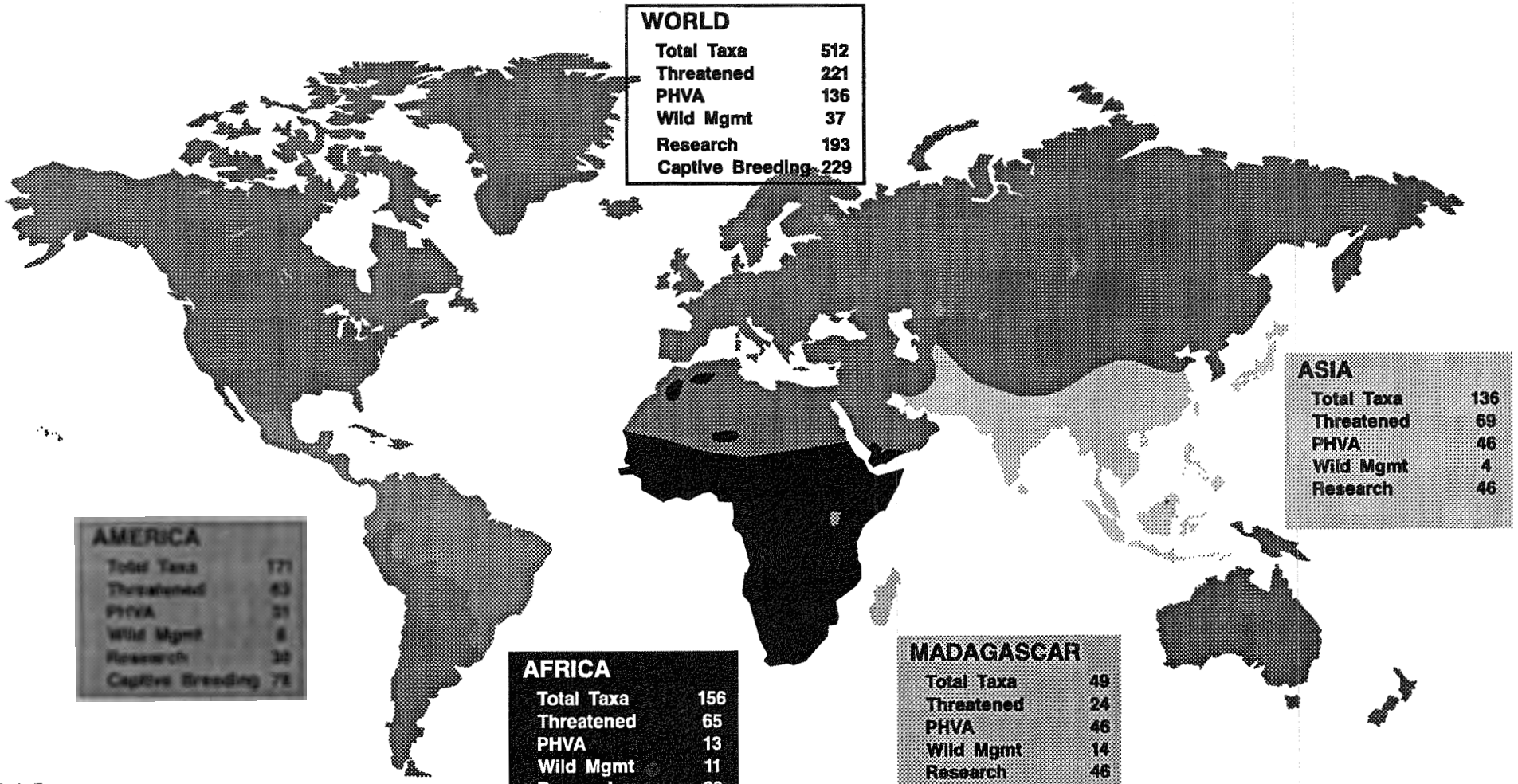
GLOBAL AND REGIONAL CAPTIVE PROPAGATION PROGRAMS



T.J.F./CBSG
1 August 1992

FIGURE 4

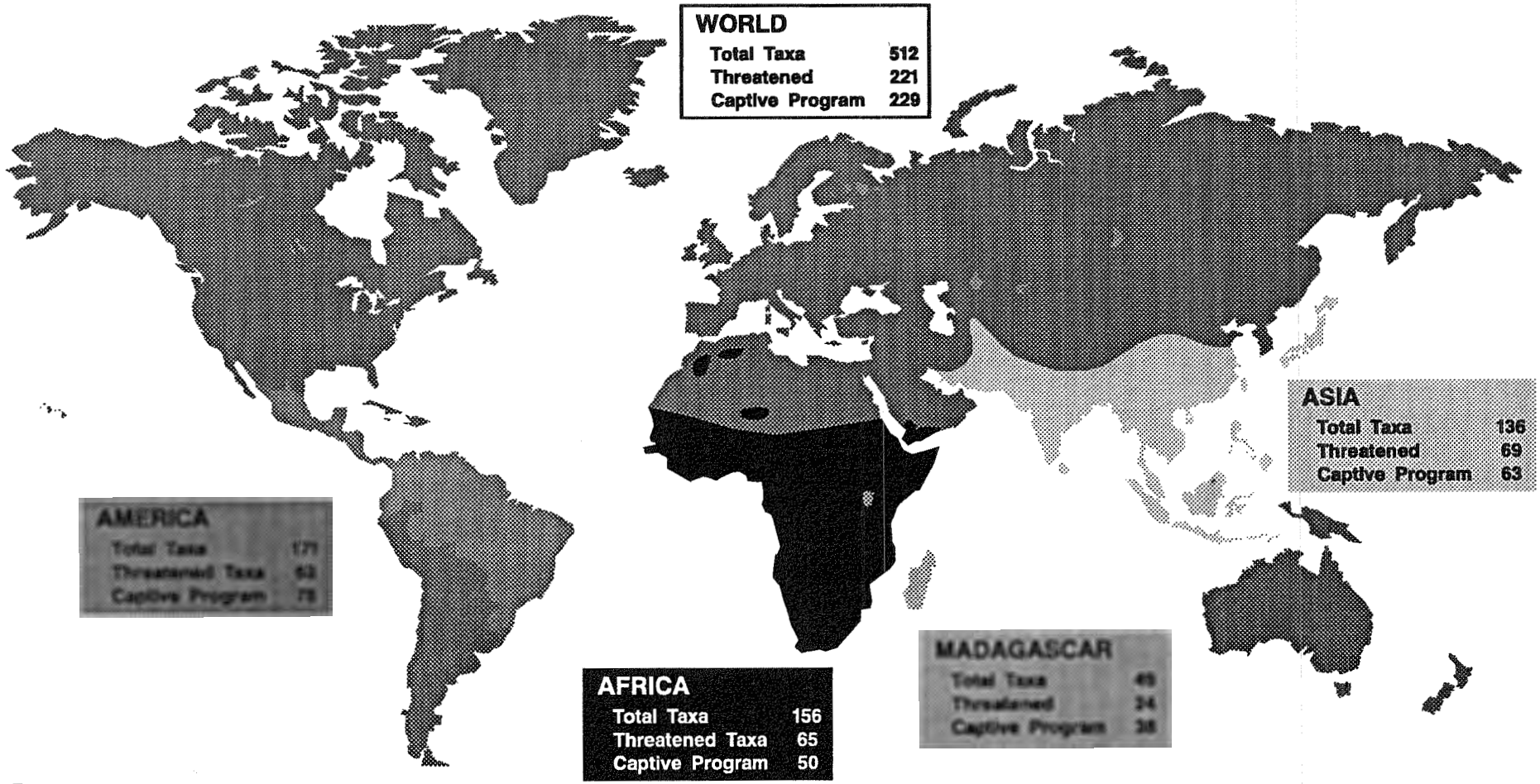
CONSERVATION ASSESSMENT & ACTION PLAN (CAMP) FOR PRIMATES



T. J. Foose
CBSG
1 August 1992

FIGURE 5

GLOBAL CAPTIVE ACTION PLAN (GCAP) FOR PRIMATES



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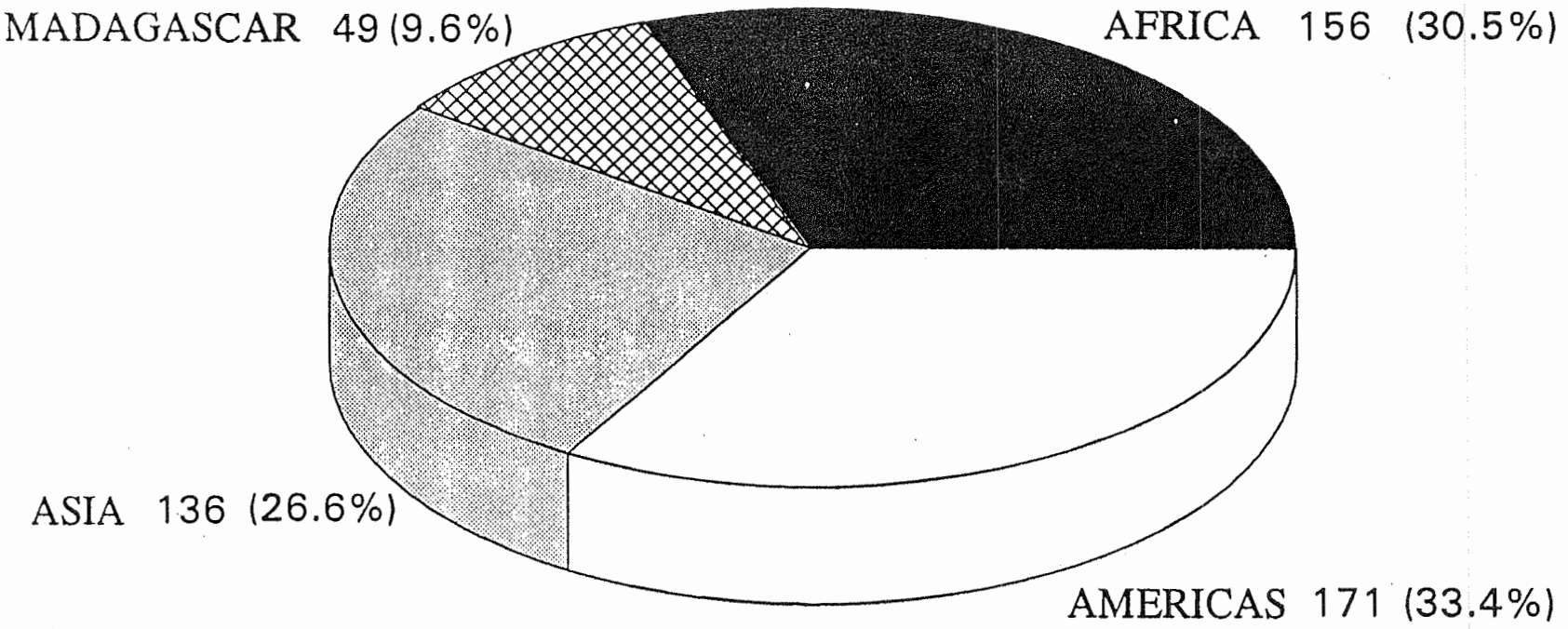
CBSG
1 August 1992

FIGURE 6

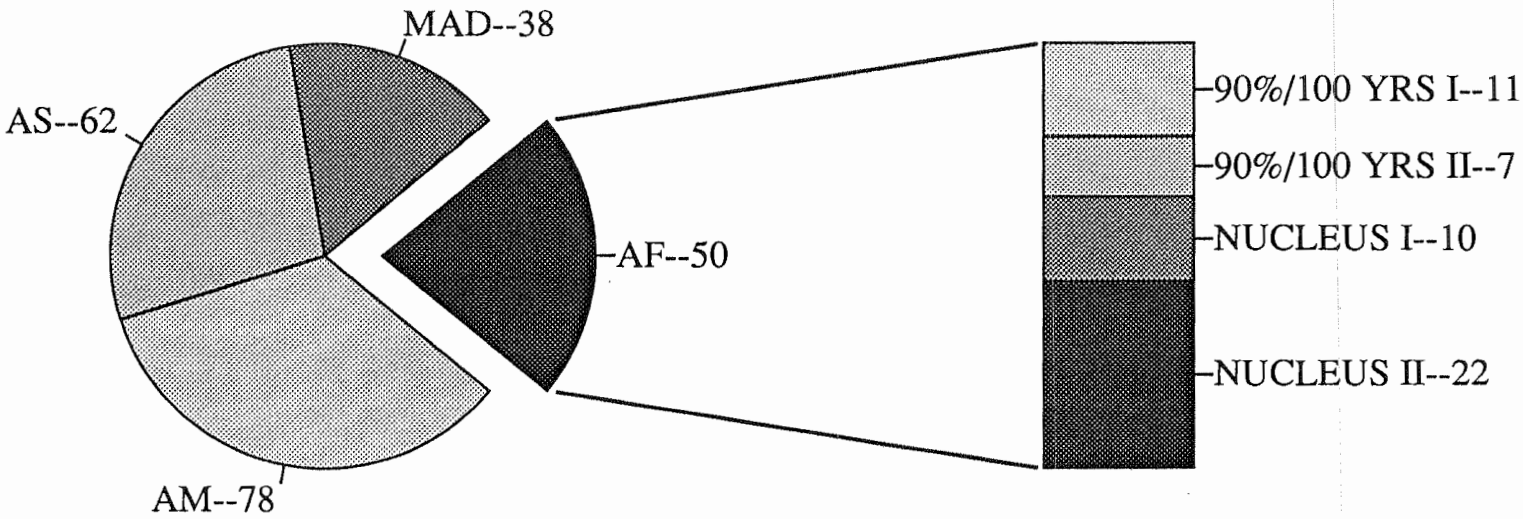
PRIMATE TAXA BY REGION



TOTAL 512 PRIMATE TAXA

FIGURE 7

RECOMMENDED CAPTIVE PROGRAMS FOR PRIMATE TAXA AFRICA

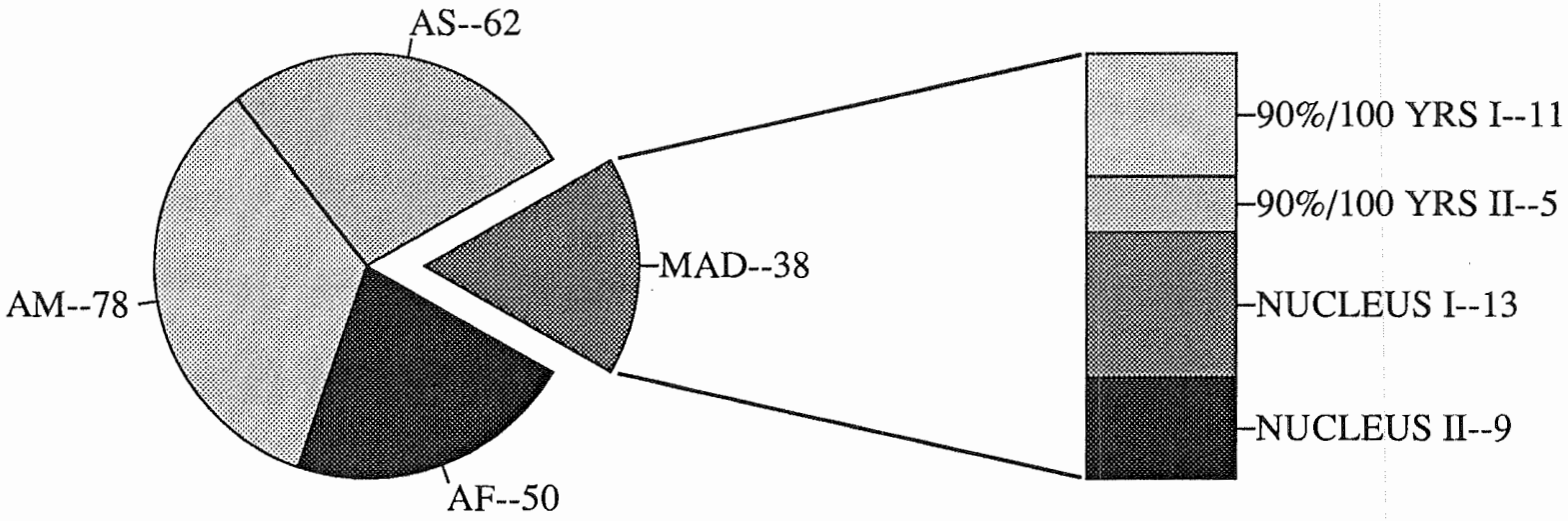


NUM. OF TAXA PLANNED FOR CAPTIVITY

CAPTIVE PROGRAMS FOR AFRICA

FIGURE 8

RECOMMENDED CAPTIVE PROGRAMS FOR PRIMATE TAXA MADAGASCAR

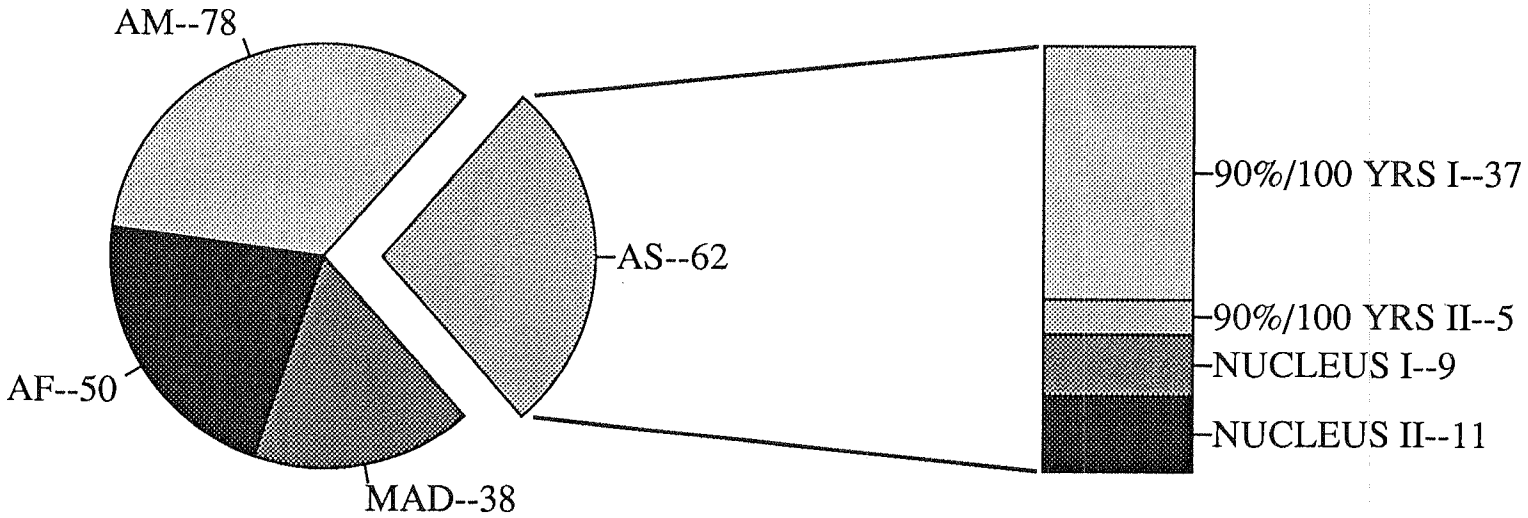


NUM. OF TAXA PLANNED FOR CAPTIVITY

CAPTIVE PROGRAMS FOR MADAGASCAR

FIGURE 9

RECOMMENDED CAPTIVE PROGRAMS FOR PRIMATE TAXA ASIA

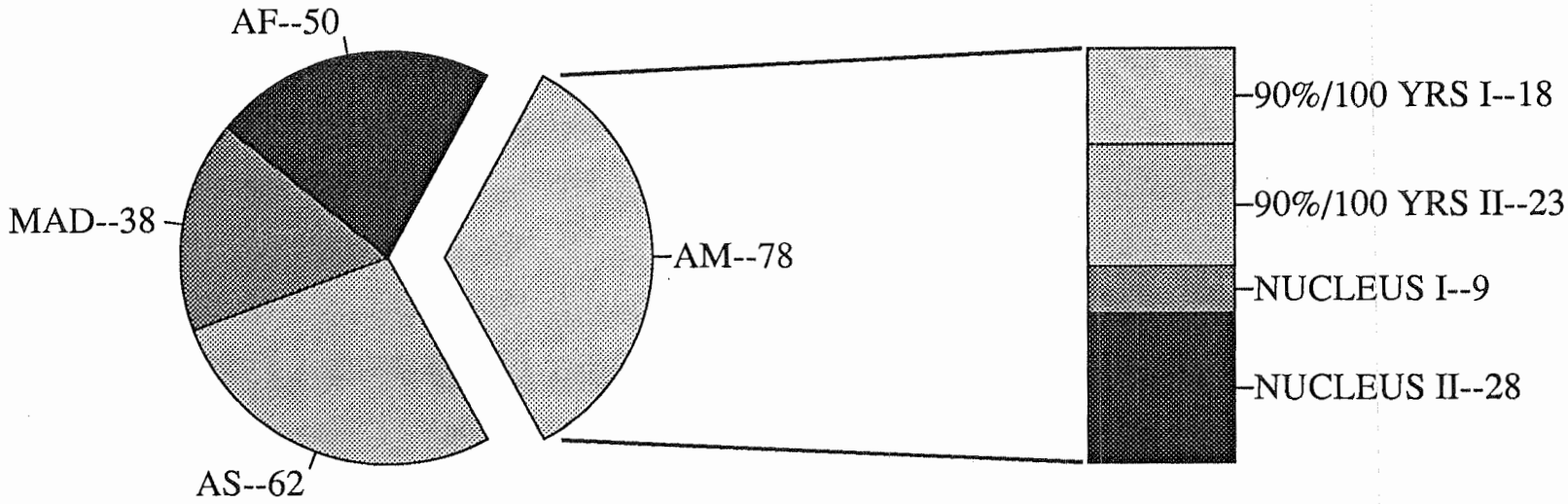


NUM. OF TAXA PLANNED FOR CAPTIVITY

CAPTIVE PROGRAMS FOR ASIA

FIGURE 10

RECOMMENDED CAPTIVE PROGRAMS FOR PRIMATE TAXA AMERICA

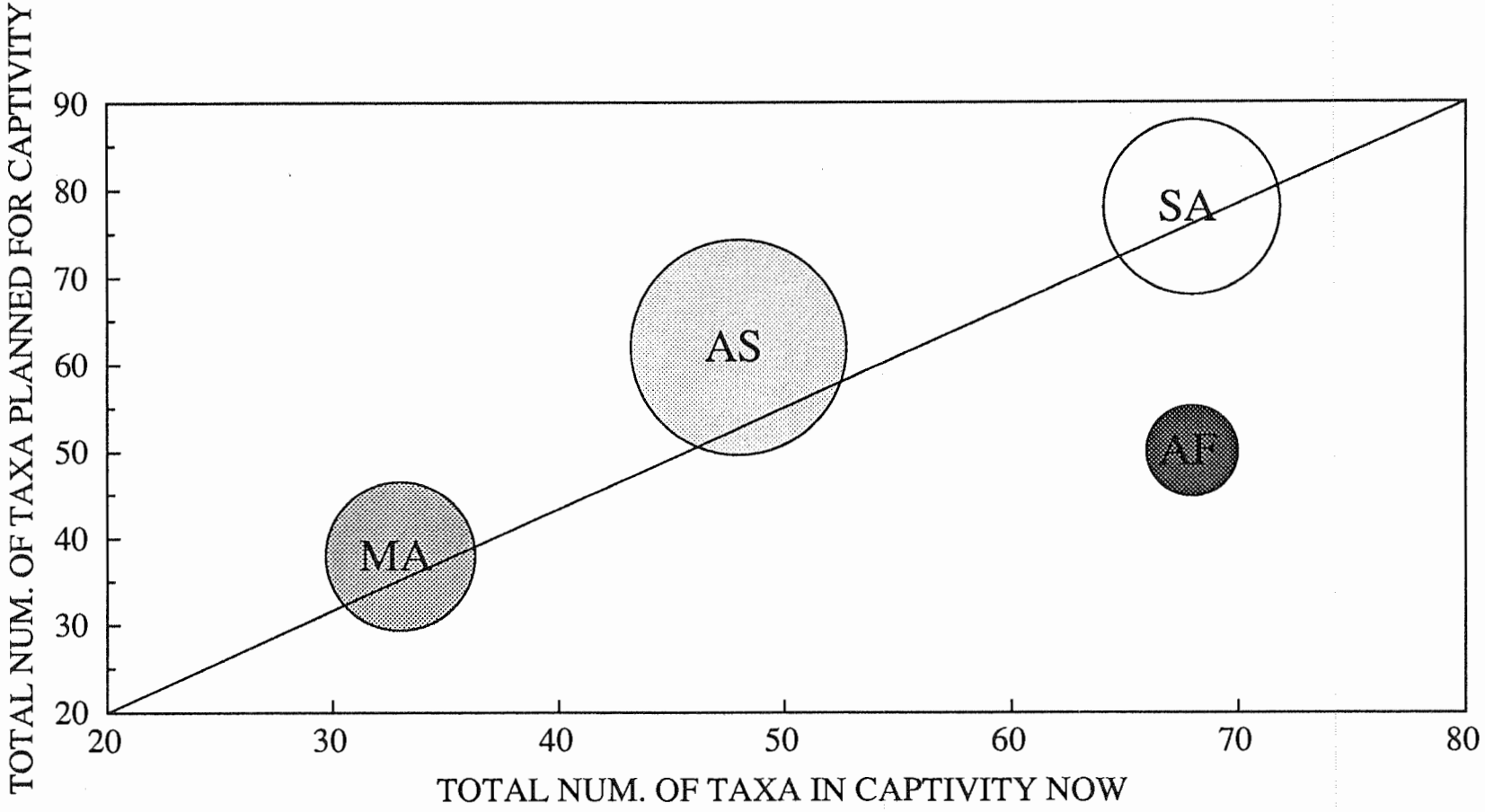


NUM. OF TAXA PLANNED FOR CAPTIVITY

CAPTIVE PROGRAMS FOR AMERICA

FIGURE 11

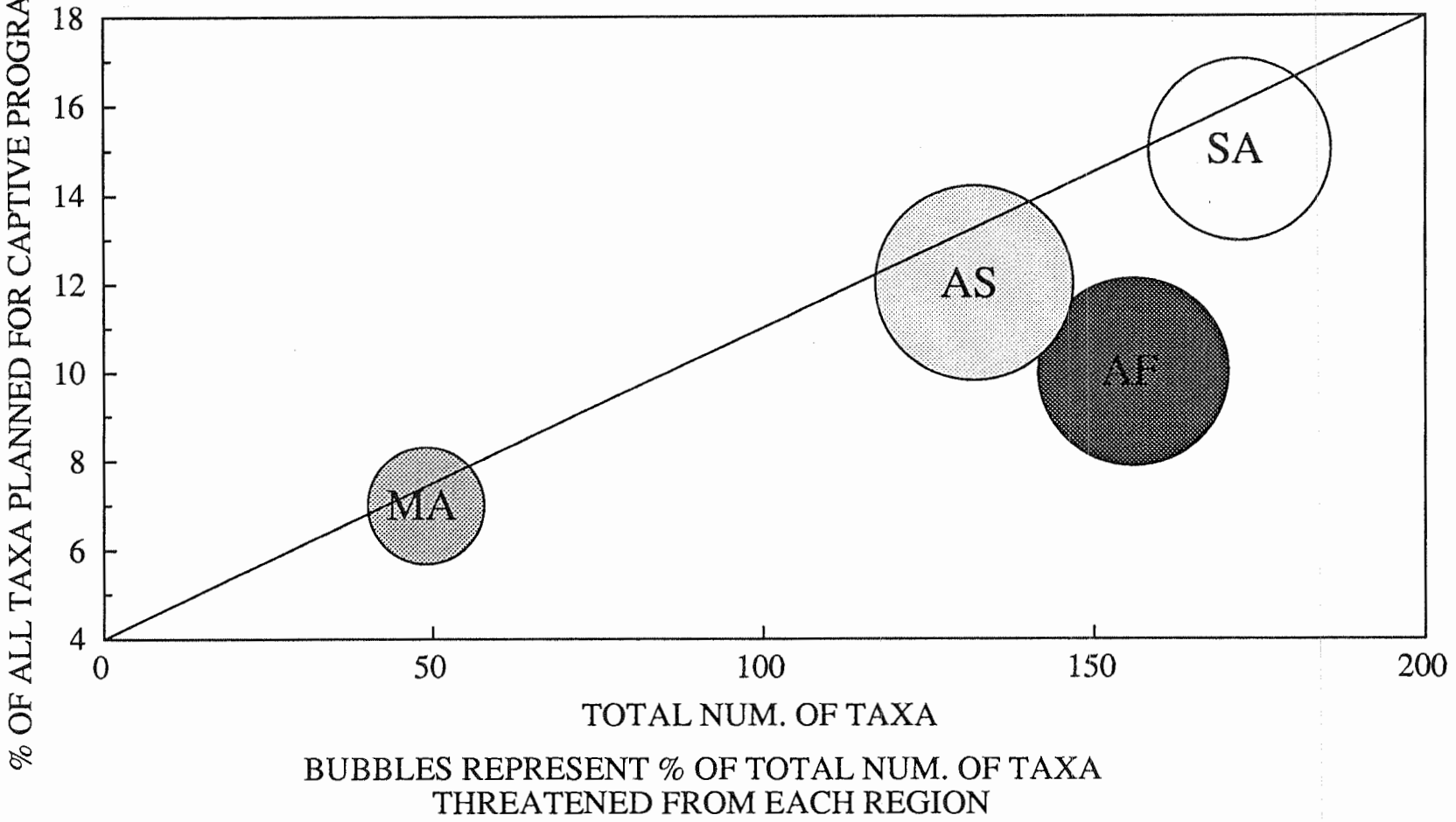
PRIMATE TAXA IN CAPTIVITY NOW PLOTTED AGAINST THOSE RECOMMEND TO BE KEPT IN FUTURE



BUBBLES REPRESENT % OF THE RECOMMENDED SPECIES FROM EACH REGION THAT ARE CURRENTLY NOT IN CAPTIVITY

FIGURE 12

PRIMATE TAXA
GEOGRAPHICAL DISTRIBUTION, FIELD AND CAPTIVE PROGRAMS



BUBBLES REPRESENT % OF TOTAL NUM. OF TAXA
THREATENED FROM EACH REGION

PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 8

TABLES

TABLE 1
MACE/LANDE CATEGORIES AND CRITERIA OF THREAT

POPULATION TRAIT	CRITICAL	ENDANGERED	VULNERABLE
Probability of Extinction	50% within 5 years or 2 generations, whichever is longer	20% within 20 years or 10 generations, whichever is longer	10% within 100 years
	Or	**Or**	**Or**
	Any 2 of following criteria	Any 2 of following criteria or any 1 CRITICAL criterion	Any 2 of following criteria or any 1 ENDANGERED criterion
Effective Population N_e	$N_e < 50$	$N_e < 500$	$N_e < 2{,}000$
Total Population N	$N < 250$	$N < 2{,}500$	$N < 10{,}000$
Subpopulations	≤ 2 with $N_e > 25$, $N > 125$ with immigration < 1/gen.	≤ 5 with $N_e > 100$, $N > 500$ or ≤ 2 with $N_e > 250$, $N > 1{,}250$ with immigration < 1/gen.	≤ 5 with $N_e > 500$, $N > 2{,}500$ or ≤ 2 with $N_e > 1{,}000$, $N > 5{,}000$ with immigration < 1/gen.
Population Decline	> 20%/yr. for last 2 yrs or > 50% in last generation	> 5%/yr. for last 5 years or > 10%/gen. for last 2 gens.	> 1%/yr. for last 10 years
Catastrophe: Rate & Effect	> 50% decline per 5-10/yrs or 2-4 gens. subpopulations highly correlated	> 20% decline/5-10 yr, 2-4 gen > 50% decline/10-20 yrs, 5-10 gen. with subpops. correlated.	> 10% decline/5-10 yrs, > 20% decline/10-20 yrs, or > 50% decline/50yrs. with subpops. correlated.
Or			
Habitat Change	resulting in the above population effects	resulting in above population effects	resulting in above population effects
Or			
Commercial Exploitation or Interaction/Introduced Taxa	resulting in the above population effects	resulting in above population effects	resulting in above population effects

TABLE 2A

NUMBER OF TAXA AND DEGREE OF THREAT FOR PRIMATES BY REGION

REGION	TAXA			CRIT	END	VUL	SAFE	TOTAL THREATENED		
	Genera	Species	Subspecies = Total Taxa	Subspecies = Total Taxa	Subspecies = Total Taxa	Subspecies = Total Taxa	Subspecies = Total Taxa	Genera	Species	Subspecies = Total Taxa
AFRICA	18	67	156	7	12	46	91	16	45	65
MADAGASCAR	14	31	49	7	8	9	25	7	16	24
ASIA	13	64	136	30	22	17	67	12	37	69
AMERICAS	16	77	171	15	27	21	108	15	40	63
WORLD	60*	239	512	59	69	93	291	49	138	221

* *Macaca* in both Africa and Asia

TABLE 2B

NUMBER OF TAXA AND DEGREE OF THREAT FOR PRIMATES BY BROAD TAXONOMIC GROUP

REGION	TAXA			CRIT	END	VUL	SAFE	TOTAL THREATENED		
	Genera	Species	Subspecies = Total Taxa	Subspecies = Total Taxa	Subspecies = Total Taxa	Subspecies = Total Taxa	Subspecies = Total Taxa	Genera	Species	Subspecies = Total Taxa
Malagasy Prosimians	14	31	49	7	8	9	24	7	16	24
Other Prosimians	8	22	30	0	3	9	18	6	8	12
African Cercopithecines	9	40	106	4	7	21	74	9	27	32
Asian Cercopithecines	1	19	24	1	6	1	16	1	8	8
African Colobines	2	11	29	2	5	15	7	2	11	22
Asian Colobines	7	26	67	21	9	9	28	6	19	39
Cebids	11	50	119	11	19	20	69	11	28	50
Callitrichids	5	27	52	4	8	1	39	4	12	13
Hylobatids	1	9	27	8	2	2	15	1	5	12
Pongids	3	4	9	1	2	6	0	3	4	9
ALL PRIMATES	61	239	512	59	69	93	290	50	138	221

TABLE 3A

INTENSIVE ACTION RECOMMENDATIONS BY CATEGORY OF THREAT					
MACE/LANDE	TOTAL TAXA	PHVA	WILD MGMT	RESEARCH	CAPTIVE PROGRAM
CRITICAL	59	51	17	49	55
ENDANGERED	71	42	16	48	47
VULNERABLE	92	21	4	49	53
SAFE	290	22	0	47	74
TOTALS	512	136	37	193	229

TABLE 3B

INTENSIVE ACTION RECOMMENDATIONS BY REGION						
REGION	TOTAL TAXA	THREATENED TAXA	PHVA	WILD MGMT	RESEARCH	CAPTIVE PROGRAM
AFRICA	156	65	13	11	63	50
MADAGASCAR	49	25	46	14	46	38
ASIA	136	69	46	4	46	63
AMERICAS	171	63	31	8	38	78
WORLD	512	222	136	37	193	229

TABLE 3C

INTENSIVE ACTION RECOMMENDATIONS BY BROAD TAXONOMIC GROUP						
PRIMATE GROUP	**TOTAL TAXA**	**THREATENED TAXA**	**PHVA**	**WILD MGMT**	**RESEARCH**	**CAPTIVE PROGRAM**
Malagasy Prosimians	49	25	46	14	46	38
Other Prosimians	30	12	1	1	10	14
African Cercopithecines	106	32	10	4	30	34
Asian Cercopithecines	24	8	6	1	9	9
African Colobines	29	22	3	7	26	6
Asian Colobines	67	39	27	1	21	30
Cebids	119	50	25	3	30	50
Callitrichids	52	13	6	5	8	28
Hylobatids	27	12	12	1	8	13
Pongids	9	9	0	0	5	7
ALL PRIMATES	512	222	136	37	193	229

TABLE 4A

RECOMMENDED RESEARCH BY CATEGORY OF THREAT						
MACE/LANDE	**TOTAL TAXA**	**TAXONOMIC**	**SURVEY**	**HUSBANDRY**	**TOTAL PROJECTS**	**TOTAL TAXA FOR PROJECTS**
CRITICAL	59	36	45	11	92	49
ENDANGERED	71	26	39	11	76	48
VULNERABLE	92	34	43	9	86	49
SAFE	290	40	29	16	85	47
TOTALS	512	136	156	47	339	193

TABLE 4B

RECOMMENDED RESEARCH BY REGION							
REGION	TOTAL TAXA	THREATENED TAXA	TAXONOMIC	SURVEY	HUSBANDRY	TOTAL PROJECTS	TOTAL TAXA FOR PROJECTS
AFRICA	156	65	44	42	1	87	63
MADAGASCAR	49	25	33	46	28	107	46
ASIA	136	69	40	44	5	89	46
AMERICAS	171	63	19	24	13	56	38
WORLD	512	222	136	156	47	339	193

TABLE 4C

RECOMMENDED RESEARCH BY BROAD TAXONOMIC GROUP							
PRIMATE GROUP	**TOTAL TAXA**	**THREATENED TAXA**	**TAXONOMIC**	**SURVEY**	**HUSBANDRY**	**TOTAL PROJECTS**	**TOTAL TAXA FOR PROJECTS**
Malagasy Prosimians	49	25	33	46	28	107	46
Other Prosimians	30	12	7	10	0	17	10
African Cercopithecines	106	32	19	20	0	39	30
Asian Cercopithecines	24	8	8	8	5	21	9
African Colobines	29	22	25	15	1	41	26
Asian Colobines	67	39	17	21	0	38	21
Cebids	119	50	18	17	13	48	30
Callitrichids	52	13	1	7	0	8	8
Hylobatids	27	12	7	8	0	15	8
Pongids	9	9	1	4	0	5	5
ALL PRIMATES	512	222	136	156	47	339	193

TABLE 5A

RECOMMENDATIONS FOR CAPTIVE PROGRAMS BY CATEGORY OF THREAT					
MACE/LANDE	**90/100 I**	**90/100 II**	**NUC I**	**NUC II**	**TOTAL**
CRITICAL	54	1	0	0	55
ENDANGERED	12	34	1	0	47
VULNERABLE	11	6	33	3	53
SAFE	0	0	6	68	74
TOTAL	77	41	40	71	229

TABLE 5B

RECOMMENDATIONS FOR CAPTIVE PROGRAMS BY REGION							
REGION	TOTAL TAXA	THREATENED MACE/LANDE	90/100 I	90/100 II	NUC I	NUC II	TOTAL CAP PROGRAMS
AFRICA	156	65	11	7	10	22	50
MADAGASCAR	49	25	11	5	13	9	38
ASIA	136	69	37	6	8	12	63
AMERICAS	171	63	18	23	9	28	78
WORLD	512	222	77	41	40	71	229

TABLE 5C

RECOMMENDATIONS FOR CAPTIVE PROGRAMS BY BROAD TAXONOMIC GROUP							
PRIMATE GROUP	**TOTAL TAXA**	**THREATENED MACE/LANDE**	**90/100 I**	**90/100 II**	**NUC I**	**NUC II**	**TOTAL CAP PROGRAMS**
Malagasy Prosimians	49	25	11	5	13	9	38
Other Prosimians	30	12	1	2	6	5	14
African Cercopithecines	106	32	7	6	4	17	34
Asian Cercopithecines	24	8	3	2	0	4	9
African Colobines	29	22	1	0	3	2	6
Asian Colobines	67	39	23	1	1	5	30
Cebids	119	50	11	18	8	13	50
Callitrichids	52	13	7	5	1	15	28
Hylobatids	27	12	8	2	2	1	13
Pongids	9	9	5	0	2	0	7
ALL PRIMATES	512	222	77	41	40	71	229

TABLE 6
OVERVIEW OF THREAT CATEGORY AND CAPTIVE RECOMMENDATIONS BY CONTINTENT

CONTINENT	TOTAL TAXA			THREATENED			RECOMMENDED FOR CAPTIVITY			NOT RECOMMENDED FOR CAPTIVITY		
	Gen	Spec	Subs	Gen	Spec	Subs	Gen	Spec	Subs	Gen	Spec	Subs
AFRICA	18	67	156	16	44	65	18	45	50	0	22	106
MADAGASCAR	14	31	49	7	15	24	13	24	38	0	7	11
ASIA	13	64	136	12	38	70	13	42	63	0	22	70
AMERICAS	16	77	171	15	40	63	16	52	78	0	25	94
WORLD	60	239	512	49	137	222	59	163	229	0	76	281

TABLE 7
OVERVIEW OF THREAT CATEGORY AND CAPTIVE RECOMMENDATIONS BY BROAD TAXONOMIC GROUP

PRIMATE GROUP	TOTAL TAXA			THREATENED			RECOMMENDED FOR CAPTIVITY			NOT RECOMMENDED FOR CAPTIVITY		
	Gen	Spec	Subs	Gen	Spec	Subs	Gen	Spec	Subs	Gen	Spec	Subs
Madagascar Prosimians	14	31	49	7	15	24	13	24	38	0	7	11
Other Prosimians	8	22	30	6	8	12	8	9	14	0	13	16
African Cercopithecines	9	40	106	8	26	32	9	33	34	0	7	72
Asian Cercopithecines	1	19	24	1	9	9	1	11	9	0	8	15
African Colobines	2	11	29	2	11	22	2	4	6	0	7	23
Asian Colobines	7	26	67	6	19	39	7	17	30	0	9	37
Cebids	11	50	119	11	28	50	11	29	50	0	21	69
Calltrichids	5	27	52	4	12	13	5	23	28	0	4	24
Hylobatids	1	9	27	1	5	12	1	9	13	0	0	14
Pongids	3	4	9	3	4	9	3	4	7	0	0	2
ALL PRIMATES	60	239	512	49	137	222	59	163	229	0	76	283

TABLE 8
SUMMARY OF RECOMMENDED CAPTIVE PROGRAMS FOR PRIMATES BY CONTINENT

CONTINENT	TOTAL SUBSPECIES	90%/100 YRS I	90%/100 YRS II	NUCLEUS I	NUCLEUS II	TOTAL FOR CAPTIVITY
AFRICA	156	11	7	10	22	50
MADAGASCAR	49	11	5	13	9	38
ASIA	136	37	6	8	12	63
AMERICAS	171	18	23	9	28	78
WORLD	512	77	41	40	71	229

TABLE 9
SUMMARY OF RECOMMENDED CAPTIVE PROGRAMS BY BROAD TAXONOMIC GROUP

PRIMATE GROUP	TOTAL SUBSPECIES	90%/100 YRS I	90%/100 YRS II	NUCLEUS I	NUCLEUS II	TOTAL FOR CAPTIVITY
Madagascar Prosimians	49	11	5	13	9	38
Other Prosimians	30	1	2	6	5	14
African Cercopithecines	106	7	6	4	17	34
Asian Cercopithecines	24	3	2	0	4	9
African Colobines	29	1	0	3	2	6
Asian Colobines	67	23	1	1	5	30
Cebids	119	11	18	8	13	50
Callithricids	52	7	5	1	15	28
Hylobatids	27	8	2	2	1	13
Pongids	9	5	0	2	0	7
ALL PRIMATES	512	77	41	40	71	229

TABLE 10
PRIMATES IN CAPTIVITY - PRESENT AND PROPOSED - BY CONTINENT

CONTINENT	TOTAL TAXA IN CAPTIVITY NOW	TOTAL RECOMMENDED	RECOMMENDED IN CAPTIVITY NOW	RECOMMENDED NOT IN CAPTIVITY NOW	TAXA TO BE ELIMINATED FROM CAPTIVITY
AFRICA	68	50	46	4	4 (22)*
MADAGASCAR	34	38	30	8	1 (4)
ASIA	52	63	34	29	0 (18)
AMERICAS	68	78	52	26	1 (16)
WORLD	222	229	162	67	6 (60)

* Numbers outside parenthesis indicate taxa that have been actually designated for elimination from captivity.
Numbers inside parenthesis are the difference between total taxa in captivity now and taxa recommended for captive programs in captivity now.

TABLE 11
PRIMATES IN CAPTIVITY - PRESENT & PROPOSED BY BROAD TAXONOMIC GROUP

PRIMATE GROUP	TOTAL TAXA IN CAPTIVITY NOW	TOTAL RECOMMENDED	RECOMMENDED IN CAPTIVITY NOW	RECOMMENDED NOT IN CAPTIVITY NOW	TAXA TO BE ELIMINATED FROM CAPTIVITY
Madagascar Prosimians	34	38	30	8	1 (4)
Other Prosimians	11	14	7	7	1 (4)
African Cercopithecines	48	34	33	1	3 (15)
Asian Cercopithecines	17	9	7	1	0 (10)
African Colobines	8	6	5	1	0 (3)
Asian Colobines	14	30	12	18	0 (2)
Cebids	43	50	28	22	1 (15)
Callithrichids	25	28	24	4	0 (1)
Hylobatids	14	13	9	4	0 (5)
Pongids	8	7	7	0	0 (1)
ALL PRIMATES	222	229	162	67	6 (59)

TABLE 12
CAPTIVE PRIORITIES FOR AFRICAN PRIMATES

90%/100 YEARS I	90%/100 YEARS II	NUCLEUS I	NUCLEUS II
Mandrillus sphinx	*Galagoides zanzibaricus*	*Arctocebus calabarensis*	*Otolemur crassicaudatus*
Mandrillus leucophaeus	*Cercocebus atys lunulatus*	*Papio papio*	*Galago moholi*
Theropithecus gelada	*Cercocebus torquatus*	*Allenopithecus nigroviridus*	*Perodicticus potto*
Cercopithecus diana diana	*Cercopithecus diana roloway*	*Cercocebus galeritus chrysogaster*	*Cercocebus atys atys*
Cercopithecus sclateri	*Cercopithecus hamlyni hamlyni*	*Cercopithecus aethiops djamdjamensis*	*Cercocebus galeritus agilis*
Cercopithecus erythrogaster(Togo/Benin)	*Cercopithecus lhoesti*	*Procolobus badius temminekii*	*Cercocebus aterrimus aterrimus*
Macaca sylvanus	*Cercopithecus solatus*	*Colobus polykomos*	*Papio anugis*
Colobus guereza caudatus		*Colobus guereza (no subsp)*	*Papio cynocephalus*
Pan troglodytes (no subsp)		*Colobus guereza guereza*	*Papio hamadryas*
Pan troglodytes verus		*Pan troglodytes schweinfurthi*	*Papio ursinus*
Pan paniscus		*Pan troglodytes troglodytes*	*Cercopithecus neglectus*
Gorilla gorilla gorilla			*Cercopithecus albogularis albogularis*
			Cercopithecus mitis (no subsp)
			Cercopithecus mitis stuhlmanni
			Cercopithecus nictitans nictitans
			Cercopithecus petaurista (no subsp)
			Cercopithecus cephus cephus
			Cercopithecus ascanius (no subsp)
			Cercopithecus ascanius schmidti
			Cercopithecus cambelli cambelli
			Cercopithecus mona
			Cercopithecus aethiops (no subsp)

			Cercopithecus sabaeus (no subsp)
			Miopithecus talapoin ?
			Erythrocebus patas (no subsp)
			Colobus guereza kikuyuensis
			Colobus angolensis angolensis

TABLE 13
CAPTIVE PRIORITIES FOR MADAGASCAR PRIMATES

90%/100 YEARS I	90%/100 YEARS II	NUCLEUS I	NUCLEUS II
Daubentonia madagascariensis	*Lemur coronatus*	*Mirza coquereli*	*Cheirogaleus medius*
Allocebus trichotis	*Lemur mongoz*	*Phaner furcifer*	*Microcebus rufus*
Indri indri	*Lemur macaco macaco*	*Avahi laniger laniger*	*Microcebus murinus*
Propithecus diadema candidus	*Varecia variegata rubra*	*Avahi laniger occidentalis*	*Propithecus verreauxi verreauxi*
Propithecus diadema perrieri	*Varecia variegata variegata*	*Propithecus diadema diadema*	*Lemur fulvus fulvus*
Propithecus verreauxi coronatus		*Propithecus diadema edwardsi*	*Lemur fulvus albifrons*
Propithecus tattersalli		*Propithecus verreauxi coquerli*	*Lemur fulvus rufus*
Lemur macaco flavifrons		*Propithecus verreauxi deckeni*	*Hapalemur griseus griseus*
Hapalemur griseus alaotrensis		*Lemur catta*	*Lepilemur mustelinus*
Hapalemur simus		*Lemur fulvus albocollaris*	
Hapalemur aureus		*Lemur fulvus collaris*	
		Lemur fulvus sanfordi	
		Lemur rubiventer	

TABLE 14
CAPTIVE PRIORITIES FOR ASIAN PRIMATES

90%/100 YEARS I	90%/100 YEARS II	NUCLEUS I	NUCLEUS II
Nycticebus pygmaeus	*Tarsius syrichta*	*Loris tardigradus tardigradus*	*Nycticebus coucang coucang*
Macaca silenus	*Macaca maura*	*Loris tardigradus grandis*	*Nycticebus coucang bengalensis*
Macaca nigra	*Trachypithecus francoisi francoisi*	*Loris tardigradus malabaricus*	*Macacca nemestrina (no subsp)*
Macaca pagensis	*Hylobates concolor leucogenys*	*Loris tardigradus nycticeboides*	*Macaca fasicularis (no subsp)*
Semnopitheucs entellus aeneas	*Hylobates concolor gabriellae*	*Loris tardigradus nordicus*	*Macaca fasicularis philippinensis*
Semnopithecus entellus iulus	*Macaca brunnescens*	*Nasalis larvatus*	*Macaca mulatta (no sub)*
Semnopithecus entellus dusumerei		*Hylobates hoolock hoolock*	*Macaca mulatta mulatta*
Semnopithecus entellus elissa		*Hylobates hoolock leuconedys*	*Macaca fuscata (no subsp)*
Presbytes comata comata			*Macaca arctoides (no subsp)*
Presbytis comata fredericae			*Semnopithecus entellus (no subsp)*
Presbytis femoralis batuana			*Semnopithecus entellus entellus*
Presbytes femoralis natunae			*Semnopithecus entellus thersites*
Presbytes potenziani potenziani			*Trachypithecus auratus auratus*
Presbytis rubicunda carimatae			*Trachypithecus cristatus (no subsp)*
Trachypithecus johnii			*Trachypithecus cristatus ultimus*
Trachypithecus francoisi leucocephalis			*Trachypithecus obscurus*
Trachypithecus francoisi poliocephalis			*Hylobates lar (no subsp)*
Trachypithecus francoisi delacouri			*Hylobates syndactylus (no subsp)*
Trachypithecus francoisi laotum			*Hylobates agilis (no subsp)*
Trachypithecus francoisi hatinhensis			*Hylobates muelleri (no subsp)*
Trachypithecus geei			*Hylobates muelleri abbotti*
Simias concolor concolor			*Macaca tokeana*

Simias concolor siberu			
Pygathrix nemaeus			
Rhinopithecus avunculus			
Rhinopithecus bieti			
Rhinopithecus brelichi			
Hylobates concolor concolor			
Hylobates concolor hainanus			
Hylobates concolor furvogaster			
Hylobates concolor lu			
Hylobates concolor siki			
Hylobates klossii			
Hylobates moloch moloch			
Hylobates pileatus			
Pongo pygmaeus pygmaeus			
Pongo pygmaeus abelii			

TABLE 15
CAPTIVE PRIORITIES FOR AMERICAN PRIMATES

90%/100 YEARS I	90%/100 YEARS II	NUCLEUS I	NUCLEUS II
Callithrix flaviceps	*Callithrix argentata leucippe*	*Callithrix humeralifer chrysoleuca*	*Callithrix argentata argentata*
Saguinus oedipus	*Callithrix argentata intermedius*	*Callicebus torquatus medemi*	*Callithrix argentata melanura*
Leontopithecus rosalia	*Callithrix aurita aurita*	*Callicebus personatus nigrifrons*	*Callithrix jacchus*
Leontopithecus chrysomelas	*Saguinus bicolor bicolor*	*Pithecia albicans*	*Callithrix geoffroyi*
Leontopithecus chrysopygus	*Saguinus leucopus*	*Ateles belzebuth belzebuth*	*Callithrix kulhi*
Leontopithecus caissara	*Aotus lemurinus lemurinus*	*Ateles geoffroyi vellerosus*	*Callithrix pencillata*
Callimico goeldi	*Aotus lemurinus griseimembra*	*Lagothrix lagotricha lagotricha*	*Cebuella pygmaea*
Callicebus personatus barbarabrownae	*Aotus miconax*	*Lagothrix lagotricha cana*	*Saguinus fuscicollis weddellii*
Chiropotes satanas satanas	*Callicebus personatus personatus*	*Lagothrix lagotricha poeppigii*	*Saguinus fuscicollis illigeri*
Alouatta belzebul ululata	*Callicebus personatus melanochir*		*Saguinus mystax mystax*
Alouatta fusca fusca	*Cacajao calvus calvus*		*Saguinus labiatus labiatus*
Alouatta coibensis trabeata	*Chiropotes albinasus*		*Saguinus imperator imperator*
Ateles belzebuth marginatus	*Chiropotes satanas utahicki*		*Saguinus imperator subgrisescens*
Ateles fusciceps fusciceps	*Alouatta palliata mexicana*		*Saguinus midas midas*
Ateles geoffroyi azuerensis	*Alouatta coibensis coibensis*		*Saguinus geoffroyi*
Brachyteles arachnoides	*Ateles belzebuth hybridus*		*Aotus trivirgatus*
Cebus apella xanthosternos	*Ateles fusciceps robustus*		*Aotus vociferans*
Saimiri oerstedi citrinellus	*Ateles geoffroyi geoffroyi*		*Callicebus moloch*
	Ateles geoffroyi frontatus		*Callicebus donacophilus donacophilus*
	Ateles geoffroyi panamenisis		*Cacajao calvus rubicundus*
	Lagothrix lagotricha lugens		*Pithecia pithecia pithecia*
	Cebus apella robustus		*Alouatta seniculus (no subsp)*

	Saimiri oerstedi oerstedi		*Alouatta seniculus sara*
			Alouatta palliata palliata
			Alouatta caraya
			Ateles paniscus paniscus
			Ateles paniscus chamek
			Saimiri sciureus sciureus
			Saimiri boliviensis boliviensis

TABLE 16
SPECIES WHICH ARE NOT REPRESENTED IN RECOMMENDATIONS FOR CAPTIVE PROGRAMS

AFRICA	MADAGASCAR	ASIA	AMERICA
Galago senegalensis	*Cheirogaleus major*	*Nycticebus intermedius*	*Callithrix emiliae*
Galago matschiei (inustus)	*Lepilemur edwardsi*	*Tarsius bancanus*	*Saguinus nigricollis*
Galago elegantulus	*Lepilemur dorsalis*	*Tarsius diana*	*Saguinus tripartitus*
Galago gallarum	*Lepilemur leucopus*	*Tarsius pumilus*	*Saguinus inustus*
Galagoides alleni	*Lepilemur microdon*	*Tarsius spectrum*	*Aotus brumbacki*
Galagoides demidovii	*Lepilemur ruficaudatus*	*Macaca nigrescens*	*Aotus nigriceps*
Galagoides thomasi	*Lepilemur septentrionalis*	*Macaca orchreatra*	*Aotus infulatus*
Otolemur garnetti		*Macaca hecki*	*Aotus azarae*
Cercocebus albigena		*Macaca sinica*	*Aotus nancymai*
Cercopithecus salongo		*Macaca radiata*	*Callicebus cupreus*
Cercopithecus preussi		*Macaca assamensis*	*Callicebus oenanthe*
Cercopithecus erythrotis		*Macaca thibetana*	*Callicebus caligatus*
Cercoputhecus pogonias		*Macaca cyclopis*	*Callicebus brunneus*
Cercoputhecus wolfi		*Presbytes frontata*	*Callicebus modestus*
Cercopithecus pygerythrus		*Presbytes hosei*	*Callicebus olallae*
Procolobus pennanti		*Presbytes melanophos*	*Cacajao melanocehpalus*
Procolobus rufomitratus		*Presbytes thomasi*	*Pithecia monachus*
Procolobus kirkii		*Trachypithecus vetulus*	*Pithecia irrorata*
Procolobus gordonorum		*Trachypithecus phayrei*	*Pithecia aequatorialis*
Procolobus verus		*Trachypithecus pileatus*	*Alouatta pigra*
Colobus vellerosus		*Pygathrix nigripes*	*Lagothrix flavicada*
Colobus satanas		*Rhinopithecus roxellana*	*Cebus albifrons*

			Cebus capuchinus
			Cebus olivaceus
			Saimiri ustus

TABLE 17
SPECIES RECOMMENDED FOR CAPTIVITY NOT CURRENTLY IN CAPTIVITY

AFRICA	MADAGASCAR	ASIA	AMERICA
Galagoides zanzibaricus	*Avahi laniger laniger*	*Loris tardigradus tardigradus*	*Callithrix argentata leucippe*
Arctocebus calabarensis	*Avahi laniger occidentalis*	*Loris tardigradus grandis*	*Callithrix argentata intermedia*
Cercopithecus sclateri	*Indri indri*	*Loris tardigradus malabaricus*	*Callithrix humeralifer chrysoleuca*
Procolobus badius temminckii	*Propithecus diadema candidus*	*Loris tardigradus nycticeboides*	*Leontopithecus caissara*
	Propithecus diadema edwardsi	*Loris tardigradus nordicus*	*Aotus lemurinus lemurinus*
	Propithecus diadema perrieri	*Macaca brunnescens*	*Aotus lemurinus griseimembra*
	Propithecus verreauxi deckeni	*Macaca pagensis*	*Aotus miconax*
	Lepilemur mustelinus	*Semnopithecus entellus aeneas*	*Callicebus torquatus medemi*
		Semnopithecus entellus iulus	*Callicebus personatus personatus*
		Semnopithecus entellus dusumerei	*Callicebus personatus nigrifrons*
		Semnopithecus entellus elissa	*Callicebus personatus melanochir*
		Presbytis comata comata	*Callicebus personatus barbarabrownae*
		Presbytis comata fredericae	*Chiropotes satanas utahicki*
		Presbytis femoralis batuanae	*Pithecia albicans*
		Presbytis femoralis natunae	*Alouatta seniculus sara*
		Presbytis potenziani potenziani	*Allouatta belzebul ululata*
		Presbytis rubicunda carimatae	*Alouatta fusca fusca*
		Trachypithecus francoisi poliocephalis	*Alouatta palliata mexicana*
		Trachypithecus francoisi delacouri	*Alouatta coibensis coibensis*
		Trachypithecus francoisi laotum	*Alouatta coibensis trabeata*
		Trachypithecus francoisi hatinhensis	*Ateles belzebuth marginatus*

		Rhinopithecus brelichi	*Ateles fusciceps fusciceps*
		Hylobates concolor hainanus	*Ateles geoffroyi azuerensis*
		Hylobates concolor furvogaster	*Ateles geoffroyi frontatus*
		Hylobates concolor lu	*Lagothrix lagotricha lagotricha*
		Hylobates hoolock leuconedys	*Cebus apella robustus*

TABLE 18
GLOBAL & REGIONAL
NUMBER OF CURRENT & TARGET CAPTIVE FACILITIES/SPACES
FOR PRIMATES
BY BROAD TAXONOMIC GROUP

TAXON	WORLD			AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		S.AMERICA		N.AMERICA		EUROPE	
								CHINA		INDIA		JAPAN		S.E.									
	ISIS		TRGT	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T
	NOW	2X																					
Madagascar Prosimians	2,465	4,930																					
Other Prosimians	460	920																					
African Cercopithecines	2,225	4,450																					
Asian Cercopithecines	1,100	2,200																					
African Colobines	460	920																					
Asian Colobines	407	814																					
Cebids	1,798	3,599																					
Callithricids	2,760	5,520																					
Hylobatids	930	1,860																					
Pongids	3,212	6,424																					
ALL PRIMATES	15,833	31,666																					

TABLE 19
REGIONAL CAPTIVE PROPAGATION PROGRAMS
PRIMATES

TAXON	APP AFRICA	IESBP INDIA	SEAZA SE ASIA	SSCJ JAPAN	ASMP AUSTRL\NZ	SZB BRAZIL	AMAZOO C.AMERICA	AAZPA/SSP N.AMERICA	JMSG U.K.	EEP EUROPE
Black Lemur								X		X
Black & White Ruffed Lemur								X	X	X
Red Ruffed Lemur								X	X	X
Mongoose Lemur									X	
Brown Lemur									X	
Ring-Tailed Lemur									X	
Slow Loris									X	
Slender Loris									X	
Drill								X		X
Mandrill									X	
Gelada Baboon									X	X
DeBrazza's Monkey									X	
Diana Monkey									X	X
Lion-Tailed Macaque				X				X	X	X
Celebes Macaque									X	X
Douc Langur										X
Hanuman Langur									X	
Banded Leaf Monkey									X	
Silvered Leaf Monkey									X	
Phayre's Leaf Monkey									X	
Black & White Colobus									X	
Guereza									X	
Golden Lion Tamarin								X		

TAXON	APP AFRICA	IESBP INDIA	SEAZA SE ASIA	SSCJ JAPAN	ASMP AUSTRL\NZ	SZB BRAZIL	AMAZOO C.AMERICA	AAZPA/SSP N.AMERICA	JMSG U.K.	EEP EUROPE
Cotton-top Tamarin					X				X	X
Emperor Tamarin										X
Pygmy Marmoset										X
Silvery Marmoset									X	
Geoffroy's Marmoset									X	
Goeldi's Monkey									X	X
White-Faced Saki									X	
Woolly Monkey										X
Spider Monkey (*geoffroyi*)					X				X	
Spider Monkey (*fusiceps*)									X	
Spider Monkey (*paniscus*)									X	
Concolor/Black/White-Cheeked Gibbon				X				X		X
Lar/White-Handed Gibbon								X		
Moloch/Java Grey/Silvery Gibbon										X
Pileated Gibbon										X
Siamang					X			X		
Orangutan				X	X			X	X	X
Bonobo								X		X
Chimpanzee				X	X			X		
Lowland Gorilla				X				X	X	X

TABLE 20
GLOBAL CAPTIVE PROPAGATION PROGRAMS

AFRICA	MADAGASCAR	ASIA	AMERICA
Bonobo			Golden Lion Tamarin
			Golden-Headed Lion Tamarin
			Black Lion Tamarin
			Yellow-Chested (Tufled) Capuchin

TABLE 21
INTERNATIONAL/REGIONAL STUDBOOKS
PRIMATES

TAXON	INTRNL	APP AFRICA	IESBP INDIA	SEAZA SE ASIA	SSCJ JAPAN	ASMP AUSTRL\NZ	SZB BRAZIL	AMAZOO C.AMERICA	AAZPA/SSP N.AMERICA	JMSG U.K.	EEP EUROPE
Aye-Aye	X										
Sifaka	Pending								X		
Ring-Tailed Lemur									X		
Black Lemur	X										
Black/White Ruffed Lemur	X										
Red Ruffed Lemur	X										
Mongoose Lemur	X										
Fat-Tailed Dwarf Lemur	X										
Coquerel's Mouse Lemur	X										
Lesser Mouse Lemurs	X								X		
Galagoes									X		
Pygmy Loris	X										
Asian Prosimians									X		
Drill	X										
Mandrill									X		
Gelada Baboon	X										
Hamadryas Baboon									X		
Diana Monkey	X										
Mangabey									X		
Lion-Tailed Macaque	X										
Celebes Macaque										X	X
Colobus Monkeys									X		
Francois Langur									X		

TAXON	INTRNL	APP AFRICA	IESBP INDIA	SEAZA SE ASIA	SSCJ JAPAN	ASMP AUSTRL\NZ	SZB BRAZIL	AMAZOO C.AMERICA	AAZPA/SSP N.AMERICA	JMSG U.K.	EEP EUROPE
Douc Langur	X										
Golden Lion Tamarin	X										
Black Lion Tamarin	X										
Golden Headed Tamarin	X										
Cotton-top Tamarin	X								X		
Emperor Tamarin	X										
Geoffroy's Tamarin	X										
Geoffroy's Marmoset									X		
Pygmy Marmoset	X										
Callimico Monkey										X	X
Black Howler Monkey	X										
Wooly Monkey											X
Black-Handed Spider Monkey						X				X	
Black Spider Monkey						X				X	
White-Faced Saki									X		
Concolor/Black/White-Cheeked Gibbon					X				X		X
Lar/White-Handed Gibbon									X		
Moloch/Java Grey/Silvery Gibbon											X
Pileated Gibbon											X
Siamang						X			X		
Orangutan					X	X			X	X	X
Bonobo									X		X
Chimpanzee					X	X			X		
Lowland Gorilla					X				X	X	X

TABLE 22
"GENERIC" POPULATIONS IN CAPTIVITY

TAXON	CAPTIVE PROGRAM RECOMMENDATION	OTHER CAPTIVE PROGRAMS IN SPECIES
Alouatta seniculus	NUCLEUS II	Yes
Cercopithecus petaurista	NUCLEUS II	No
Cercopithecus ascanius	NUCLEUS II	Yes
Cercopithecus aethiops	NUCLEUS II	Yes
Cercopithecus sabaeus	NUCLEUS II	No
Erythtocebus patas	NUCLEUS II	No
Macacca nemestrina	NUCLEUS II	No
Macaca fasicularis	NUCLEUS II	Yes
Macaca mulatta	NUCLEUS II	Yes
Macaca fuscata	NUCLEUS II	No
Colobus guereza	NUCLEUS I	Yes
Semnopithecus entellus	NUCLEUS II	Yes
Trachypithecus cristatus	NUCLEUS II	Yes
Hylobates lar	NUCLEUS II	No
Hylobates syndactylus	NUCLEUS II	No
Hylobates agilis	NUCLEUS II	No
Hylobates muelleri	NUCLEUS II	Yes
Pan troglodytes	90%\100 YRS I	Yes

TABLE 23
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AFRICA PRIMATE TAXA
RECOMMENDED FOR 90/100 I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Mandrillus sphinx																						
Mandrillus leucophaeus																						
Theropithecus gelada																						
Cercopithecus diana diana																						
Cercoithecus sclateri																						
Cercopithecus erythrogaster (Togo/Benin)																						
Macaca sylvanus																						
Colobus guereza caudatus																						
Pan troglodytes (no subsp)																						
Pan troglodytes verus																						

Pan paniscus																						
Gorilla gorilla gorilla																						

TABLE 24
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AFRICA PRIMATE TAXA
RECOMMENDED FOR 90/100 II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Galagoides zanzibaricus																						
Cercocebus atys lunulatus																						
Cercocebus torquatus																						
Cercopithecus diana roloway																						
Cercopithecus hamlyni hamlyni																						
Cercopithecus lhoesti																						
Cercopithecus solatus																						

TABLE 25
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AFRICA PRIMATE TAXA
RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Arctocebus calabarensis																						
Papio papio																						
Allenopithecus nigrovirdidus																						
Cercocebus galeritus chrysogaster																						
Cercopithecus aethiops djamdjamensis																						
Procolobus badius temminekii																						
Colobus polykomos																						
Colobus guereza (no subsp)																						
Colobus guereza guereza																						
Pan troglodytes schweinfurthi																						

Pan troglodytes troglodytes																						

TABLE 26
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AFRICA PRIMATE TAXA
RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C. P.	T. P.	C. P.	T. P.	C. P.	T. P.	C. P.	T. P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Otolemur crassicaudatus																						
Galago moholi																						
Perodiciticus potto																						
Cercocebus atys atys																						
Cercocebus galeritus agilis																						
Cercocebus aterrimus aterrimus																						
Papio anugis																						
Papio cynocephalus																						
Papio hamadryas																						
Papio ursinus																						
Cercopithecus neglectus																						
Cercopithecus albogularis albogularis																						

Cercopithecus mitis (no subsp)																						
Cercopithecus mitis stuhlmanni																						
Cercopithecus nicititans nicititans																						
Cercopithecus petaurista (no subsp)																						
Cercopithecus cephus cephus																						
Cercopithecus ascanius (no subsp)																						
Cercopithecus ascanius schmidti																						
Cercopithecus cambelli cambelli																						
Cercopithecus mona																						
Cercopithecus aethiops (no subsp)																						
Cercopithecus sabaeus (no subsp)																						
Miopithecus talapoin ?																						
Erythrocebus patas (no subsp)																						
Colobus guereza kikuyuensis																						
Colobus angolensis angolensis																						

TABLE 27
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR MADAGASCAR PRIMATE TAXA
RECOMMENDED FOR 90/100 I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Daubentonia madagascariensis																						
Allocebus trichotis																						
Indri indri																						
Propithecus diadema candidus																						
Propithecus diadema perrieri																						
Propithecus verreauxi coronatus																						
Propithecus tattersalli																						
Lemur macaco flavifrons																						
Hapalemur griseus alaotrensis																						
Hapalemur simus																						
Hapalemur aureus																						

TABLE 28
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR MADAGASCAR PRIMATE TAXA
RECOMMENDED FOR 90/100 II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Lemur coronatus																						
Lemur mongoz																						
Lemur macaco macaco																						
Varecia vaiegata rubra																						
Varecia variegata variegata																						

TABLE 29
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR MADAGASCAR PRIMATE TAXA
RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Mirza coquereli																						
Phaner furcifer																						
Avahi laniger laniger																						
Avahi laniger occidentalis																						
Propithecus diadema diadema																						
Propithecus diadema edwardsi																						
Propithecus verreauxi coquerli																						
Propithecus verreauxi deckeni																						
Lemur catta																						
Lemur fulvus albocollaris																						
Lemur fulvus collaris																						

Lemur fulvus sanfordi																						
Lemur rubiventer																						

TABLE 30
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR MADAGASCAR PRIMATE TAXA
RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Cheirogaleus medius																						
Microcebus rufus																						
Microcebus murinus																						
Propithecus verreauxi verreauxi																						
Lemur fulvus fulvus																						
Lemur fulvus albifrons																						
Lemur fulvus rufus																						
Hapalemur griseus griseus																						
Lepilemur mustelinus																						

TABLE 31
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR ASIA PRIMATE TAXA
RECOMMENDED FOR 90/100 I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Nycticebus pygmaeus																						
Macaca silenus																						
Macaca nigra																						
Macaca pagensis																						
Semnopitheucs entellus aeneas																						
Semnopithecus entellus iulus																						
Semnopithecus entellus dusumerei																						
Semnopithecus entellus elissa																						
Presbytes comata comata																						
Presbytis comata fredericae																						
Presbytis femoralis batuana																						

Presbytes femoralis natunae																						
Presbytes potenziani potenziani																						
Presbytis rubicunda carimatae																						
Trachypithecus johnii																						
Trachypithecus francoisi leucocephalis																						
Trachypithecus francoisi poliocephalis																						
Trachypithecus francoisi delacouri																						
Trachypithecus francoisi laotum																						
Trachypithecus francoisi hatinhensis																						
Trachypithecus geei																						
Simias concolor concolor																						
Simias concolor siberu																						
Pygathrix nemaeus																						
Rhinopithecus avunculus																						
Rhinopithecus bieti																						

Rhinopithecus brelichi																						
Hylobates concolor concolor																						
Hylobates concolor hiananus																						
Hyolbates concolor furvogaster																						
Hylobates concolor lu																						
Hylobates concolor siki																						
Hylobates klossii																						
Hylobates moloch moloch																						
Hylobates pileatus																						
Pongo pygmaeus pygmaeus																						
Pongo pygmaeus abelii																						

TABLE 32
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR ASIA PRIMATE TAXA
RECOMMENDED FOR 90/100 II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Tarsius syrichta																						
Macaca maura																						
Trachypithecus francoisi francoisi																						
Hylobates concolor leucogenys																						
Hylobates concolor gabriellae																						

TABLE 33
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR ASIA PRIMATE TAXA
RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Loris tardigradus tardigradus																						
Loris tardigradus grandis																						
Loris tardigradus malabaricus																						
Loris tardigradus nycticeboides																						
Loris tardigradus nordicus																						
Macaca brunnescens																						
Nasalis larvatus																						
Hylobates hoolock hoolock																						
Hylobates hoolock leuconedys																						

TABLE 34
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR ASIA PRIMATE TAXA
RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Nycticebus coucang cougang																						
Nycticebus coucang bengalensis																						
Macacca nemestrina (no subsp)																						
Macaca fasicularis (no subsp)																						
Macaca fasicularis philippinesnsis																						
Macaca mulatta (no subsp)																						
Macaca mulatta mulatta																						
Macaca fuscata (no subsp)																						
Macaca arctoides (no subsp)																						

Semnopithecus entellus (no subsp)																						
Semnopithecus entellus entellus																						
Semnopithecus entellus thersites																						
Trachypithecus auratus auratus																						
Trachypithecus cristatus (no subsp)																						
Trachypithecus cristatus ultimus																						
Trachypithecus obscurus																						
Hylobates lar (no subsp)																						
Hylobates syndactylus (no subsp)																						
Hylobates agilis (no subsp)																						
Hylobates muelleri (no subsp)																						
Hylobates muelleri abbotti																						

TABLE 35
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AMERICA PRIMATE TAXA
RECOMMENDED FOR 90/100 I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Callithrix flaviceps																						
Saguinus oedipus																						
Leontopithecus rosalia																						
Leontopithecus chrysomelas																						
Leontopithecus chrysopygus																						
Leontopithecus caissara																						
Callimico goeldi																						
Callicebus personatus barbarabrownae																						
Chiropotes satanas satanas																						
Alouatta belzebul ululata																						

Alouatta fusca fusca																						
Alouatta coibensis trabeata																						
Ateles belzebuth marginatus																						
Ateles fusciceps fusciceps																						
Ateles geoffroyi azuerensis																						
Brachyteles arachnoides																						
Cebus apella xanthosternos																						
Saimiri oerstedi citrinellus																						

TABLE 36
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AMERICA PRIMATE TAXA
RECOMMENDED FOR 90/100 II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Callithrix argentata leucippe																						
Callithrix argentata intermedius																						
Callithrix aurita aurita																						
Saguinus bicolor bicolor																						
Saguinus leucopus																						
Aotus lemurinus lemurinus																						
Aotus lemurinus griseimembra																						
Aotus miconax																						
Callicebus personatus personatus																						
Callicebus personatus melanochir																						

Cacajao calvus calvus																						
Chiropotes albinasus																						
Chriopotes satanas utahicki																						
Alouatta palliata mexicana																						
Alouatta coibensis coibensis																						
Ateles belzebuth hybridus																						
Ateles fusciceps robustus																						
Ateles geoffroyi geoffroyi																						
Ateles geoffroyi frontatus																						
Ateles geoffroyi panamenisis																						
Lagothrix lagotricha lugens																						
Cebus apella robustus																						
Saimiri oerstedi oerstedi																						

TABLE 37
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AMERICA PRIMATE TAXA
RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C. P.	T. P.	C. P.	T. P.	C. P.	T. P.	C. P.	T. P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Callithrix humeralifer chrysoleuca																						
Callicebus torquatus medemi																						
Callicebus personatus nigrifrons																						
Pithecia albicans																						
Atels belzebuth belzebuth																						
Ateles geoffroyi vellerosus																						
Lagothrix lagotricha lagotricha																						
Lagothrix lagotricha cana																						

Lagothrix lagotricha poeppigii																						

TABLE 38
GLOBAL AND REGIONAL
CURRENT AND TARGET CAPTIVE POPULATIONS FOR
FOR AMERICA PRIMATE TAXA
RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

	WORLD		AFRICA		MADAGASCAR		ASIA								AUSTRL/NZ		EUROPE		NORTH AMERICA		C. & S. AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
PRIMATE TAXON	CPTV POP	CPTV TRGT	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.	C.P.	T.P.
Callithrix argentata argentata																						
Callithrix argentata melanura																						
Callithrix jacchus																						
Callithrix geoffroyi																						
Callithrix kulhi																						
Callithrix pencillata																						
Cebuella pygmaea																						
Saguinus fuscicollis weddellii																						
Saguinus fuscicollis illigeri																						
Saguinus mystax mystax																						
Saguinus labiatus labiatus																						
Saguinus imperator imperator																						

Saguinus imperator subgrisescens																						
Saguinus midas midas																						
Saguinus geoffroyi																						
Aotus trivirgatus																						
Aotus vociferans																						
Callicebus moloch																						
Callicebus donacophilus donacophilus																						
Cacajao calvus rubicundus																						
Pithecia pithecia pithecia																						
Alouatta seniculus (no subsp)																						
Alouatta seniculus sara																						
Alouatta palliata palliata																						
Alouatta caraya																						
Ateles paniscus paniscus																						
Ateles paniscus chamek																						
Saimiri sciureus sciureus																						
Saimiri boliviensis boliviensis																						

TABLE 39
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH AFRICA PRIMATE TAXA RECOMMENDED FOR 90\100 I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		S.AMERICA		N.AMERICA		EUROPE	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T	N	T
Mandrillus sphinx																						
Mandrillus leucophaeus																						
Theropithecus gelada																						
Cercopithecus diana diana																						
Cercopithecus sclateri																						
Cercopithecus erythrogaster (Togo/Benin)																						
Macaca sylvanus																						
Colobus guereza caudatus																						
Pan troglodytes (no subsp)																						
Pan troglodytes verus																						
Pan paniscus																						
Gorilla gorilla gorilla																						

TABLE 40
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH AFRICA PRIMATE TAXA RECOMMENDED FOR 90\100 II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Galagoides zanzibaricus																						
Cercocebus atys lunulatus																						
Cercocebus torquatus																						
Cercopithecus diana roloway																						
Cercopithecus hamlyni hamlyni																						
Cercopithecus lhoesti																						
Cercopithecus solatus																						

TABLE 41
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH AFRICA PRIMATE TAXA RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Arctocebus calabarensis																						
Papio papio																						
Allenopithecus nigroviridus																						
Cercocebus galeritus chrysogaster																						
Cercopithecus aethiops djamdjamensis																						
Procolobus badius temminekii																						
Colobus polykomos																						
Colobus guereza (no subsp)																						
Colobus guereza guereza																						
Pan troglodytes schweinfurthi																						
Pan troglodytes troglodytes																						

TABLE 42
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES
WITH AFRICA PRIMATE TAXA
RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Otolemur crassicaudatus																						
Galago moholi																						
Perodicticus potto																						
Cercocebus atys atys																						
Cercocebus galeritus agilis																						
Cercocebus aterrimus aterrimus																						
Papio anugis																						
Papio cynocephalus																						
Papio hamadryas																						
Papio ursinus																						
Cercopithecus neglectus																						
Cercopithecus albogularis albogularis																						
Cercopithecus mitis (no subsp)																						
Cercopithecus mitis stuhlmanni																						
Cercopithecus nictitans nictitans																						
Cercopithecus petaurista (no subsp)																						
Cercopithecus cephus cephus																						

Cercopithecus ascanius (no subsp)																						
Cercopithecus ascanius schmidti																						
Cercopithecus cambelli cambelli																						
Cercopithecus mona																						
Cercopithecus aethiops (no subsp)																						
Cercopithecus sabaeus (no subsp)																						
Miopithecus talapoin ?																						
Erythrocebus patas (no subsp)																						
Colobus guereza kikuyuensis																						
Colobus angolensis angolensis																						

TABLE 43
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH MADAGASCAR PRIMATE TAXA RECOMMENDED FOR 90\100 I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Daubentonia madagascariensis																						
Allocebus trichotis																						
Indri indri																						
Propithecus diadema candidus																						
Propithecus diadema perrieri																						
Propithecus verreauxi coronatus																						
Propithecus tattersalli																						
Lemur macaco flavifrons																						
Hapalemur griseus alaotrensis																						
Hapalemur simus																						
Hapalemur aureus																						

TABLE 44
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH MADAGASCAR PRIMATE TAXA RECOMMENDED FOR 90\100 II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Lemur coronatus																						
Lemur mongoz																						
Lemur macaco macaco																						
Varecia variegata rubra																						
Varecia variegata variegata																						

TABLE 45
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH MADAGASCAR PRIMATE TAXA RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Mirza coquereli																						
Phaner furcifer																						
Avahi laniger laniger																						
Avahi laniger occidentalis																						
Propithecus diadema diadema																						
Propithecus diadema edwardsi																						
Propithecus verreauxi coquerli																						
Propithecus verreauxi deckeni																						
Lemur catta																						
Lemur fulvus albocollaris																						
Lemur fulvus collaris																						
Lemur fulvus sanfordi																						
Lemur rubiventer																						

TABLE 46
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH MADAGASCAR PRIMATE TAXA RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Cheirogaleus medius																						
Microcebus rufus																						
Microcebus murinus																						
Propithecus verreauxi verreauxi																						
Lemur fulvus fulvus																						
Lemur fulvus albifrons																						
Lemur fulvus rufus																						
Hapalemur griseus griseus																						
Lepilemur mustelinus																						

TABLE 47
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH ASIA PRIMATE TAXA RECOMMENDED FOR 90\100 I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Nycticebus pygmaeus																						
Macaca silenus																						
Macaca nigra																						
Macaca pagensis																						
Semnopithecus entellus aeneas																						
Semnopithecus entellus iulus																						
Semnopithecus entellus dusumerei																						
Semnopithecus entellus elissa																						
Presbytes comata comata																						
Presbytis comata fredericae																						
Presbytis femoralis batuana																						
Presbytes femoralis natunae																						
Presbytes potenziani potenziani																						
Presbytis rubicunda carimatae																						
Trachypithecus johnii																						
Trachypithecus francoisi leucocephalis																						

Trachypithecus francoisi poliocephalis																						
Trachypithecus francoisi delacouri																						
Trachypithecus francoisi laotum																						
Trachypithecus francoisi hatinhensis																						
Trachypithecus geei																						
Simias concolor concolor																						
Simias concolor siberu																						
Pygathrix nemaeus																						
Rhinopithecus avunculus																						
Rhinopithecus bieti																						
Rhinopithecus brelichi																						
Hylobates concolor concolor																						
Hylobates concolor hainanus																						
Hylobates concolor furvogaster																						
Hylobates concolor lu																						
Hylobates concolor siki																						
Hylobates klossii																						
Hylobates moloch moloch																						
Hylobates pileatus																						
Pongo pygmaeus pygmaeus																						
Pongo pygmaeus abelii																						

TABLE 48
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH ASIA PRIMATE TAXA RECOMMENDED FOR 90\100 II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Tarsius syrichta																						
Macaca maura																						
Trachypithecus francoisi francoisi																						
Hylobates concolor leucogenys																						
Hylobates concolor gabriellae																						

TABLE 49
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH ASIA PRIMATE TAXA RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Loris tardigradus tardigradus																						
Loris tardigradus grandis																						
Loris tardigradus malabaricus																						
Loris tardigradus nycticeboides																						
Loris tardigradus nordicus																						
Macaca brunnescens																						
Nasalis larvatus																						
Hylobates hoolock hoolock																						
Hylobates hoolock leuconedys																						

TABLE 50
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH ASIA PRIMATE TAXA RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Nycticebus coucang cougang																						
Nycticebus coucang bengalensis																						
Macacca nemestrina (no subsp)																						
Macaca fasicularis (no subsp)																						
Macaca fasiclaris philippinensis																						
Macaca mulatta (no subsp)																						
Macaca mulatta mulatta																						
Macaca fuscata (no subsp)																						
Macaca arctoides (no subsp)																						
Semnopithecus entellus (no subsp)																						
Semnopithecus entellus entellus																						
Semnopithecus entellus thersites																						
Trachypithecus auratus auratus																						

Trachypithecus cristatus (no subsp)																						
Trachypithecus cristatus ultimus																						
Trachypithecus obscurus																						
Hylobates lar (no subsp)																						
Hylobates syndactylus (no subsp)																						
Hylobates agilis (no subsp)																						
Hylobates muelleri (no subsp)																						
Hylobates muelleri abbotti																						

TABLE 51
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH AMERICA PRIMATE TAXA RECOMMENDED FOR 90\100 I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Callithrix flaviceps																						
Saguinus oedipus																						
Leontopithecus rosalia																						
Leontopithecus chrysomelas																						
Leontopithecus chrysopygus																						
Leontopithecus caissara																						
Callimico goeldi																						
Callicebus personatus barbarabrownae																						
Chiropotes satanas satanas																						
Alouatta belzebul ululata																						
Alouatta fusca fusca																						
Alouatta coibensis trabeata																						
Ateles belzebuth marginatus																						
Ateles fusciceps fusciceps																						
Ateles geoffroyi azuerensis																						
Brachyteles arachnoides																						
Cebus apella xanthosternos																						
Saimiri oerstedi citrinellus																						

TABLE 52
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH AMERICA PRIMATE TAXA RECOMMENDED FOR 90\100 II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Callithrix argentata leucippe																						
Callithrix argentata intermedius																						
Callithrix aurita aurita																						
Saguinus bicolor bicolor																						
Saguinus leucopus																						
Aotus lemurinus lemurinus																						
Aotus lemurinus griseimembra																						
Aotus miconax																						
Callicebus personatus personatus																						
Callicebus personatus melanochir																						
Cacajao calvus calvus																						
Chiropotes albinasus																						
Chiropotes satanas utahicki																						
Alouatta palliata mexicana																						
Alouatta coibensis coibensis																						
Ateles belzebuth hybridus																						
Ateles fusciceps robustus																						
Ateles geoffroyi geoffroyi																						
Ateles geoffroyi frontatus																						

Ateles geoffroyi panamenisis																						
Lagothrix lagotricha lugens																						
Cebus apella robustus																						
Saimiri oerstedi oerstedi																						

TABLE 53
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH AMERICA PRIMATE TAXA RECOMMENDED FOR NUCLEUS I LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Callithrix humeralifer chrysoleuca																						
Callicebus torquatus medemi																						
Callicebus personatus nigrifrons																						
Pithecia albicans																						
Ateles belzebuth belzebuth																						
Ateles geoffroyi vellerosus																						
Lagothrix lagotricha lagotricha																						
Lagothrix lagotricha cana																						
Lagothrix lagotricha poeppigii																						

TABLE 54
CURRENT & TARGET NUMBER OF CAPTIVE FACILITIES/SPACES WITH AMERICA PRIMATE TAXA RECOMMENDED FOR NUCLEUS II LEVEL OF BREEDING PROGRAM

TAXON	WORLD		AFRICA		MADAGSCR		ASIA								AUSTRAL\NZ		EUROPE		N.AMERICA		S.AMERICA	
							CHINA		INDIA		JAPAN		S.E.									
	NOW	TRGT	N	T	N	T	N	T	N	T	N	T	N	T	NOW	TRGT	NOW	TRGT	NOW	TRGT	NOW	TRGT
Callithrix argentata argentata																						
Callithrix argentata melanura																						
Callithrix jacchus																						
Callithrix geoffroyi																						
Callithrix kulhi																						
Callithrix pencillata																						
Cebuella pygmaea																						
Saguinus fuscicollis weddellii																						
Saguinus fuscicollis illigeri																						
Saguinus mystax mystax																						
Saguinus labiatus labiatus																						
Saguinus imperator imperator																						
Saguinus imperator subgrisescens																						
Saguinus midas midas																						
Saguinus geoffroyi																						
Aotus trivirgatus																						
Aotus vociferans																						
Callicebus moloch																						
Callicebus donacophilus donacophilus																						

Cacajao calvus rubicundus																						
Pithecia pithecia pithecia																						
Alouatta seniculus (no subsp)																						
Alouatta seniculus sara																						
Alouatta palliata palliata																						
Alouatta caraya																						
Ateles paniscus paniscus																						
Ateles paniscus chamek																						
Saimiri sciureus sciureus																						
Saimiri boliviensis boliviensis																						

TABLE 55
STRATEGIC SUPPORT OF *IN SITU* PROTECTED AREAS FOR PRIMATES BY THE GLOBAL AND REGIONAL CAPTIVE COMMUNITIES

ECO-TAXONOMIC GROUP	NUMBER OF SIGNIFICANT *IN SITU* SANCTUARIES	SUPPORTED BY ZOOS FROM					
		AFRICA	ASIA	AUSTRALASIA	EUROPE	N. AMERICA	S. AMERICA
Madagascar Prosimians							
Other Prosimians							
African Cercopithecines							
Asian Cercopithecines							
African Colobines							
Asian Colobines							
Cebids							
Caalithricids							
Hylobatids							
Pongids							
ALL PRIMATES							

PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 9

REGIONAL CAPTIVE CONSERVATION PROGRAMS/N. AMERICA AAZPA

AMERICAN ASSOCIATION OF ZOOLOGICAL PARKS AND AQUARIUMS
A·A·Z·P·A 1924

AAZPA ANNUAL REPORT

on conservation and science

AAZPA
ANNUAL REPORT ON
CONSERVATION AND SCIENCE
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First Edition
1991

1991

PROSIMIAN TAXON ADVISORY GROUP

Chair: Ingrid Porton, St. Louis Zoological Park
Co-chair: Helena Fitch-Snyder, San Diego Zoo

Primary Goals

The Prosimian Advisory Group (PAG), which encompasses all prosimians and the tarsier, received approval from AAZPA's Wildlife Conservation and Management Committee (WCMC) in May 1991. Initial goals of the committee were established at the Prosimian Interest Group meeting held at the 1990 Annual AAZPA Conference: (1) to determine current and projected North American captive space available for the exhibition and propagation of prosimians; (2) to identify prosimian species in greatest need of captive breeding programs based on their status in the wild, status in captivity, availability and husbandry requirements; (3) to stimulate and coordinate the initiation of new studbooks and SSPs; (4) to determine status and demographic and genetic "health" of current captive populations of prosimians (especially through the development of studbooks); (5) to coordinate actively the use of captive space by various prosimian species and communicate to zoological institutions the species/population goals and priorities set by the PAG; (6) to facilitate communication within the scientific community of research opportunities and needs; (7) to encourage and coordinate the development of husbandry manuals; (8) to cooperate with other national and international conservation organizations and groups, such as IUCN/SSC Primate Specialist Group and IUCN CBSG to achieve common goals; (9) to develop captive management programs that recognize and facilitate the retention of species-typical behavior; and (10) to inform the public about prosimian conservation issues by developing an educational arm to the PAG.

Data Table

	Current year
# of meetings	0
# of studbooks under umbrella	2
# of SSPs under umbrella	2
# of new studbook petitions submitted	3
# of new studbooks approved	2
# of new SSP petitions submitted	0
# of new SSPs approved	0

Progress Toward Goals

(1) Two prosimian studbooks were approved by the WCMC: Asian Prosimians (covering *Nycticebus coucang, N. pygmaeus, Loris tardigradus, Tarsius bancanus, T. syrichta*) by Helena Fitch-Snyder, San Diego Zoo and *Lemur catta* by Lynn Villers, Indianapolis Zoo. The compilation of a *L. catta* studbook will be both difficult and important because the captive population of this endangered species is very large and undoubtedly composed of many individuals of unknown ancestry.

(2) A studbook petition for three nocturnal lemur species (*Microcebus murinus, Mirza coquereli, Cheirogaleus medius*) has been submitted to the WCMC by Barbara Coffman, Duke University Regional Primate Center. Two other studbook petitions are being prepared for submission: *Lemur fulvus* by Barbara Coffman and *Propithecus* species by David Harring, Duke University Regional Primate Center.

(3) International studbooks for the following species have or will be initiated in the near future: *Lemur mongoz* (Mike Clark, London Zoological Society), *Daubentonia madagascariensis* (Jersey Wildlife Preservation Trust), *L. coronatus, L. rubriventer*, and *Hapalemur* species (Jean-Marc Lernould, Zoo Mulhouse). With the exception of galagos, most of the prosimian species held in captivity will be managed at a studbook level within the next few years.

(4) Spearheaded by Dr. Anne Baker, Chicago Zoological Park, three of the primate TAGs (Old World, New World and Prosimians) developed a joint primate housing survey that was sent to all North American zoos. The survey was designed to obtain information on the current as well as projected captive space allotted primates and also requested information on mixed species displays. Dr. Fred Koontz, New York Zoological Society, is designing a computer program to analyze the data; results may be available this fall.

(5) A Primate Captive Action Plan Workshop was held 13-15 March at the IUCN CBSG Office in Minnesota. The meeting brought together members of the IUCN/SSC Primate Specialist Group, representatives from the EEP, AAZPA Primate TAG chairs, Madagascar Fauna Interest Group, International Species Information System and IUCN CBSG. The objective of the meeting was to evaluate primate

species conservation priorities. Taxa were classified according to degree of threat in the wild (based on available census data/estimates, and reduction and/or fragmentation of habitat) as well as taxonomic uniqueness. This important document will provide a foundation from which to formulate a Regional Collection Plan for prosimians within the context of the overall needs of all primate taxa.

Short-term Goals for Upcoming Year

(1) Recruit an interested individual to become studbook keeper for galagos.
(2) Develop a communication network to better manage captive prosimian breeding programs on a global level.
(3) Recruit individuals with experience managing prosimians species to develop basic husbandry protocols. Encourage the eventual expansion of these protocols into husbandry manuals.
(4) Develop and encourage a more systematic method of collecting data on group interactions within and success of prosimians in mixed species exhibits.
(5) Initiate development of a North American Regional Collection Plan for prosimians based on data from the CBSG Primate Captive Action Plan, results of the Primate Space Survey, and census data on current captive prosimian populations (from studbook and International Species Information System data).
(6) Recruit interested individuals to identify and coordinate conservation education programs (*in situ* and/or in North America) that would benefit this taxon.

1991

BLACK LEMUR (*Lemur macaco*)

Species Coordinator and International Studbook Keeper:
Ingrid Porton, St. Louis Zoological Park

Introduction

The Black Lemur SSP covers both subspecies, *L. m. macaco* and *L. m. flavifrons*. The SSP population of *macaco* totals 142 individuals and is currently being managed exclusively as a North American program. Currently, there is no Black Lemur EEP. However, a more organized breeding program is being initiated with the development of a regional studbook in Great Britain. The captive population of the more endangered *flavifrons* is limited to 17 animals at one North American institution (Duke Regional Primate Center) and another 13 in France. Clearly, it would be most efficient to initiate a management plan for this subspecies at an international level.

A Master Plan for *macaco* was developed in 1989 with the goal of maintaining 85-90% of the original genetic diversity for a period of 200 years. The second overall goal was to manage the population at the minimum required "carrying capacity" to ensure that captive space was available for other lemur species. This goal requires all participants to closely adhere to the breeding recommendations which strive to correct for discrepancies in founder representation. This is a "developing" SSP.

Data Table (current through 1 July 1991)

	One year ago	Current year
Participating institutions	14	15
Captive Population	67.64.1	70.71.1
# SSP animals managed	113	125
# SSP animals not required to meet goals	19	17
# animals in non-participant collections but desirable to SSP	2-3	2-3
Total births in SSP program	19	15
# surviving to one year.	16	12
# of desired births	10	11
# of undesired births	6	1
# of deaths of SSP animals	4	4
# of imports	0	0
# of exports	0	0
# of founders with represented descendants	19	19

Current Population Status

Currently, 15 zoological institutions have signed a Memoranda of Participation, while another five hold SSP animals for participating institutions. Approximately 11 non-member institutions hold black lemurs. No census has been conducted on wild populations of either subspecies. A three month preliminary survey by Josephine Andrews found that *L. m. macaco* groups (ranging from 2-12 individuals) were found in primary rain forest, disturbed secondary forest, agricultural areas and timber plantations. Deforestation is the primary threat to *macaco* survival, but Ms. Andrews suggests that their propensity to feed on crops may make them susceptible to purposeful extermination.

Demographic Trends

The *L. m. macaco* SSP population is experiencing growth at about 9-10% per year. Generation time for males (7.91 years) is somewhat lower than for females (8.56 years). One goal of the SSP is to increase generation time to lower the minimum viable population (MVP). The results of breeding recommendations for those pairs that were actually placed together has been encouragingly high (about 75-80%). The new Center for Disease Control regulations governing importation permits for non-human primates have prevented three transfers of black lemurs from Canada to the U.S. due to lack of sufficient quarantine space.

The number of unwanted births decreased from six in 1990 to one in 1991. The decrease may be a result of better communication concerning the SSP recommendations and the availability of birth control options.

Population Genetics

The *macaco* SSP population originated from 19 founders. A potential founder, female #299, has failed to reproduce over the past six years. The founder genome equivalent (FGE) is just over half the actual number of founders (10.35). The SSP Master Plan calls for improvement of the FGE through increased reproduction by descendants of underrepresented founders and the addition of new founder lines from Europe and the wild. Significant progress towards this goal was made with the finalization of plans to import six (2.4) black lemurs, representing eight new founder lines, from France. Four (2.2) of the individuals arrived on 9 July 1991 and were placed in quarantine. (The SSP wishes to extend its sincere appreciation to the Cleveland Zoological Park for providing the quarantine facilities.) The remaining two females are scheduled to arrive this fall. The addition of these individuals should substantially improve the genetic diversity of the population and reduce the number of wild caught individuals required.

Research

Research on the efficacy and safety of the female-directed contraceptive, Depo-Provera, was coordinated through the AAZPA Contraception Committee. The MetroToronto Zoo, Henson Robinson Zoo, and St. Louis Zoological Park cooperated in the eight-month study. Eight females were treated twice with Depo-Provera at three-month intervals. Another nine females served as controls. Vaginal swabs were taken three times a week to monitor estrus cycles. Blood samples were drawn once a month to evaluate Depo-Provera's effect on adrenal function. Weight gain was noted in all treated females and may prove to be problematic. Complete results of this study will be available this fall, in time for the upcoming breeding season. An advantage of Depo-Provera over an MGA implant is that its use can be more easily limited to the breeding season.

Research on the feasibility of manual massage as a technique to collect semen from *L. m. macaco* was initially carried out during the 1989-90 and then again during the 1990-91 breeding season by Dr. Cheryl Asa, St. Louis Zoological Park. This technique has been successfully used to collect semen from *L. fulvus* and *L. catta*. The subjects were six adult males, including two proven breeders. No semen was collected from any of the males and, at this time, a reason for the lack of success is not obvious. Because the excretion of seminal coagulum has caused urethral blockage following electroejaculation, an alternate method of semen collection is necessary prior to the development of artificial insemination techniques for this species.

An ethogram for captive *L. m. macaco* has been drafted by I. Colquhoun and I. Porton, and should be submitted for publication this year. Behavioral research on the social dynamics of an all-male group is being conducted at the St. Louis Zoological Park. Hand-rearing and resocialization techniques have been developed at the St. Louis Zoological Park and were presented by J. Knobbe at the AAZPA Great Lakes Regional Conference.

An extensive medical survey is being undertaken by the veterinary advisor, Dr. Randall Junge., St. Louis Zoological Park Medical and necropsy records for 1980-1990 have been requested from 16 current and five historical record holders. Four cases of hypertrophic metaphyseal osteoarthropathy associated with chronic renal disease have been identified. Further diagnostic evaluation of these cases continues, utilizing expertise in both veterinary and human fields of radiology, pathology, endocrinology and internal medicine. All established cases have led to euthanasia due to severe debilitation accompanying the condition. There is evidence of a genetic link, which is being investigated.

Two graduate students from Washington University initiated their field research on *L. m. macaco* this spring. Ian Colquhoun will focus on the behavioral ecology of black lemurs while Josephine Andrews will compare the success of black lemur groups in disturbed versus undisturbed habitats. Information from both studies will greatly benefit the development of long-term captive management strategies.

Progress Toward Goals

(1) A fairly high reproductive success rate was achieved among pairs that were recommended to breed.
(2) There is a potential to add eight new *macaco* founder lines with the acquisition of 2.2 animals this summer and another 0.2 animals are scheduled to arrive this fall.
(3) Research was conducted on the efficacy and safety of Depo-Provera as a reversible contraceptive in the black lemur.
(4) An ethogram was developed on the behavior of captive black lemurs.
(5) Work on a computer-based medical manual was initiated by the veterinary advisor.

Short-term Goals for Upcoming Year

(1) Complete importation of five *L. m. macaco*.

(2) Develop a husbandry manual, incorporating the completed medical manual.
(3) Initiate a more formalized approach to the investigation of appropriate group size and composition.
(4) Continue to accumulate and disseminate information on the efficacy and safety of different birth control methods for this species.
(5) Initiate discussions with European holders of *flavifrons* to develop a global captive breeding program.

1991

RUFFED LEMUR (*Varecia variegata*)

Species Coordinator and International Studbook Keeper:
Ingrid Porton, St. Louis Zoological Park

Introduction

The Ruffed Lemur SSP is, in essence, managed as two separate SSPs: one for the red ruffed lemur (*V. v. rubra*) and one for the black and white ruffed lemur (*V. v. variegata*). Two Master Plans, the first in May 1988, and the second in June 1991, have been developed for the ruffed lemur. The original Master Plan called for the maintenance of 85-90% genetic diversity over 200 years and a reduction in the number of spaces required in North America to 150 (per subspecies) by managing the SSP and EEP populations as one. The second Master Plan, which utilized the more accurate software now available, has modified some of the goals. The current Plan has as its goal to maintain 90% of the original genetic diversity over a period of 100 years. This goal has to be achieved within the context of the larger goal of providing captive space for other endangered prosimians. The minimum viable population (MVP) required to retain the 90% diversity over 100 years with the populations' current founder genome equivalent (FGE) and estimated N_e/N ratio characteristics is clearly too high to be feasible (around 450 per subspecies). Consequently, a major goal of the Ruffed Lemur SSP, is to correct for discrepancies in founder representation and significantly improve the N_e/N ratio. The only way this goal can be achieved is for all SSP participants to understand both the biological basis behind and the importance of following the breeding (and non-breeding) recommendations. This is a developing SSP.

Data Table: *V. v. variegata* (current through 1 June 1991)

	Two years ago	One year ago	Current year
Participating institutions	41	69	76
Captive Population	145.110.0	144.109.0	150.113.4
# SSP animals managed	230	233	247
# SSP animals not required to meet goals	25	20	20
# animals in non-participant collections but desirable to SSP	0	0	0
Total births in SSP program	31	15	28
# surviving to one year	22	11	14
# of desired births	9	5	24
# of undesired births	22	10	4
# of deaths of SSP animals	24	15	16
# of imports	0	0	0
# of exports	4	3	0
# of founders with represented descendants	16	16	16

Data Table: *V. v. rubra* (current through 1 June 1991)

	Two years ago	One year ago	Current year
Participating institutions	41	69	76
Captive Population	98.67.1	105.81.0	111.84.3
# SSP animals managed	166	184	198
# SSP animals not required to meet goals	0	2	0
# animals in non-participant collections but desirable to SSP	0	0	0
Total births in SSP program	33	34	22
# surviving to one year	20	22	16
# of desired births	13	29	18
# of undesired births	20	5	4

# of deaths of SSP animals	16	16	7
# of imports	0	0	0
# of exports	0	0	2
# of founders with represented descendants	10	11	12

Current Population Status

There are 76 institutions that have signed Memoranda of Participation (MOPs), 20 of which maintain both subspecies. In addition, there are nine institutions that are not members of the SSP, but are cooperating by holding SSP animals on loan from participating institutions. There are five institutions/individuals outside of the SSP that hold *V. v. rubra* and 13 that hold *V. v. variegata*. Some surplus animals have been moved overseas into other breeding programs; however, some SSP animals have been moved into non-SSP institutions against current recommendations.

Demographic Trends

Demographic analysis of the two populations reveal that both are growing, *V. v. variegata* at 10% per year and *V. v. rubra* at 13% per year. The generation time (*T*) for both subspecies is similar: 7.8 years for red ruffed lemurs and 7.5 years for black and white ruffed lemurs. Mortality of individuals in the 0-1 year age class is substantially higher in *variegata* (37%) than *rubra* (25%), with some indication that the difference is partially due to husbandry.

Of some concern is that over the past three years the majority of recommended *variegata* breedings have not been successful. In some cases the results are explainable (a recommended move was not made; medical problems; founders that are most likely post-reproductive); but in others, no explanation is readily apparent. Careful and detailed records of those pairs that are requested to breed may provide some answers. In contrast, close to the expected number of recommended *rubra* pairings (about half) have been successful.

Population Genetics

The recently completed genetic analysis of the *variegata* and *rubra* populations show that the founder genome equivalents (FGEs) in both populations are substantially lower than the number of founders. The *rubra* population stems from 12 founders, but the FGE is 3.77. This low number is due to both genetic bottlenecks and uneven founder representation (founders 9, 10, 11 are significantly overrepresented). However, there is the potential to increase the FGE to 9.95 with improved genetic management. A significant improvement is not unrealistic because all four of the new, relatively young founders brought into the population in 1988 are now reproducing. The addition of five wild caught founders would significantly improve the genetics of this population and allow it to be managed at a reasonable MVP.

The *variegata* population is derived from 16 founders but the FGE is 9.07. Although calculations indicate that the FGE could be improved to 16.10, that figure is not realistically attainable. This is because increased reproduction by founders 20 (a female that has never reproduced), 22, 13, 16 and 25 was calculated into the formula, but all of these individuals are most likely post- reproductive. A significant shift in the genetic management of *variegata* emerged as a result of the gene drop analysis. This recently available and more precise analysis revealed that certain individuals were genetically more valuable than previously thought. Another important concept, pairing individuals of equivalent genetic value, has necessitated some re-pairings. Strict adherence to the more accurate genetic management strategy outlined in the current Master Plan will improve the present FGE figure. This SSP would also benefit from the addition of several new founders.

In both *rubra* and *variegata* populations, the undesired births that have occurred are generally from individuals of lower genetic value. These births dilute progress made as a result of reproduction by genetically more valuable animals. Removing these individuals from the SSP by transferring them to non-SSP institutions or overseas is becoming increasingly more difficult and is, in some cases, detrimental to the SSP. The only strategy that will ultimately improve the genetic health of the SSP population and solve the surplus animal problem is to not breed outside of SSP recommendations.

Special Concerns

Black and White Ruffed Lemur: There is a continuing debate concerning the number of subspecies into which the black and white ruffed lemur should be divided. The original studbook and SSP was developed with the assumption of one subspecies: *variegata*. The SSP continues to operate under this assumption due to the following line of thought: (1) offspring from founders of different pelage patterns (the only basis

for the presumption of different subspecies) have already been crossed; (2) heavy deforestation of Madagascar's eastern rain forests and the consequent reduction of wild *Varecia* populations may obstruct verification of clinal variation in pelage; (3) the ultimate goal of reintroducing captive bred individuals back into the wild will probably not suffer if subspecies have indeed been hybridized. (There are two reasons for this: the release of subspecific hybrids will allow--if actually important--environmental factors to resort and select the most fit subspecies; and the environment into which captive- bred individuals may be released will undoubtedly be different from that in which *Varecia* first evolved); and (4) practical considerations related to the limited "carrying capacity" of zoos.

Undesired Births: The Data Table shows that undesired births occur annually, although it is encouraging that the numbers have decreased. Failures are due, in the most part, to management practices (not using contraceptives or not separating pairs during the breeding season); however, purposeful breeding of non-recommended pairs has also occurred. The goals of this SSP can only be met if all institutions work hard to comply with the recommendations.

Surplus Animals: The responsible disposition of individuals that are no longer necessary for the goals of the SSP is a difficult problem. The placement of these individuals into other regional breeding programs should always be given priority.

Social Management and Housing: As is true for all species, space for *Varecia* is limited. Consequently, it is essential that optimal use be made of the space allotted. The SSP therefore suggests that offspring be housed with parents for as long as possible (a strategy that will require the use of birth control). If social discord necessitates separation, we suggest that related females remain together. This is because, unlike males, unrelated females are most often incompatible. To facilitate social harmony, efforts should be made to increase cage complexity, provide areas for seclusion, practice environmental enrichment and maintain behavioral records to provide a basis from which to evaluate the success of different group structures. Successfully maintaining non-reproductive groups of ruffed lemurs is among the most significant contributions an institution can make to this SSP.

Research

Research on the efficacy and safety of the female directed contraceptive Depo-Provera was initiated this year.

Field Conservation

A survey of black and white ruffed lemurs in Betampona National Park is being coordinated through Project Ivoloina. This reserve is being studied as a potential reintroduction site for *variegata*.

Progress Toward Goals

(1) The Master Plan was revised and updated in June 1991
(2) The number of unwanted births has been reduced.
(3) All new *rubra* founders have reproduced.
(4) Birth control information in *Varecia* has been compiled.

Short-term Goals for Upcoming Year

(1) Continue to improve upon the ratio of wanted/unwanted births.
(2) Develop a husbandry manual in the format outlined by WCMC. Concentrate initially on the social behavior/housing section to help zoos manage larger social groups.
(3) Initiate discussions to import wild caught founders of *rubra*. Determine the feasibility of exchanging captive born *Varecia* for confiscated *Varecia* held in Malagasy zoos.
(4) Develop and distribute a protocol to all institutions housing living founders to collect and store genetic materials upon their death.
(5) Initiate and coordinate the collection of genetic materials to elucidate the subspecies question.
(6) Work closely with the EEP to determine the feasibility of combining the SSP and EEP population into one, thereby reducing the total space required for this species.

1991

OLD WORLD MONKEY ADVISORY GROUP

Co-chairs:
Fred Koontz, Ph.D., New York Zoological Society
David Ruhter, Houston Zoological Garden
Wendy Turner, Cheyenne Mountain Zoo

Primary Goals

The AAZPA Old World Monkey Interest Group held its first meeting at the AAZPA Annual Conference in Indianapolis, IN in September 1990. A petition has since been submitted to the AAZPA's Wildlife Conservation and Management Committee (WCMC) for formal recognition as a taxon advisory group. The group has the following long-term objectives: (1) to identify the taxa that are currently being held in North American zoological institutions; (2) to encourage the use of a standardized taxonomy, consistent with the IUCN/SSC's Primate Action Plans; (3) to coordinate management objectives for each taxon, consistent with the conservation needs of Old World monkeys as identified by the IUCN/SSC Primate Specialist Group, IUCN CBSG Primate Action Plan Working Group and other relevant organizations; (4) to coordinate the allocation of available captive space in North America among various taxa through the development of a Regional Collection Plan; (5) to develop and coordinate captive breeding programs to enhance conservation of endangered or threatened wild populations; and (6) to develop an effective communication network between field researchers and zoo biologists to enhance cooperative conservation efforts.

Data Table

	Current year
# of meetings	2
# of studbooks under umbrella	3
# of SSPs under umbrella	2
# of new studbook petitions submitted	2
# of new studbooks approved	0
# of new SSP petitions submitted	0
# of new SSPs approved	0

Special Concerns

Communication and cooperation between field biologists and captive population managers is essential to assure coordination of field and captive conservation programs. Old World monkeys are not well represented in captive collections. Representation in zoo collections has not historically been based on conservation needs, though captive breeding has considerable potential. Approximately 88 taxa are currently represented in captivity for North America. Twenty-five of these (28%) are classified as vulnerable or endangered, but only six (7%) are at levels potentially capable of becoming self-sustainable.

Federal and foreign restrictions on relocation of primates for captive breeding makes *in situ* programs important. Expertise in captive management can contribute to conservation efforts for species not currently represented in North American institutions. Zoo biologists are, for example, encouraged to consider supporting training programs for African and Asian zoo managers and keepers.

Hybridization and intergradation are major concerns. Hybrid species and subspecies should be avoided whenever possible. Approximately 62 species and 145 species and subspecies of African monkeys have been recognized. Forty-two species and 51 species and subspecies are represented in zoo collections. However, the numbers of many taxa are inadequate to establish self-sustainable populations in the near future. Moreover, concern exists for the loss of genetic diversity in captive populations as the numbers of subspecies and individuals decrease. A resolution of the intergradation issue among colobus needs to be developed and adopted by participating institutions. There are serious questions as to which subspecies are held and how to accurately identify them.

Progress Toward Goals

(1) Following the initial meeting in September, the African and Asian Monkey Interest Groups were combined to form the Old World Monkey Interest Group. A petition for formal recognition as a taxon advisory group has been submitted.

(2) A Captive Primate Action Plan Workshop was held at the Minnesota Zoological Garden from 13-15 March 1991. Representatives from IUCN CBSG, IUCN/SSC Primate Specialist Group, the Old World Monkey Interest Group and other AAZPA primate taxon advisory groups (TAGs) reviewed wild and captive status of all taxa. General comments and recommendations were made concerning priority species for captive breeding programs. This report will be reviewed at the 1991 AAZPA Annual Conference in San Diego.
(3) A survey of captive space was developed in cooperation with the other primate TAGs. Survey results are being tabulated by Dr. Fred Koontz, New York Zoological Society. An initial report should be available for review at the San Diego conference. Emphasis is being placed on species equivalents--those species which require similar housing and husbandry needs. Efforts were made to identify exhibit flexibility within collections based on geographical origin and taxonomy. Availability of space for captive propagation appears less critical. Allocation of space for taxa of highest need will be more critical.
(4) A species report form is being developed for standard compilation of data by SSP coordinators, studbook keepers and others for each taxon. Genetic representation, as well as current and potential population parameters, will be identified for evaluation. Species reports will provide a preliminary population analysis for taxa currently without formal studbooks.

Short-term Goals for Upcoming Year
(1) Establish working committees and subcommittees and identify their specific responsibilities. Committees will be organized by taxanomic groups (cercocebids, cercopithecids, baboons, colobines, macaques and langurs). Committee members will include existing SSP coordinators and studbook keepers.
(2) Complete a housing/space survey and use the resulting data to begin work on a Regional Collection Plan. Initial results have provided general information, but more institutional responses are needed. Future housing trends may need further clarification through an additional survey. Strategic planning to achieve the recommended objectives will require input from institutional representatives. Development of a species report form will assist in these planning efforts.

1991

DRILL (*Mandrillus leucophaeus*)

Species Coordinator: Cathleen Cox, Ph.D., Los Angeles Zoo
International Studbook Keeper: Michael Boer, Hannover Zoo

Introduction

Two factors precipitated the formation of the Drill SSP: (1) the identification of this species by the IUCN/SSC Primate Specialist Group as one of six African primates likely to vanish in the wild without conservation action and (2) the decreased rate of reproduction in the North American captive population over the past 20 years. Indeed, the North American drill population has substantially decreased and the last successful birth occurred in 1982.

Minimum viable population (MVP) analyses for the North American drill population were conducted in June 1989. This work showed that there were just ten effective founders in the SSP drill population. With the limited number of founders it is clear that we cannot achieve the objective of maintaining 90% of original genetic diversity for 200 years that has been adopted by many other SSP's. A more realistic goal is to strive to maintain 80% of genetic diversity for 100 years which requires a MVP of 97. The Drill SSP is still in a developmental stage; in order to increase the percentage of genetic diversity that can be preserved, the rate of reproduction needs to be increased and more founders should be recruited. These are two major focuses of the Drill SSP. In addition, it is clear that the Drill SSP needs to become part of a global plan and we are working cooperatively with the EEP to establish such a program.

Data Table (current through 30 June 1991)

	One year ago	Current year
Participating institutions	8	8
Captive Population	11.13	9.14
# SSP animals managed	22	22
# SSP animals not required to meet goals	0	0
# animals in non-participant collections but desirable to SSP	0	0
Total births in SSP program	0	0
# surviving to one year.	0	0
# of desired births	0	0
# of undesired births	0	0
# of deaths of SSP animals	0	3
# of imports	1	3
# of exports	0	0
# of founders with represented descendants	20	21

Current Population Status

The Drill SSP population remains very small; just 22 (8.14) animals are managed by the SSP and these are held in a total of five institutions. Because of the small population size, there is no shortage of space in which to house the animals. In Europe, the EEP manages a population of 26 (10.16) in a total of seven institutions. Another nine (5.4) animals reside in Asian institutions.

Free-ranging drills inhabit a very limited area on the west coast of Africa: the lowland rain forest of eastern Nigeria southward to the Sanaga River in Cameroon, and the island of Bioko, Equatorial Guinea. When the IUCN/SSC Primate Action Plan was published in 1986 it was clear that the range of the drill had decreased substantially and it appeared that the animals had been extirpated from Nigeria. However, in 1988 drills were sighted in eastern Nigeria in an area that is contiguous with their range in Cameroon; at present it is estimated that fewer than 4,000 drills reside in Nigeria. There is no current population estimate for those remaining in Cameroon but a survey has been funded and is now underway. The population found on Bioko represents a separate subspecies and the number remaining on the island is unknown. A major reason for the decline of the wild population is hunting of drills as a food source by local villagers and this

pressure remains unchecked in all three countries where drills reside. Deforestation and fragmentation of the habitat is also contributing to the population decrease.

Demographic Trends

A basic problem in the North American population has been a dearth of breeding activity; as a result, no births have occurred in recent years. In order to facilitate reproduction, changes in the composition of extant groups have been recommended and four novel males, surplus to the EEP, population have been brought into SSP institutions. In addition, three of the four transfers between SSP institutions that were recommended in the fall of 1990 have now taken place. As a direct result of these actions, drills at two institutions are actively breeding and the prognosis for reproduction in the coming year looks much more favorable. Reproduction occurs regularly at two European zoos and occasionally at others. There were three viable births in the EEP population during 1990.

One of the drills imported during the past year descended from a European founder that had not been represented in the SSP population; if the SSP population is considered separately from the EEP population, the importation of this male represents the addition of a potential founder. In addition, two females from the Cairo Zoo were recently imported but their lineage is unknown.

Population Genetics

In 1989, the mean inbreeding coefficient (IC) was found to be 0.091. At that time, recommendations for movements of animals that would minimize the possibility of subsequent inbreeding were made. Since then, all of these moves have been accomplished. At this point the highest priority is to achieve reproduction.

Special Concerns

Reproduction is of paramount importance and steps to facilitate breeding are being pursued. In two cases, recommended moves have facilitated breeding. However, six males remain nonreproductive. At the June 1991 meeting additional moves were recommended that are designed to alter the social situations in which three of these males reside, with the goal of increasing the likelihood of reproduction. The semen of two males is being collected for use in artificial insemination. At this time, work to achieve artificial insemination is being actively pursued at one institution.

The need for recruitment of additional founders remains, and promoting the establishment and maintenance of captive breeding facilities in the drill's native habitat may ultimately lead to an exchange of genetic material. Such facilities will certainly enhance conservation efforts in the countries where they are established. Support is being given to the first such facility which is in the preliminary stages of development in Nigeria.

There is a possibility that drills in captivity vary in subspecific origin. This matter needs exploration, and blood and tissue samples have been collected from nearly all SSP drills to be used in genetic analysis.

Research

A standardized manner of collecting behavioral data has been developed and each institution that holds drills in a reproductive situation is collecting data in this fashion. This promises to provide a much stronger basis for comparison of the success of drills that are transferred between institutions. The data will be utilized to determine if there are early indicators of deficits in behavior that lead to reproductive failure.

A behavioral study to determine the effects of providing captive drills with increased space and with visual barriers is underway. A second study to develop "enrichment" items and test their efficacy has been initiated.

Daily urine samples from female drills have been collected for endocrinological analysis in order to determine if the females are cycling and to establish baseline endocrine values. Findings are being compared with those from female mandrills who have been reproductively successful. Semen has also been collected from male drills by electroejaculation to establish baseline values of sperm concentration, motility, and morphology. Values obtained from male drills are being compared with those obtained from male mandrills.

Field Conservation

A preliminary survey of the drill population in the Gran Caldera region of Bioko has been completed and results are somewhat promising. Drills in this area were found to be relatively undisturbed but due to its remote location the Gran Caldera site will not serve as a fruitful location for long-term behavioral observations.

Participating SSP institutions have provided interim operating expenses for the maintenance of orphaned drills that have been confiscated by wildlife authorities in Nigeria. These animals are to become residents of an *in situ* captive breeding facility that is to be constructed as a project extension of Cross River National Park and managed in consultation with the SSP.

Progress Toward Goals

(1) Accomplished 75% of the recommended moves. Owner/recipient agreements needed for the remaining move have been received and the move will be made as soon as appropriate quarantine facilities become available.
(2) Developed standardized protocol for observational studies of behavior and initiated data collection at all locations with the potential for breeding.
(3) Established working group to advise and coordinate artificial insemination efforts.
(4) Imported three drills to increase the number of founders/potential founders in the SSP population.
(5) Worked cooperatively with the EEP.

Short-term Goals For Upcoming Year

(1) Actively work to enhance the chances of drill reproduction by: (a) moving animals between zoos to achieve compatible groups which are conducive to breeding; and (b) pursuing artificial insemination, and its underlying technology, to make reproduction possible for socially deficient drills.
(2) Reassess the genetic and demographic goals of the Master Plan utilizing MVP analyses based on the most current population information.
(3) Complete the drill husbandry manual.
(4) Encourage work on the appropriate DNA analyses to resolve the drill subspecies question.
(5) Seek financial support for *in situ* studies and *in situ* captive breeding facilities.
(6) Work with the EEP to facilitate an international meeting on drills. Ideally the meeting will be held in one of the African countries where drills occur so as to allow greater participation by local researchers and wildlife officials. Meeting at such a site would also provide greater familiarity for those from outside the area with the difficulties to be overcome if drill conservation is to be achieved.

1991

LION-TAILED MACAQUE (*Macaca silenus*)

Species Coordinator and Regional Studbook Keeper:
Laurence Gledhill, Woodland Park Zoological Gardens

Introduction

As of 1 January 1991, the "carrying capacity" of the 26 SSP zoos is 180 animals, while the actual number of animals in the population is 227 (including surplus animals). An analysis of the population indicates that in order to maintain 90% of the original genetic diversity for a period of 200 years, a minimum viable population (MVP) of 220 animals is necessary.

To maintain a viable population this SSP must effect one of the following options: (1) increase the number of institutions participating in the program; (2) increase the space allotted in participating zoos; or (3) manipulate reproduction by increasing the generation time and N_e/N ratio thereby lowering the MVP needed to meet our goal. The Lion-tailed Macaque SSP is still in a developmental stage.

Data Table (current through 1 January 1991)

	One year ago	Current year
Participating institutions	33	33
Captive Population	120.124.01	113.113.01
# SSP animals managed	186	175
# SSP animals not required to meet goals	59	52
# animals in non-participant collections but desirable to SSP	0	0
Total births in SSP program	23	20
# surviving to one year	17	19
# of desired births	11	7
# of undesired births	12	13
# of deaths of SSP animals	7	3
# of imports	2	0
# of exports	8	16
# of founders with represented descendants	38	38

Current Population Status

The current Lion-tailed Macaque SSP population is secure and can be increased to the desired population size rapidly if and when the spaces become available. The wild population is apparently also stable and not in need of a major recovery program which would require the use of captive bred animals.

Demographic Trends

Demographic analysis of the North American population indicates that the 1990 growth rate (r) for males is 0.060 (down from r =0.061 in 1989) and the 1990 growth rate (r) for females is 0.0668 (down from r =0.0685 in 1989). The generation time (T) for females has remained at 11.2 years over the last two years. During this same period, the generation time for males has decreased from 14.4 years in 1989 to 14.1 years in 1990. The rate of population increase (R_0) for both males and females has lowered slightly over this same time period. Male R_0 has gone from 2.41 in 1989 to 2.33 in 1990 while female R_0 has dropped from 2.156 to 2.115. The current net annual rate of increase (*lambda*) of the population has remained at 1.06 for the last two years. These findings are directly attributed to the population reaching it's maximum "carrying capacity."

Population Genetics

Inbreeding coefficients (ICs) have been calculated for each individual in the SSP population, and for the last several years, there have been no authorized matings of related animals. The current mean inbreeding coefficient of the North American population is 0.041. During 1990, one inbred animal was produced as the result of an accidental mating (down from three inbred animals in 1989).

As a result of previous over reproduction of two genetic lines the population is far from achieving parity of founder representation, although progress has been made over the past several years toward equalization of representation. Current representation ranges from a low of 0.2% to a high of 10.9%. The

total number of 38 founders (with a potential to increase to 42 without additional animals) should be a sufficient number to maintain this population.

Gene drop analysis utilizing 10,000 simulations indicates that the current population retains 95.7% of its original genetic diversity, with the potential of increasing this retention to 98.4%. The mean retention throughout the population is 69.7%

Special Concerns

The two most pressing concerns facing the Lion-tailed Macaque SSP are the disposition of surplus animals and the implementation of a viable method of manipulating the reproduction of a social, group living animal. The inability to adequately address either of these topics have resulted in a moratorium on reproduction in many collections, which if continued, could drastically effect the survivability of the SSP population.

For the last several years the Lion-tailed macaque SSP has supplied animals to both the United Kingdom and Japanese lion-tailed macaque management plans. Both of these programs are approaching the limits of animals which they can accept and cannot be considered as a continued source for our surplus. Contact has been made with the EEP and officials of several Indian zoos offering animals for their needs, but nothing definite has transpired.

If a workable solution to the manipulation of reproduction can be devised it should help alleviate the surplus problem to a degree, but a successful breeding program will always have to contend with surplus animals.

An additional concern which must be addressed is the coordination of primate SSP efforts. If each primate species were to require 220 spaces to maintain it's program, it is apparent that very few programs could be realistically supported. Hopefully, this can be achieved by working through the newly formed AAZPA Old World Monkey and New World Monkey Advisory Groups.

Research

Current research includes studies on artificial insemination and embryo transplants being conducted by the Baltimore Zoo; on troop behavior by the San Diego Zoo; and on reintroduction techniques by the New York Zoological Society at St. Catherine's Island Wildlife Survival Center. All three of these projects are ongoing studies.

Progress Toward Goals

(1) Formulated a Master Plan.
(2) Contacted counterparts in the UK, Europe, Japan and India.
(3) Participated in an International Symposium on Lion-tailed Macaques in 1990.

Short-term Goals for Upcoming Year

(1) Establishment of a viable management plan taking into consideration the behavioral, social and spacial needs of the lion-tailed macaque.
(2) Publish and distribute a husbandry manual for the lion-tailed macaque and start on a medical manual.
(3) Reduce the surplus population to a manageable level.
(4) Work toward the establishment of a Global Management Plan for the lion-tailed macaque.
(5) Recruit at least three additional institutions into the SSP.

GOLDEN LION TAMARIN (*Leontopithecus rosalia*)

Species Coordinator: Devra Kleiman, Ph.D., National Zoological Park
International Studbook Keeper: Jonathan Ballou, National Zoological Park

Introduction

The Golden Lion Tamarin (GLT) SSP is part of the Golden Lion Tamarin Management Committee's (GLTMC) global strategy for conservation of the species. The primary mission of the program is to maximize the probability of survival of a naturally evolving population of golden lion tamarins. This is to be achieved through an integrated program which includes captive propagation, reintroduction, conservation education, and habitat protection and restoration. The GLTMC was formed in 1981 by close collaboration among zoos breeding and maintaining GLTs. Today, the GLTMC is an advisor to the Brazilian government and oversees management of both the captive and wild populations of golden lion tamarins. Any institution wishing to participate in this research, conservation, and management program must apply to and be approved by the Committee.

The current goal for golden lion tamarins is maintenance of 90% of the heterozygosity contained in the wild population for at least 200 years. This goal requires a globally managed captive population of about 550 animals. As the reintroduction program (started in 1984) continues to develop, this requirement will be modified to allow for genetic and demographic interactions between the captive and wild populations.

Data Table (current through 31 December 1990)

	One year ago	Current year
Participating institutions	104	112
Captive Population	567	558
# SSP animals managed	260.274.33	264.270.24
# SSP animals not required to meet goals	0	0
# animals in non-participant collections but desirable to SSP	0	0
Total births in SSP program	116	96
# of deaths of SSP animals	91	94
# of imports	0	0
# of exports	10	9
# of founders with represented descendants	51	47

Demographic Trends and Current Population Status

Since the captive population is currently at its target size (about 550 animals), it is being managed at zero population growth (ZPG) through use of contraceptive implants, establishment of single-sexed groups (pairs), and reintroduction of animals to the wild. To achieve ZPG status only 40 pairs of captive golden lion tamarins need to be bred each year. These pairs have been identified for the next two years.

Population Genetics

Pedigree analyses indicate that the founder genome equivalent (FGE) is about 14. This is considered inadequate. Management recommendations to increase the founder contribution include production of more offspring from under represented founders and incorporation of additional founders into the program. As of 1990, the captive population contained about 96% of the heterozygosity contained in the wild population.

Special Concerns

A significant problem facing the captive population is managing for zero population growth. GLTs can produce two litters per year and can breed until 14-16 years old. Assuming approximately 50% infant mortality, a single pair could produce more than thirty offspring during its reproductive lifetime. Clearly, breeding must be regulated in order to ensure a relatively constant population size.

Genetic analyses indicated that only eighty (forty pairs) of the most valuable animals should breed during the next two years. Several institutions, now housing breeding animals, have been informed of the

need to implant contraceptives into females which have produced sufficient offspring to contribute genetically to the succeeding generation. For those zoos encountering legal difficulties with importation of the implants, the only other way of removing animals from potential breeding situations is to separate males from females, a less desirable option since it disturbs group structure. Also, groups comprised entirely of females are usually very unstable.

Research

The Golden Lion Tamarin Conservation Program involves research in the areas of behavioral ecology and evolutionary biology (Dr. J. Dietz, University of Maryland; Dr. A. Baker, National Zoological Park; J. Ballou, National Zoological Park; and Dr. R. Fleischer, National Zoological Park) and reintroduction strategies (Dr. B. Beck, National Zoological Park). Publications and research updates for these projects can be obtained by contacting the studbook keeper.

Field Conservation

The golden lion tamarin inhabits the Atlantic Coastal Rainforest of eastern Brazil. Field conservation efforts are focused in this area and include habitat assessment and population censuses in areas potentially capable of holding GLTs (Dr. C. Kierulff; Universitie Federal Minas Gerais) and studies on the population biology of GLTs in their only protected reserve, Poco das Antas (Dr. J. Dietz and Dr. A. Baker). A reintroduction program, ongoing since 1984, involves the release of captive and wild-born (confiscated) animals into available, privately-owned habitat and studies of the adaptation of these animals to the wild (Dr. B. Beck; Dr. D.G. Kleiman; A. Rosenberger). As of June 1991, 91 animals have been released into wild habitat in Brazil. Many of these reintroduced animals have successfully reproduced. The reintroduction program has resulted in a net total of 71 new animals, alive today, being added to the wild. Conservation education has been integrated with other aspects of the Program as a further tool for the protection of forested areas suitable for GLTs.

Progress Toward Goals

(1) The goals of the captive population continue to be met with the outstanding cooperation of all 112 zoos currently participating in the Program. For each of the last four years we had 100% return on studbook update inquiries.

(2) In 1990 a workshop was held in Belo Horizonte, Brazil, to develop conservation strategies for all four species of lion tamarins. These conservation recommendations have been incorporated into the GLTMC where appropriate and continue to define the goals of the program.

Short-term Goals for Upcoming Year

(1) Execution of the captive management recommendations developed in 1991. These involve shipments of approximately thirty-two animals to specific destinations and the halting of reproduction in approximately twenty breeding pairs to achieve ZPG.

(2) Bring about a further increase in the involvement of Brazilian Zoos in the captive breeding program.

(3) Completion of habitat assessment and population censusing for wild GLT populations.

1991

GIBBONS (*Hylobates sp.*)

Co- TAG Chairs and Co-Species Coordinators:
Ronald L. Tilson, Minnesota Zoological Garden
Katherine Castle, Minnesota Zoological Garden

Siamang (*Hylobates syndactylus*) Regional Studbook Keeper: William Fiore, Montgomery Zoo
Black Gibbon (*H. concolor*) International Studbook Keeper: Jean Marc Lernould, Mulhouse Zoo, France
Javan Grey Gibbon (*H. moloch*) International Studbook Keeper: Beatrix Rau, Munchen Zoo, Germany
Pileated Gibbon (*H. pileatus*) International Studbook Keeper: Christian Schmidt, Zurich Zoo, Switzerland

Introduction

The Gibbon SSP was approved by the AAZPA's Wildlife Conservation and Management Committee (WCMC) in September 1990. Because the Gibbon SSP incorporates all species under its aegis, and because all gibbon taxa belong to the single family Hylobatidae, the Gibbon SSP also functions as a taxon advisory group (TAG).

The Gibbon SSP/TAG met in April 1990 and July 1991 to discuss the demographic characteristics of North American gibbon populations. Currently eight of the nine gibbon species are managed in AAZPA facilities. *H. lar* and *H. syndactylus* occupy approximately 400 spaces. *H. concolor* occupies less than 50 spaces while *H. agilis, hoolock, moloch, muelleri* and *pileatus* together account for less than 50 spaces. Using criteria of wild status, captive status and future population trends, the management needs of each species have been prioritized. Briefly, the priorities for each species are: (1) *H. moloch, hoolock* and *klossii* have high conservation priorities and should be managed if sufficient numbers become available; (2) *H. concolor* has a high conservation priority and the North American population should be expanded; (3) *H. pileatus* has a high conservation priority and a global program should be instituted; (4) *H. agilis* and *muelleri* have a lower conservation priority and North American captive programs are not recommended; and (5) *H. lar* and *syndactylus* have a lower conservation priority and the current North American populations should be managed for containment.

Recognizing the importance of solidly based captive conservation efforts, the Gibbon SSP/TAG recommended that proposals for new captive breeding programs should: (1) not compete with ongoing programs; (2) involve multiple institutions; (3) include sufficient numbers of animals to meet demographic and genetic goals; and (4) involve the country of origin.

The Gibbon SSP/TAG is a developing program. Memoranda of Participation (MOP) were sent to 80 AAZPA accredited facilities; 80% responded with only two facilities indicating nonparticipation due to the non-breeding status of their collections. Sixteen facilities did not return the MOP.

Data Table (to be developed)

Current Population Status

The current population of living gibbons in North American institutions includes: 5.6 *H. agilis* in three institutions; 45 (17.24.4) *H. concolor* in 14 institutions; one (0.1) *H. hoolock* in one institution; 245 (108.126.11) *H. lar* in an unknown number of institutions; five (3.1.1) *H. moloch* in two institutions; nine (6.3) *H. muelleri* in three institutions; 20 (11.9) *H. pileatus* in five institutions; and 144 (70.74) *H. syndactylus* in 43 institutions.

Once the molecular and genetic DNA analysis is performed (see below) and the various subspecies and species are established, the spaces occupied by the above gibbons will be utilized for *concolor, lar* and *syndactylus* primarily and for *pileatus, moloch, hoolock* and *klossii* as they become available.

Demographic Trends

This analysis will not be performed until the molecular genetic analysis is complete.

The population characteristics of this family are as follows: (1) age at first reproduction = 7 years; (2) gestation = 7.5 months; (3) sex ratio at birth is equal; (4) captive born mortalities are highest between 0-2 years (ranging from 20-30% the first year and 8-20% the second year); (5) captive longevity = 30-35

years; (6) captive reproduction span (either sex) = generally 10-25 years, averages 18 years. The Gibbon SSP/TAG has agreed to use data only from the last ten years for further demographic analyses.

Population Genetics

This analysis will not be performed until the molecular genetic analysis is complete. Of special note is that most individuals of all species are either founders or first or second generation descendants of founders and therefore the population will be genetically healthy. However, some of these populations have too few reproducing founders and will need to be closely monitored.

Special Concerns

A primary concern of the Gibbon SSP/TAG centers on the issue of species and subspecies definition. The validity of the nine recognized species of gibbons and their subspecies (approximately 28 separate taxa) is based upon conventional taxonomic characteristics that may or may not have relevance to evolutionary significant units (see Research, below).

Research

The Gibbon SSP/TAG recognizes an immediate need to resolve long-standing questions surrounding the biological relevance of existing subspecies-level taxa. To effectively design and implement appropriate management plans, we must be able to recognize the evolutionary significant units, sort captive gibbons into such units, and take action to prevent undesirable hybridization between genetically differentiated populations. To achieve these goals we identified a number of specific research questions and investigators potentially capable of resolving these issues within a period of one to two years. The Gibbon SSP will sponsor and possibly commission the appropriate genetic research and assist the participating investigators in preparing funding proposals and acquiring tissues (blood and hair) for analysis.

First priority should be given to identifying genetically coherent units among the gibbons currently referred to as *H. concolor* and its eight subspecies. Published reports from France and Wisconsin indicate a reasonable probability of achieving this goal using chromosomal rearrangements as markers. The Gibbon SSP/TAG will karyotype the approximately 24 founding lineages (founders or their immediate descendants) in the *concolor* population. This information is necessary to sort the gibbons into genetically appropriate management units. At the same time, the SSP is encouraging efforts to characterize the natural patterns of genetic variability of *H. concolor* in Cambodia, Laos, Viet Nam and China. The results of such field-based studies should be integrated into the management of captive animals as they become available.

Second priority will be given to resolve the relevance of existing subspecies classifications to the management of *H. lar* and *H. syndactylus*. Such information is urgently required to manage SSP populations to containment. In the absence of marked chromosomal differentiation in these species, the founder stocks of known geographic provenance will be genotyped by other methods. Under consideration is the potential applicability of non-invasive nuclear and mitochondrial DNA genotyping, based on gene sequences amplified from hair. Thus, hair of all SSP animals will be collected opportunistically for possible genotyping by 1992. Specific questions requiring attention include: (1) Are the Sumatran and Peninsular Malaysian populations of *H. syndactylus* sufficiently different to warrant separate breeding programs?; and (2) Are the four Thai-Peninsular Malaysian and Sumatran subspecies of *H. lar* sufficiently different to warrant separate breeding programs? If these geographically defined races are found to be significantly differentiated, then the other SSP population members must be screened for racial/stock affinity, and identification of hybrids.

As a third priority, the Gibbon SSP/TAG recognizes the need to stimulate similar genetic studies of other species, especially the taxonomically problematic *H. agilis*, *H. muelleri* and *H. hoolock*. The SSP/TAG will seek to foster such research when funding permits.

Field Conservation

Hylobates lar and *pileatus*: The Gibbon SSP/TAG supports a proposal to develop a gibbon conservation and management center for Thailand, submitted by Dr. W. Brockelman on behalf of the Thai Royal Forest Department, the Zoological Park Organization, Mahidol University and Wildlife Fund Thailand. In abstract: "Gibbons in protected areas in Thailand are gradually declining in number as poaching and a flourishing local pet trade take their toll. Enforcement of the ban on primate exports has

caused an accumulation of unwanted animals in captivity in Thailand. The proposed center for gibbon conservation will help alleviate these problems by establishing a scientifically sound breeding program, promoting conservation-related research, implementing a reintroduction program in depleted protected areas and carrying out a public awareness program."

Hylobates klossii: A field effort to develop a protected area for *H. klossii* (and three other endemic primate species) on the southern Mentawai Island of South Pagai, west of Sumatra, Indonesia, is being coordinated by Dr. Richard Tenaza, University of the Pacific, in conjunction with the Indonesian Directorate General of Nature Conservation and Forest Protection (PHPA). Support for this field program is being provided by the Fort Wayne Children's Zoo.

Hylobates moloch: An *in situ* regional captive breeding program for *H. moloch* is being developed in conjunction with appropriate Indonesian authorities. The goal is to: (1) initiate an *in situ* captive breeding program for this species along the lines of the Gibbon SSP/TAG's programs for gibbon management in North America; (2) assist a regional Indonesian zoo in the planning and construction of a captive breeding facility for gibbons; and (3) conduct a workshop focusing on captive management protocols including health treatment for gibbons.

Progress Toward Goals

(1) A grant to support costs for the molecular genetic study has been developed and submitted to appropriate agencies for funding (Co-PIs: D. Woodruff and R. Tilson).

Short-Term Goals for Upcoming Year

(1) Secure necessary funds and initiate the molecular genetic study as outlined above.
(2) Investigate cost and protocols for karyotype analysis of *H. concolor*.
(3) Identify through the American Association of Zoo Veterinarians (AAZV) an appropriate candidate to serve as a veterinary advisor to the Gibbon SSP/TAG.
(4) Follow-up on nonresponsive MOP institutions and finalize our membership.
(5) Continue drafting a husbandry manual based on WCMC guidelines.
(6) Monitor the implementation of MGA hormonal implants in gibbons (there is a breeding moratorium for all *H. lar* and *H. syndactylus* until molecular genetic analyses can be performed for these species within the next three years.).
(7) Draft and submit a letter of concern from the Gibbon SSP/TAG to countries within the extant range of gibbons supporting legislation prohibiting the keeping of gibbons as pets.

LOWLAND GORILLA (*Gorilla gorilla gorilla*)

Species Coordinator: Lester E. Fisher, D.V.M., Lincoln Park Zoological Gardens
Regional Studbook Keeper: Dan Wharton, Ph.D., New York Zoological Park

Introduction

The Gorilla Species Survival Plan was initiated by the AAZPA in 1983. The Master Plan was completed in March 1988. The primary purpose of the Gorilla SSP has been to optimize captive reproduction in North American zoos. This is being accomplished through programs of research, on-going animal exchange and the cooperative assembling of potential breeders into larger, more complex social groups. Although the underlying mechanism is as yet unexplained, transfer itself has stimulated non-breeders into sexual activity and subsequent reproduction.

The Gorilla SSP's goal is one of managing the captive population to maintain 90% of original genetic diversity for 200 years. "Carrying capacity" for gorillas in North American zoos is estimated at 400 animals, although program goals are probably achievable with a captive population of 150, given an N_e/N of 0.5. To date, reproduction has not been reliable enough to suggest that we should attempt to reduce numbers from the current 300 in North America. Also, there is a perception of under-population of captive gorillas because of public and professional demand for the species as first-class wildlife, conservation and human interest exhibits. The Gorilla SSP has not actively discouraged the construction of new and larger, more naturalistic facilities for this species since they have a positive impact on SSP goals for ideal social group formation; however, we do encourage institutions to consider the construction or renovation of facilities that will serve the other great ape species as well.

Data Table

	Two years ago	One year ago	Current year
Participating institutions	-	46	48
Captive Population	632	648(295.353)	660 est.
# SSP animals managed	289	296(141.155)	295
# SSP animals not required to meet goals	0	0	0
# animals in non-participant collections but desirable to SSP	4	6	6
Total births in SSP program	16	17	15
# surviving neonatal period	13	15	11
# of desired births	16	17	15
# of undesired births	0	0	0
# of deaths of SSP animals	8	7	15
# of imports	2	2	0
# of exports	0	0	0
# of founders with represented descendants	-	-	106

Current Population Status

There are no animals in North America that are considered surplus to the population. Although perhaps "surplus" to breeding plans in the literal sense, non-breeders and/or aged animals are still extremely useful for creating viable social groups. Importations into North America include two (1.1) captive born animals from Germany in 1988. The importation of two (1.1) wild caught animals into Mexico in 1989, although technically legal because Mexico and the African country of origin (Equatorial Guinea) are not signatories to CITES, is nevertheless not condoned by the Gorilla SSP nor the wildlife conservation community in general. Otherwise, virtually no animals from Africa have come to North America for about the last twenty years. The current population (301 including non-SSP) is down slightly from the 302 recorded last year; however, this is an increase of 34 animals since 1986 when the total North American population stood at 267. The majority of animals in North America are under SSP-management. No births are occurring outside the SSP.

Demographic Trends

Despite the fact that we have observed some growth in this population, demographic analyses suggest that this population will in fact decline. Females, which are the basis for reproduction, are aging and have

not been consistently replaced by sufficient numbers of daughters. However, recent Master Plan goals to (1) produce at least seven newborn females each year; and (2) recruit at least two captive born females between the ages of 6 and 15 into the breeding population (as first-time mothers) have actually been achieved for the last few years. The rate and ultimate level of decline of the overall population can be expected to be reduced if cooperative efforts in breeding management are continued.

Population Genetics

Of the 171 potential founders in the North American population, 106 have produced offspring as of 1988. Founders have not contributed equally to the population. Gene drop analysis gives an N_f of 50 (or the equivalent of 50 founders if the 106 actual founders are adjusted for under-representation). A similar analysis of the European population gives an N_f of 34.

Special Concerns

Again, concerns center on managing the population for a positive rate of growth. Many potential breeders are not yet breeding and the causes are not clearly understood. Diet is being examined much more closely and there is some opinion that reduced-fat, higher-fiber diets will reduce levels of obesity associated with some kinds of reproductive failure. Although juvenile mortality is far lower than recorded in nature, even low levels remain a topic for concern given the current growth rate of the population. Since the preferred rearing mode (mother-rearing) is associated with most juvenile mortality (maternal mis-handling), peer group hand-rearing remains an attractive alternative when maternal capabilities are at all in doubt. Social adjustment of hand-reared animals continues to be an area of concern. A recent study by Beck and Power (ZOO BIOLOGY, 1988, 7:339-350) found better reproductive success among mother-reared females (no difference among males) although the data set included a number of females reared in some level of isolation from conspecifics, a condition which has been rigorously avoided for more than a decade. Interestingly, the same study found that those hand-reared females that did give birth were just as likely as mother-reared females to have good maternal capabilities.

Research

Gorillas have been an attractive area of research for a number of disciplines, much to the benefit of the species. Data on diet in wild populations in West Africa (Calvert, Ph.D thesis, 1985) plus studies on serum cholesterol in captive animals (McGuire et al. 1989, JOURNAL OF MEDICAL PRIMATOLOGY) are having significant impact on formulation of captive diets. Reproductive studies by Czekala, Raphael and others are providing valuable insight on the breeding biology of gorillas. Artificial insemination, *in vitro* fertilization (sans implantation) and pregnancy-maintenance with progesterone therapy have all been accomplished in the last few years. There are a number of good behavioral studies (see Beck, also Gold to name just a few) and, more recently, a study of social group size and reproductive success has been initiated (Glick). Veterinary research is focusing more on cardiomyopathy observed in gorillas in the 25-40 year-old age class. In genetics, Aita and Dowler have examined karyotype and protein variation in over 70 animals in North America. Ryder and Garner are addressing the subspecies question.

Field Conservation

The Gorilla SSP has joined with the IUCN/SSC Primate Specialist Group, the AAZPA and the IUDZG in condemning any action which would engender demand for, and trade in, gorillas from Africa.

Short-term Goals for Upcoming Year

(1) Complete recommended transfers. Twenty-eight recommendations were issued in 1991 having to do with SSP goals for forming more complex social groups, establishing groups in new facilities and encouraging breeding among underrepresented captive and wild-born animals. Most notably, wild-born males in Cleveland and the Miami Monkey Jungle (currently without offspring from lack of access to fertile females) are to be moved to collections with proven females. A proven male is scheduled to join two relatively young females in Colorado Springs, replacing a male with questionable fertility.

1991

ORANGUTAN (*Pongo pygmaeus*)

Species Coordinator and International Studbook Keeper: Lori Perkins, Zoo Atlanta
Regional Studbook Keeper: Melanie Bond, National Zoological Park

Introduction

The Orangutan SSP program was initiated in 1982. Since that time, the Propagation Group, led throughout the 1980s by Dr. Terry L. Maple, has dealt with an unusual number of difficult (and occasionally unpopular) issues related to improving the captive management of the species. Most notable is the issue of subspecies. Prior to 1982, most orangutans in North America were managed as a single species, although a number of institutions did house specimens originating in Sumatra separately from those originating in Borneo. However, at that time, such determinations were made on the basis of physical appearance, a method subsequently proven to be imprecise. A major achievement of the SSP has been the refinement of orangutan subspecies determinations; SSP-sponsored karyotyping has determined, on a chromosomal basis, the true genetic subspecies of nearly every orangutan managed by the SSP. The validity of these results has been confirmed by recent fieldwork, also completed under the auspices of the SSP. Dr. Oliver Ryder, Zoological Society of San Diego, performed the captive genetic studies, and Dr. William Karesh, New York Zoological Society, headed the team that examined wild animals in Indonesia and Malaysia. Since 1985, as a result of these data, the SSP has held to the policy that subspecific hybrid orangutans (*P. p. pygmaeus* x *abelii*) should not be produced; to that end, there is a moratorium on the breeding of hybrid animals within the SSP.

A Master Plan for this species was first produced in 1987; at that time, the genetic goal for orangutan management was the maintenance of 90% heterozygosity for 200 years. The minimum viable population (MVP) was determined to be 150-200 animals per subspecies (for a total managed population of 300-400), with the subspecific hybrid population being managed to extinction. North American "carrying capacity" was determined to be approximately 300 spaces. A Master Plan Update Workshop was held at the Chicago Zoological Park from 2-3 August 1991; it is anticipated that these parameters (90% for 200 years; MVP 150 - 200; carrying capacity ~300) will be relatively unchanged.

Dr. Terry Maple has retired as Species Coordinator in order to assume the expanded duties of co-chair of the AAZPA Great Ape Advisory Group; International Studbook Keeper Lori Perkins has been chosen to replace Dr. Maple as Species Coordinator. The North American Regional studbook has been transferred from Lori Perkins to Melanie Bond of the National Zoo.

The Orangutan SSP can be categorized as developing, as there are numerous issues of genetics and demography to be addressed before the two populations can become stable and successful.

Data Table (current through 30 June 1991)

	Two years ago	One year ago	Current year
Participating institutions	53	51	55
Captive Population	142.156.0	139.162.0	139.161.1
# SSP animals managed	193	189	194
# SSP animals not required to meet goals	57	55	59
# animals in non-participant collections but desirable to SSP	7	7	7
Total births in SSP program	8	7	3
# surviving to one year	6	6	*
# of desired births	7	6	3
# of undesired births	1	1	0
# of deaths of SSP animals	10	7	4
# of imports	0	0	0
# of exports	0	0	0
# of founders with represented descendants	45	49	51

* as this column reports a 6-month period, 1-year survivorship cannot be gauged. All three animals born this year are alive as of this date.

Current Population Status

At present, both the Bornean and the Sumatran populations can be considered as unstable, both genetically (there are both un- and underrepresented founder animals) and demographically (the populations have not achieved stability, and the birth rate needs to increase). The competition for captive holding space is severe, and more "ape space" needs to be dedicated to orangutans in order for the populations to achieve the necessary growth. There are no plans to acquire animals from the wild or from other regional populations, and we believe there is no need for either type of acquisition at this time. That is, the present population is sufficient to meet Master Plan goals provided that increased breeding is allowed to occur and captive holding space is expanded.

Demographic Trends

In general, where births are occurring, the animals are surviving at nearly 90%. However, births are not occurring at a rate sufficient to replace deaths, and thus the population overall is declining.

Population Genetics

As stated, we see no need to increase the number of founders in either sub-population, neither from the wild nor from other regional programs. The caveat must be reiterated, however, that this is predicated on an immediate and substantial increase in the reproductive rate of the present populations.

Special Concerns

The overriding problem facing the Orangutan SSP at this time is a severe shortage of captive holding space. Due to this constraint, many institutions have (at least temporarily) ceased breeding their animals, as there is no room for the offspring at their own or other SSP facilities. There is apparently a pervasive misconception throughout the zoo community that orangutans are doing well in captivity because so many zoos house them. They are very visible, and the impression is that "everybody has them, they must be doing okay." However, as has been stated, the tremendous space constraints combined with the substantial size and longevity of the surplus hybrid population make it extremely difficult to encourage the level of reproduction necessary to expand and stabilize the captive Bornean and Sumatran populations. It is increasingly clear that zoos building or planning new ape exhibits are doing so on the hope of acquiring gorillas, which are seen as more "glamorous" or appealing to the visiting public. What is unfortunate is that these facilities often have to wait years to acquire gorillas, while orangutans are available now, and they do make for exciting, popular exhibits. There is a wide variety of housing options, as orangutans are adaptable to a range of types of housing situations (i.e., solitary animals to multi-male groups) and, in fact, the needs for placing animals cover this range of options. Facilities are needed to house older, "retired" males as well as young males together in groups, in addition to the more typical breeding group of 1.2 or 1.3 animals.

Research

Current and ongoing research projects include: glucose tolerance testing of diabetic animals and their offspring, in collaboration with Dr. Joseph Kemnitz, Wisconsin Regional Primate Research Center; continued assessment of the genetic variability among wild orangutans by Dr. Dianne Janczewski, Cancer Research and Development Center, Frederick, MD; research on using inoculations of an antigen to develop a new, safe, and effective means of hybrid animal contraception, being performed by Dr. Bill Lasley, University of California at Davis.

Short-term Goals for Upcoming Year

(1) Complete the Master Plan Update and communicate the animal-by-animal recommendations to the participating institutions.

(2) Work closely with the AAZPA Great Ape Advisory Group to find a way to coordinate the conflicting needs for captive "great ape space" in North America.

(3) Make an extraordinary effort to reverse the historically negative demographic trends among the orangutan subspecific populations; we hope to encourage all concerned to contribute positively to the process and to begin a concerted effort to achieve our genetic and demographic goals.

CHIMPANZEE (*Pan troglodytes*)

Species Coordinator and Regional Studbook Keeper:
Les Schobert, North Carolina Zoological Park

Introduction

The Chimpanzee SSP is only in its second year and is still developing. The basic issues that need to be resolved in order to establish a stable population have been identified, goals for the SSP have been set, and the first Master Plan published. The genetic and demographic goals are to retain 90% of the founding stock's genetic heterozygosity for 200 years. Based on genetic analysis, this will require an MVP of 180 (Ne/N = 0.3). The target population size is 220 to allow for stabilization of the age structure and to protect against loss of genetic diversity. Currently there are 218 (75.142) chimpanzees in 34 institutions with a potential for 185 (53.132) spaces for adults plus another 64 spaces for dependant juveniles. Since the existing chimpanzee population very nearly fills the number of potential spaces available for adults, the need for additional space is critical. Lack of space makes stabilizing the population more difficult since breeding must be limited. Space limitations may be further exacerbated if the captive population is found to contain subspecies groups. Research is underway to address this issue.

The intelligence and social complexity of the species requires that behavioral and social considerations be incorporated into plans for transferring animals into or out of existing groups. The SSP has identified a number of behavioral and social goals for the population aimed at enhancing species-typical development and at promoting breeding and parent rearing by captive born chimpanzees. The potential importance of non-reproductive or overrepresented individuals to the social structure of various groups and their importance as behavioral and social models for younger animals makes it difficult to identify those animals that are surplus to the SSP population. Genetic criteria alone are not sufficient to classify individual chimpanzees as surplus to the program's needs.

Data Table (current through 1 January 1991)

	Current year
Participating institutions	34
Captive Population	75.142.1
# SSP animals managed	218
# SSP animals not required to meet goals	0
# animals in non-participant collections but desirable to SSP	0
Total births in SSP program	11
# surviving to one year.	10
# of desired births	2
# of undesired births	9
# of deaths of SSP animals	6
# of imports	0
# of exports	0
# of founders with represented descendants	12.15(27)

*The table presents data for only the current year since the chimpanzee SSP has just begun and data have only been collected for one year.

Current Population Status

The present SSP population has a good founder base, and no imports of wild-born chimpanzees will be needed to secure the population's survival. Besides the SSP, two other substantial populations of captive chimpanzees exist in North America: one in bio-medical facilities (approximately 1700 animals) and another in private hands (estimated at one to two thousand individuals). A breeding plan for chimpanzees owned by NIH facilities is underway. Competition for space with other great apes remains a problem.

Demographic Trends

Most reproduction in the SSP population can be attributed to wild-born chimpanzees. Only 9.14 (25) captive born chimpanzees have reproduced. Of the 33 offspring produced by captive born chimpanzees, only 12 have two captive born parents, the rest have only one captive born parent. The small number of

offspring from captive born animals is due, at least in part, to the fact that most (63%) of these chimpanzees are less than 10 years old, and, therefore, their breeding potential cannot yet be determined. The future of the SSP population depends on the capability of captive born animals to breed and rear their offspring. The SSP's attention to species-typical behavioral and social development is aimed at ensuring that captive born chimpanzees will develop these necessary skills. The reproductive potential of this group will not be apparent for 5-10 years. Recruiting captive born animals as breeders will be essential for stabilizing the age structure of the population as the wild-born animals move into the older, low-reproductive age classes. Stabilization of the population will require continued growth, creating even more pressure for space.

To limit the growth rate of the population and to comply with breeding recommendations, individual institutions have initiated contraception programs. Few offspring have been produced from the recommended matings, however, the recommendations were made only 10 months ago and little can be expected at this early date. The births from unrecommended matings can be attributed to animals pregnant before the recommendations were made or before contraception programs could be initiated.

Population Genetics

The current population has 82 founders with a potential for 136. Due to inequalities in family size, 55.3 genomes still survive, and the population has a realistic founder genome equivalent (FGE) of 27. Since most of the reproduction in the population has been by wild-born animals nearly all (98.7%) of the wild gene diversity has been retained. Very little inbreeding has occurred (mean inbreeding coefficient = 0.005).

Mean kinship (MK) analysis shows that 30 males and 79 females are underrepresented, 12 and 14 are adequately represented, and 28 and 52 are overrepresented, respectively. Highest priority breeding recommendations were given to animals in the older age classes with low MK. Many of the matings may not be successful since they are for older, wild-born animals that have not previously reproduced. The failure of many of these matings will not seriously harm the population because of its good founder base and the high percentage of genetic diversity that has been retained. Stabilization of the population will be possible through future breeding of the large pool of younger, underrepresented chimpanzees.

Special Concerns

From a genetic point of view, the population is in relatively good shape, however, space limitations and the development of species-typical social and parental skills remain a concern. The need for additional space for chimpanzees has already been discussed. A variety of contraception strategies are needed to control population growth. The need to understand the environmental factors that promote or deter species-typical development requires special attention. Problems with hand-reared primates rejecting their offspring are well known, and protocols for hand-rearing and socialization need to be investigated to promote normal maternal behavior. The role of older animals as models for competent social, mating, and parental behavior needs to be better understood.

Another concern is the possibility that the SSP population may contain sub-species groups. The existence of sub-species in chimpanzees is still in question, and further research on wild populations needs to be conducted.

Field Conservation

The SSP is in discussions with Dr. Jane Goodall and Dr. Geza Teleki of the Jane Goodall Institute (JGI) on the role we can play in establishing and operating sanctuaries in Africa for orphaned chimpanzees.

Research

A first step toward resolving the question of chimpanzee sub-species in the captive population is underway. Dr. Robert Lacy at the Chicago Zoological Park is analyzing samples from captive wild-born chimpanzees to determine whether or not karyotypic differences exist within this group.

One of the SSP's goals is to produce a comprehensive husbandry manual. Collecting information on current husbandry practices is a necessary first step toward producing the manual. The North Carolina Zoological Park has applied for an IMS grant to fund collection of basic husbandry information, and to collate this and other information into a published husbandry manual. We should know if IMS funding will be available in August 1991.

Progress Toward Goals

(1) First Master Plan has been prepared, reviewed, and adopted.
(2) Funding has been sought for production of a husbandry manual.
(3) Began collecting information on behavioral development, introductions and socialization, and individual chimpanzee profiles to be used to determine surplus.
(4) A veterinary advisory committee has been formed.
(5) Contacts have been established with field conservationists to promote conservation of wild populations.

Short-term Goals for Upcoming Year

(1) Develop a pre-transfer veterinary protocol.
(2) Standardize transfer procedures in compliance with USDA regulations and, accomplish transfers to affect breeding recommendations.
(3) Continue reproductive evaluations of non-breeding wild-born animals.
(4) Gather data for the husbandry manual.
(5) Expand contraception efforts and research to prevent non-recommended matings.
(6) Work to encourage new chimpanzee exhibits and expansion of existing collections.

BONOBO OR PYGMY CHIMPANZEE (*Pan paniscus*)

Species Coordinator: Gay E. Reinartz, Zoological Society of Milwaukee County
International Studbook Keeper: Bruno Van Puijenbroeck, Royal Zoological Society of Antwerp, Belgium

Introduction

Pan paniscus is relatively rare in captivity; the species is represented by only 42 individuals in North America. The world captive bonobo population (outside Africa) is about 91. Because of the extremely small population size, intensive management to preserve genetic diversity is necessary. Furthermore, captive propagation must be viewed as a global management program and be conducted in cooperation with zoological institutions worldwide in order to attain a minimum viable population size and ensure long-term success. Therefore, the SSP works in coordination with the European Endangered Species Program or EEP; jointly, they manage 79 bonobos as two continental sub-populations.

Using life-history and pedigree data obtained from studbook analyses, population genetic models indicate that the current captive population is marginally large enough to preserve 90% of the original genetic diversity for 200 years (approximately ten bonobo generations). However, this would require intensive management, increased population growth rate and inclusion of founders from institutions not yet participating in the global management program. In light of these difficult challenges, the SSP goals are to work in coordination with the EEP and develop a global breeding regimen initially aimed at preserving 90% genetic diversity for up to 200 years. (Because bonobos are genetically very similar to humans, advances in human reproductive technology, genetics and cryopreservation may allow a shorter management period.)

Depending on the eventual number of effective founders and the average population growth rate, a stable captive population size of approximately 250-400 bonobos will be required to meet the genetic goals. Six SSP institutions are constructing new or expanded bonobo facilities; after construction (estimated at approximately five years), the additional space would be sufficient to almost double the existing SSP population from 38 to 70 animals. Reaching projected goals of 400 spaces worldwide (maximum), or approximately half this for the SSP, is tenable but will require coordination with other great ape SSP's through the AAZPA Great Ape Advisory Group. The Bonobo SSP is still developing and working towards the following immediate objectives: (1) increase the population size to carrying capacity as rapidly as possible, commensurate with responsible management; (2) increase the annual population growth rate to 3%; (3) redress the skewed founder representation, and (4) increase the number of founder genome equivalents.

Data Table (current through 1 July 1991)

	Two years ago	One year ago	Current year
Participating institutions	7	7	8
Captive Population	38.45	38.46	42.91
# SSP animals managed	30	33	38
# SSP animals not required to meet goals	0	0	0
# animals in non-participant collections but desirable to SSP	4	4	4
Total births in SSP program	1	4	2
# surviving to one year	1	3	-
# of desired births	1	4	2
# of undesired births	0	0	0
# of deaths of SSP animals	0	1	1
# of imports	0	1	4
# of exports	1	1	0
# of founders with represented descendants	7	7	7

Current Population Status

The Bonobo SSP population is presently very small, consisting of 38 animals. All bonobos in the United States are included in the SSP population. Two non-SSP institutions in Mexico hold two pairs of

wild-born bonobos, bringing the total captive population for North America up to 42. There are no reliable estimates of bonobo numbers in the wild. The bonobo now occupies only a small percentage of its historical range. Past survey information (prior to 1974) indicates a discontinuous, fragmented population. Current threats to the wild population include illegal hunting for food and animal trade and clearing of its forest habitat. The SSP has actively participated in several international forums focusing on the need for and design of a conservation action plan for this species. The SSP is currently exploring ways to support *in situ* conservation projects.

Demographic Trends

Successful reproduction over the past two decades has slowly increased the captive population size; over half of the bonobos within the SSP are captive born. The population is still relatively young with three generations present. The age structure of the world captive population is basically pyramidal in shape with a higher proportion of individuals in younger age classes. Life-history tables show that the greatest risk of mortality to captive bonobos is within their first year of life; approximately 21% of captive born bonobos die within their first year; neonatal mortality is most common. Otherwise, survival remains essentially constant for the older age-classes. Age at first reproduction is approximately 10 years for both sexes. Reproduction among captive bonobos has been relatively constant, and there is no evidence of sterility; only 9% of the females entering the studbook population (n=35) and known to have had access to mature males have never reproduced. However, fecundity in this species appears to be inherently low. Studbook analyses estimate the annual population growth rate to be approximately 1-2%, just slightly over replacement rate. Small population size, coupled with slow growth and low reproductive capacity, makes the captive bonobo population vulnerable to extinction as a result of stochastic events. Hence, demographic management objectives focus on ways to increase population size through successful reproduction. All SSP breeding recommendations have been carried out to date.

Population Genetics

The founder representation within the SSP and EEP populations is severely skewed. Worldwide, 18 founders have living descendants in the current population (7 in the SSP population), but because of pedigree bottlenecks and variance in founder family size, the number of founder genome equivalents (FGE) is 9 for the world population and 4 for North America (gene drop analysis data 31 December 1990). Given the present annual growth rate of 1-2%, 9 FGE (world) are not sufficient to preserve 90% genetic diversity for 50 years. Increasing FGE to 15 and keeping growth rate the same will preserve 90% of the original genetic diversity for 50 years, but not for 100 years. At least 20 FGE's are needed to attain this latter goal, and 25 FGE would put the world population within range of the 200 year goal. Fewer FGE are needed when the annual growth rate is increased to 3%. For example, with 15 FGE, 90% diversity can be maintained for 200 years, but the population size would have to be 483 individuals. The best strategy, then, is a combination of doubling the current FGE and increasing growth rate to arrive at reasonable carrying capacities (less than 400 animals). In any case, the number of FGE must be increased if preservation of genetic diversity is our goal. Some increase of FGE is possible with improved breeding management, i.e., ensuring that potential (unrepresented) founders breed (10 in North America) and underrepresented founders receive breeding priority. Doubling FGE may be possible if many underrepresented founders which are still alive continue to reproduce, and if efforts to obtain additional potential founders are successful. To date, efforts to increase the number of founders has centered around management of the existing captive population, facilitating exchanges with the EEP for unrelated stock, and annexing bonobos held in non-SSP institutions in Mexico.

Special Concerns

Special problems currently facing the Bonobo SSP are those associated with small population size, low reproductive capacity, and the inherent genetic and demographic consequences discussed above. Of immediate concern to the SSP is the lack of unrelated reproductive-aged pairing possibilities. Skewed founder representation and demographic history have led to a number of related F_1 reproductive-aged males, 83% (n=6) of whom have no unrelated females to breed with in the SSP population. Young females are theoretically better paired with underrepresented founder males. Inbreeding has thus far been avoided in the SSP population, but without exchanges with the EEP, high levels of inbreeding (F=0.125 or higher) will

result if these males are allowed to breed. (Currently, there is little genetic overlap between the SSP and EEP sub-populations.) The EEP also has a higher proportion of mature F1 males, but their average degree of relatedness to the whole population is less than those in the SSP. A temporary measure is to form a bachelor group. Furthermore, in order to pair individuals of genetic priority or to prevent inbreeding, movement of animals will be necessary. Disruption of social groups may therefore become a problem. The SSP is soliciting the assistance of a behavioral specialist to review breeding recommendations and help meet both social and genetic requirements. A high neonatal mortality has been observed for captive born bonobos, especially for females (22.5% first year mortality) and the SSP is seeking scientific expertise to study causes of infant mortality.

Research

The Propagation Group recently voted to endorse and facilitate sample collection for genetic studies. There is a need to examine the genetic structure and relative diversity of the captive population. The genetic profile of the founding population and subsequent generations will be documented by several different techniques including protein electrophoresis, DNA analyses and karyotyping. As a prerequisite for research on artificial insemination, plans to collect preliminary data on reproductive physiological norms and behavioral correlates have been discussed. The effects of hand-rearing on reproduction and social development have been identified as an additional research priority.

Progress Toward Goals

(1) All breeding recommendations and associated transfers have been followed.
(2) All necessary demographic and pedigree analyses of studbook data have been completed, including comparisons of various subpopulations with the world population.
(3) The first edition of the Master Plan (1991-1992) was compiled and distributed.
(4) The potential number of founders was increased by inclusion of 2.2 additional wild-born bonobos into the SSP/EEP program (importation by Columbus Zoo).
(5) One bonobo facility in Japan and two in Mexico were reviewed and a closer working relationship was established with these institutions.
(6) A communication network was established with field primatologists, conservationists and bonobo researchers with regard to *in situ* conservation and development of complementary conservation goals.
(7) The species coordinator participated in international forums (International Primatological Society Congress, Japan; Bonobo Conservation Workshop, San Diego, CA) to discuss (a) further refinement of SSP and EEP objectives; (b) conservation of wild populations; (c) the orphan and pet-trade issue, and (d) the need and design of a holistic action plan for Zaire.

Short-term Goals for Upcoming Year

(1) Intensify efforts to breed all priority animals.
(2) Review relatedness of unpaired individuals six years old or older and begin to formulate plans for future breeding and social groups commensurate with institutional holding capacities.
(3) Identify animals for exchange with the EEP; begin permit process.
(4) Develop guidelines for holding facilities to provide optimal conditions to reach program goals.
(5) Assess carrying capacity and facility design of existing institutions.
(6) Collaborate with the EEP in developing and distributing a husbandry questionnaire. Sections have been assigned and the draft is due by December 1991.
(7) Refine research priorities; evaluate effects of hand-rearing and assess causes of infant mortality.
(8) Compile research requests and approved protocols into a manual for distribution and easy use.
(9) Review non-AAZPA member SSP participant applications and status of Mexican institutions.
(10) Continue communications with associated conservation groups and organizations with regard to *in situ* conservation issues.

AAZPA
ANNUAL REPORT ON
CONSERVATION AND SCIENCE
1991-92

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PROSIMIAN TAXON ADVISORY GROUP

Chair: Ingrid Porton, St. Louis Zoological Park
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Primary Goals

The goals of the Prosimian Advisory Group (PAG), which encompasses the tarsier as well as all the prosimians, are as follows: 1) to determine current and projected North American captive space available for the exhibition and propagation of prosimians; 2) to identify prosimian species in greatest need of captive breeding programs based on their status in the wild, status in captivity, availability, and husbandry requirements; 3) to stimulate and coordinate the initiation of new studbooks and SSPs; 4) to determine the demographic and genetic health of the current captive populations of prosimians, 5) to actively coordinate the use of captive space by prosimian species and communicate to zoological institutions the species/population goals and priorities set by the PAG; 6) to facilitate communication within the scientific community of research opportunities and needs; 7) to encourage and coordinate the development of husbandry manuals; 8) to cooperate with other national and international conservation organizations and groups to achieve common goals; and 9) to develop captive management programs that recognize and facilitate the retention of species-typical behavior.

Data Table (current through 1 July, 1992)

	One year ago	Current year
# of meetings this year	0	2
# of studbooks under umbrella	2	7
# of SSPs under umbrella	2	2
# of new studbook petitions submitted	3	2
# of new studbooks approved	2	3
# of new SSP petitions submitted	0	0
# of new SSPs approved	0	0

Special Concerns

At the mid-year meeting data was presented on the current captive prosimian populations. The overview revealed several areas of concern regarding the utilization of captive housing. *L. catta* is by far the species with the largest population, taking up a disproportionate amount of the available prosimian space. Breeding has largely gone unplanned, the population contains few live or potential founders, and although the actual founder base has not yet been determined, incomplete records and the inability to positively identify many of the individuals in the current population are large obstacles in the development of an effective breeding program. Prior to availability of the ring-tailed lemur studbook, which will allow for more informed breeding decisions, it is imperative that there be a breeding moratorium of this species. This can be accomplished through the use of contraception, or the formation of single sex groups. We also encourage the development of mixed species displays to optimize space utilization. It should, however, be emphasized that the large number of ring tailed lemurs in captivity provides a false picture of the conservation status of this species. First, the amount of original genetic diversity maintained in the present captive population is unknown and may be quite poor. Second, habitat destruction has accelerated in southern Madagascar, severely threatening the survival of this unique species in the wild (Sussman, pers.comm.). In addition, Simmons and Rumpler (1988) have suggested a revised classification for lemurs that results in *catta* being the only species in the genus *Lemur*. If adopted, this increases the taxonomic uniqueness and thus the conservation priority of this species. Regardless of the latter, it is clear that more serious attention should be paid to the captive management of *catta*.

Another concern is *L. fulvus* because hybrids comprise approximately 25% of the U.S. population, and the largest purebred populations are of the less threatened subspecies. Barbara Coffman, Duke University Primate Center, will petition for a regional studbook to facilitate better management of this taxa.

A number of lemur species currently kept in captivity exist in, as yet, small population numbers with the founder base divided between several European and North American institutions. This is the optimal time to plan global breeding programs that manage growth rate while emphasizing the equalization of founder representation for the following taxa: *L. rubriventer, L. mongoz, L. m. flavifrons, L. coronatus,*

and *Daubentonia.*

The successful captive management of *Propithecus* is still problematic and would benefit from additional research on the nutritional and veterinary aspects of their care.

Dr. Patricia Wright brought attention to the plight of the tarsier. Because of the unique taxonomic position held by the tarsier, there was a consensus among the attending PAG members to direct more attention to the development of a breeding and research program for this taxa. Husbandry problems are significant and include meeting the nutritional requirements of adults and neonates.

The management of *Galagidae* and the Asian prosimians is hampered by the uncertain taxonomic status of many of the species. Both Mark Edwards and Helena Fitch Snyder are addressing the best approach to sort out the complex taxonomic questions.

Progress Toward Goals

(1) Three prosimian studbooks were approved by the WCMC this year: *Propithecus*, David Haring, Duke University Primate Center; Nocturnal Lemurs encompassing *Mirza, Cheirogaleus*, and *Microcebus*, Barbara Coffman, Duke University Primate Center; and *Galagidae*, Mark Edwards, Potter Park Zoo.

(2) Significant progress has been made by Helena Fitch Snyder towards the completion of the Asian Prosimian Studbook, and by Lynne Villers in organizing the *Lemur catta* data to the point that a studbook questionnaire has now been sent to past and current holding facilities.

(3) A mid-year working meeting, which the majority of PAG members were able to attend, was held in May at the Duke University Primate Center. One of the goals of the meeting was to assemble the available data on the North American prosimian populations to assess founder base and growth trends. Data for those species not maintained in regional studbooks were gathered by: Fran Woods, *L. coronatus*; Barbara Coffman, *L. fulvus, L. mongoz*; Elwyn Simmons, *Daubentonia*; John Drake, *L. rubriventer*; David Haring, *Hapalemur*; and Cheryl Fredrick, *Perodicticus.*

(4) The mid-year meeting assembled field and laboratory scientists engaged in ecological, behavioral, and genetic research on prosimians to initiate a dialogue between the captive conservation and scientific communities.

(5) To facilitate continued communication, Robin Absher, Yale University/American Museum of Natural History has initiated two projects: the "Research on All Prosimians (RAP) Newsletter"; and a directory that will list all individuals engaged in field, laboratory, or captive research on prosimians. The goal of both projects is to encourage a sharing of information, resources, and time in order to more fully coordinate and optimize efforts aimed at conserving prosimians.

(6) Progress towards the development of husbandry manuals for prosimian species has been made. Extensive bibliographies have been assembled by the studbook keepers, veterinary, nutrition, and reproductive physiology advisors to initiate literature reviews for the different species. At the mid-year meeting it was decided that sections on the two specialized areas of nutrition and veterinary medicine would be coordinated by Dr. Sue Crissey, Nutrition Advisor, and Dr. Randall Junge, Veterinary Advisor. Dr. Kay Izard, Reproductive Physiology Advisor, will contribute a chart summarizing the available data on prosimian vaginal cytology and the detection of estrus. Responsibility for other sections of the husbandry manuals have been taken on by the studbook keepers and/or the above mentioned people that have assembled population data.

(7) A veterinary discussion section, chaired by Randy Junge, DVM, and Tricia Feeser, DVM, Duke University Primate Center, was held at the TAG meeting. Included were discussions of the function of veterinary advisors to SSP committees, the concept and progress of the black lemur medical management and survey and its applicability to other lemur species, and significant medical conditions seen in particular species. Dr. Feeser discussed the creation of a Prosimian Veterinary Resource Center at Duke which can potentially serve as a source of literature references, pathology surveys, drug and dose recommendations, tissue and serum banking, etc. In addition, suggestions were made as to how field researchers could assist ongoing nutritional, genetic, and veterinary research by collecting requested samples along with their own. With the potential reintroduction of ruffed lemurs into Betampona, guidelines for evaluating the health and disease concerns of both the introduced and resident populations will need to be formulated. Dr. Junge has agreed to coordinate this effort.

(8) Progress has been made towards the computerized analysis of available captive housing for primates in North America.

Short-Term Goals for Upcoming Year

(1) Hold a combined masterplan meeting for *Lemur macaco, L. rubriventer, L. mongoz*, and *Mirza* in 1992. One objective of the masterplan meeting will be to understand the actual mechanics of a Nucleus I

population.
(2) Hold a masterplan meeting for the pygmy loris population.
(3) Develop suggestions for the global management of *L. mongoz, L. rubriventer, L. m. flavifrons, L. coronatus*, and *Daubentonia.*
(4) Communicate the need for a breeding moratorium for *L. catta.*
(5) Complete husbandry manuals for *L. mongoz, L. rubriventer, L. coronatus, L. macaco, Varecia, Propithecus*, and *Perodicticus.*
(6) Develop and distribute with the studbook questionnaire a taxonomic key for galagoes to facilitate identification of species/subspecies (Mark Edwards).
(7) Publish Asian Prosimian and Nocturnal Lemur studbooks.
(8) Distribute the RAP Directory and initiate publication of the RAP Newsletter.
(9) Work with field biologists and zoo professionals experienced in the husbandry of tarsiers to develop a captive management strategy for this difficult and important primate taxa.
(10) Dr. Junge will assemble a list of sample requests from researchers to distribute to field workers with details about the types of samples, preservation methods, purpose, and disposition.
(11) Provide genetic and demographic data on the captive populations of Malagasy lemurs to the Madagascar Fauna Group. Such data should facilitate a better understanding of the benefits that can be provided by an infusion of new founders into existing captive populations.

RUFFED LEMUR (*Varecia variegata*)

Species Coordinator and International Studbook Keeper
Ingrid Porton, St. Louis Zoological Park

Introduction

The two recognized subspecies of *Varecia* are managed as separate SSP populations. The goal for both populations is to maintain 90% of the original genetic diversity over a period of 100 years. To achieve these goals it is essential to correct for discrepancies in founder representation. In addition, both populations require the infusion of additional founders. Space continues to be a significant problem. *Varecia* occupies a large proportion of the prosimian space, consequently efforts are directed at optimizing and coordinating space utilization through the Prosimian Taxon Advisory Group. This is a developing SSP.

Data Table: *Varecia variegata variegata* (current through 30 June, 1992)

	Two years ago	One year ago	Current year[1]
Participating institutions	69	76	83
Captive Population	144.109.0	150.113.4	148.113.2
# SSP animals managed	233	247	243
# SSP animals not required to meet goals	20	20	20
# animals in non-participant collections but desirable to SSP	0	0	0
Total births in SSP program	15	26	8
# surviving to 60 days	12	15	6
# of recommended births	16[2]	17[2]	13[2]
# of non recommended births	10	4	2
# of deaths of SSP animals	15	15	6
# of imports	0	0	0
# of exports	3	0	3
# of founders with represented descendants	16	16	16

[1] Some data for current year has not yet been reported

[2] Recommended # of matings, litter size can vary from 1-5.

Data Table: *Varecia variegata rubra* (current through 30 June, 1992)

	Two years ago	One year ago	Current year[1]
Participating institutions	69	76	83
Captive Population	105.81.0	111.84.3	107.92.5
# SSP animals managed	184	198	204
# SSP animals not required to meet goals	2	0	0
# animals in non-participant collections but desirable to SSP	0	0	0
Total births in SSP program	34	20	14
# surviving to 60 days	22	16	13
# of recommended births	18[2]	17[2]	9[2]
# of non recommended births	5	4	5
# of deaths of SSP animals	16	7	5
# of imports	0	0	0
# of exports	0	2	0
# of founders with represented descendants	11	12	12

[1] Some data for current year has not yet been reported.

[2] Recommended # of matings; litter size varies between 1-5.

Current Population Status

The captive population figures given for both subspecies do not reflect the actual number of ruffed lemurs in North America. Recent information suggests that at the very least, several hundred ruffed lemurs are kept by private breeders who do not contribute information to the studbook. Both subspecies as well as hybrids continue to be bred in the private sector. Persistent degradation and fragmentation of the eastern rain forest, the low density in which *Varecia* is normally distributed, and the hunting of this large bodied species for food and pets continue to pose serious threats to its survival in the wild.

Demographic Trends

Space limitations and delays in transferring individuals to other institutions constituted the reason that seven of the 13 recommended *variegata* and four of the nine recommended *rubra* matings did not occur this year.

An encouraging note was that *variegata* female 121, who had not bred in years was moved to Duke, paired with an important male and produced four offspring this year. Also of interest, is that a 24 year old founder female in the EEP produced and raised young this year.

Population Genetics

Genetic analysis of the *variegata* and *rubra* SSP populations carried out last year showed large discrepancies in founder representations. Although 16 founders are represented, the FGE for *variegata* was found to be 9.07. For *rubra* the FGE was 3.77. The 1991/92 breeding recommendations were made to correct for some of the disparities in founder representation. Unfortunately, the majority of the breeding recommendations were not accomplished (including two of the four wild caught *rubra*), while several non-recommended births occurred. The continued breeding of the better represented lines dilutes the progress we make when under-represented animals are successfully bred.

Special Concerns

A significant concern in this SSP has been the issue of space and the disposition of "surplus" individuals. It became apparent that the goals of the SSP required further clarification, particularly in terms of defining institutional contributions and responsibilities to the Ruffed Lemur SSP. In response to this need a document was developed and distributed to all the participating institutions. Because the importance of communicating the concerns of this SSP, excerpts of the document are presented below:

The Ruffed Lemur SSP has suggested a multi-pronged approach to the problem of space and surplus animals. First, however, the term surplus must be defined as it relates to this SSP. An individual is considered surplus only if there is no current or future potential need for its genetic contribution to the SSP population. An individual who has bred and produced the desired number of offspring should not be considered surplus until its offspring have themselves reproduced. This point is particularly important, because genetic diversity is lost with each generation.

Because founder representation in both populations is unequal, targeted family size will differ among individuals in an attempt to rectify existing disparities. The genetic management of the population will have to be carried out within the context of limiting growth to stay within carrying capacity. This situation translates into several important points for the Ruffed Lemur SSP. First, there will initially be a core of important breeders from which we will require several litters to accomplish stated genetic goals. To meet demographic goals we will need to delay reproduction in another set of individuals descended from better represented founders. Once the ruffed lemur population is stabilized, it is likely that all individuals will breed only once or twice in their lifetime. **It should therefore be very clear that contributing to the Ruffed Lemur SSP constitutes significantly more than simply producing a litter.** Housing non-reproductive groups of ruffed lemurs composed of individuals who should breed in the future or who should remain in the population until their offspring are proven breeders will be essential to the success of this SSP.

The following strategy has been adopted by the Ruffed Lemur SSP to address the space and surplus animal problem. 1) It is imperative that the yearly breeding recommendations are followed. The prevention of unwanted births is the most basic and simple solution to the space/surplus animal problem. 2) House ruffed lemurs in larger groups than has traditionally been done in the past. This can potentially be done by keeping family groups intact for as long as possible (requiring the use of birth control), and forming larger single-sex groups. 3) The generation time should be increased. 4) Prioritizing the transfer of individuals no longer needed in the SSP to other regional breeding programs. These regional breeding programs will only be able to utilize those individuals that will contribute to their genetic goals. Because many founder lines are already shared, only a limited number of ruffed lemurs will be useful to the other programs. This further

emphasizes the importance of following the breeding recommendations since over-represented lines will be increasingly difficult to move. 5) The movement of surplus ruffed lemurs outside the SSP should conform to the AAZPA's Code of Professional Ethics.

The following list outlines the responsibilities institutions should be willing to follow in order to contribute to attainment of the goals set forth by the Ruffed Lemur SSP: 1) Adhere to breeding recommendations; 2) A participating institution that wants to be directly involved with the breeding program should have the space to maintain the resultant offspring in their collection for up to five years. necessitating the ability to maintain the family as a group or to have sufficient space to separate individuals as needed; 3) Individuals designated as part of the SSP program should not be transferred outside of the Ruffed Lemur SSP; 4) If an SSP member institution locates another facility that is not a participant but meets the standards of care expected of an AAZPA institution they may transfer a ruffed lemur to that facility **ONLY** if they continue to maintain ownership of that animal; however, it will be the responsibility of the SSP participant to ensure that SSP recommendations are communicated and adhered to by the loaning facility; and 5) The Ruffed Lemur SSP strongly recommends **AGAINST** member institutions moving surplus lemurs to North American institutions and/or individuals that want them for breeding purposes.

Providing individuals that are genetically well represented in the SSP population to non-AAZPA facilities has the potential of negatively impacting the SSP in the following ways: 1) Non-SSP participants may move ruffed lemur offspring they have produced to facilities that would be willing to cooperate with the SSP, thereby directly competing for the limited resource of appropriate space; 2) Non-SSP participants may move individuals overseas, once again competing for space that could be utilized by regional breeding programs (SSP, EEP, etc); 3) As appropriate space (facilities that meet the standards expected of an AAZPA institution) becomes more difficult to find, Non-SSP institutions/individuals will move more lemurs into the hands of those unqualified to care for them; and 4) The potential exists that ruffed lemurs bred outside of a regional breeding program may find their way into the SSP. For example, an institution that has purchased a ruffed lemur from an outside source may apply and qualify to join the SSP. Another potential situation arises when wildlife regulatory agents confiscate exotics and request zoo assistance in placing these animals.

Research

Research on the efficacy and safety of the female directed contraceptive, Depo-Provera, continued into this year's breeding season.

Field Conservation

The SSP Coordinator was able to participate in a five week survey of the Betampona Natural Reserve directed by Charlie Welch and Andrea Katz of the Madagascar Fauna Group. The objective of the survey was to census the *variegata* population in Betampona to determine the feasibility of a release program in this Reserve.

Progress Toward Goals

1) A document defining the approach the Ruffed Lemur SSP has adopted to address the space and surplus animal problem has been distributed to all participating institutions. It is hoped that improved communication will reduce the number of unwanted births and inappropriate transfers.
2) Progress has been made on the husbandry manual, a draft should be available by the fall.
3) A protocol for the collection of genetic materials from founders was developed and distributed to all institutions. We thank the San Antonio and Happy Hollow Zoos for collecting genetic samples upon the death of their two founders.
4) Wesley Sutton, a doctoral candidate from Texas Tech, has agreed to help with a genetic analysis of the variation of pelage patterns in black and white ruffed lemurs. Discussions with field researchers have been initiated to collect samples.
5) The feasibility of importing additional *rubra* founders and transferring confiscated *variegata* from Zoo Ivoloina into the SSP population is being discussed with the Madagascar Fauna Group as a new accord will be negotiated with the Malagasy government this year.

Short-term Goals for Upcoming Year

1) Complete first draft of the husbandry manual.
2) Continue to coordinate the collection of genetic materials for research on the subspecies taxonomy of *Varecia.*

3) Facilitate the transfer of appropriate individual ruffed lemurs into other regional breeding programs.
4) Coordinate transfers within the SSP to make space available for breeding pairs.

BLACK LEMUR (*Lemur macaco*)

Species Coordinator and International Studbook Keeper:
Ingrid Porton, St. Louis Zoological Park

Introduction

The Black Lemur SSP comprises two subspecies: the black lemur, *L.m. macacoo*,and Sclater's or blue-eyed black lemur, *L.m. flavifrons*. Up until now, only *macaco* has been managed under the formal auspices of the SSP. A Master Plan was developed for *macaco* in 1989 at which time it was decided to maintain 85-90% of the original genetic diversity of the population for 200 years. Another Master Plan meeting is needed to update the *macaco* population and develop a second masterplan for the *flavifrons* population. This meeting has been planned for 1992, and one of the objectives will be to look at the potential of managing *flavifrons* at a global level;. This is a developing SSP.

Data Table: *Lemur macaco macaco* (current through 1 July, 1992)

	Two Years ago	One Year ago	Current year
Participating Institutions	15	14	15
Captive Population	67.64.1	70.71.1	67.71.0
# SSP animals managed	113	125	138
# SSP animals not required to meet goals	19	17	20
# animals in non-participant collections but desirable to SSP	0	0	0
Total # of births in SSP program	19	15	3
# surviving to sixty days	16	13	1
# of SSP recommended births	20[1]	19[1]	11[1]
# of non recommended births	6	1	2
# of deaths of SSP animals	4	5	4
# of imports	0	0	4
# of exports	0	0	0
# of founders w/ represented descendants	19	19	25

Data Table: *L. macaco flavifrons* (current through 1 July, 1992)

	One Year ago	Current year
Participating Institutions	15*	15*
Captive Population	10.7	11.9
# SSP animals managed	17	20
# SSP animals not required to meet goals	0	0
# animals in non-participant collections but desirable to SSP	0	0
Total # of births in SSP program	3	6
# surviving to sixty days	3	3
# of SSP recommended births	NA[2]	NA[2]
# of non recommended births	0	0
# of deaths of SSP animals	0	3
# of imports	3	0
# of exports	0	0
# of founders w/ represented descendants	4	6

[1] Only Duke University Primate Center holds this subspecies

[2] A formal masterplan has not yet been developed.

Current Population Status

The North American *macaco* population is larger than the actual SSP population (shown above), although the actual figures are unclear because black lemurs continue to be bred by private individuals, most of whom do not participate in the Studbook. the North American population of *flavifrons* is still quite small, and housed only at Duke University Primate Center. The world population is held in five institutions: Duke, Mulhouse Zoo, (France), Universite Louis Pasteur (France), Zoo Ivoloina (Madagascar), and Parc Tsimbazaza (Madagascar). As the population expands, additional institutions will be needed to house this subspecies. Although both subspecies are endangered, *flavifrons* is the most critically so due to low numbers and the fact that no part of the population is contained within the protection of a reserve. To save this subspecies in the wild, Myers, et. al. (1989) recommend a combined rural development and conservation project to protect critical habitat.

Demographic Trends

Fewer *macaco* matings were recommended this past year to slow down population growth. The encouraging result was a reduction in growth; only two (reported) non-recommended births occurred, one due to an apparent contraception failure. Less encouraging is that none of the recommended matings were successful. One serious problem is the refusal of a private facility to return three genetically important females they have on loan from a participating institution. The 2.2 imported *macaco*, representing six new bloodlines, arrived this past summer, but not unexpectedly, failed to reproduce this first year.

The *flavifrons* table clearly shows that the population is growing, although infant mortality was 50% this year. In addition, the French and Malagasy captive populations are also reproducing. Both wild caught and captive born individuals are breeding, and there is every reason to believe that this subspecies should breed successfully in captivity.

Population Genetics

The addition of the 2.2 *macaco* from France has improved the founder base for the SSP population, however founder representation is still highly skewed. Female 299, a potential founder, again failed to reproduce this year. Male 91 was transferred to a new institution in hopes of stimulating reproduction but despite observed copulations, no young were produced. An aged pair that remain genetically important to the SSP failed for the first time to reproduce this year.

The *flavifrons* population should be managed on a global basis. Currently there are six founders and one potential founder in the U.S. population, but when combined with the European population the founder base increase to ten with a potential of 13. A total of four founders and one potential founder are housed in the Malagasy zoos. The most feasible way to incorporate these founders into the globally managed population requires discussion. The masterplan scheduled for this August should plan a breeding strategy to optimize founder representation while this population is still small and in the developing stage.

Research

Research to assess the efficacy and safety of Depo-Provera as a contraceptive method for black lemurs was initiated last year and continue through this breeding season. Last year the goal of the research was to determine if Depo-Provera was an effective contraceptive in this species and to evaluate its effect on adrenal function. Depo-Provera was found to be effective and there was no significant difference in the cortisol levels of treated versus control females. Weight gain and a darkening of the pelage of some of the females was noted. This year's research was aimed at assessing potential health problems associated with weight. Results of the research should be available this fall.

Dr. Randall Junge, Veterinary Advisor to the Black Lemur SSP, reports the major focus of medical concern continues to be hypertrophic osteoarthropathy-like syndrome that is being called metaphyseal hyperostosis. As previously reported, this is a metabolic abnormality affecting the longbones, and results in exuberant periosteal new bone formation. Initially the bones adjacent to the knees and ankles are affected, and later in he progression hips and wrists have also been involved. In all cases progressive renal disease has accompanied the bone disease, and ill affected animals have been euthanized within 6-9 months of identification of the syndrome. It is not yet clear what the correlation between the bone and renal disease is. A genetic component exists in this disease; the six confirmed and one suspect case are from two family groups. One group is a mother (SB# 66), son (SB# 236), and daughter (SB# 199). The second group is two half half-sisters (SB#13 and 81) and the granddaughter of SB# 13 (SB# 362). Ongoing research into the pathogenesis and possible treatment continues, utilizing specialists at several St. Louis medical facilities. Black lemur holding institutions are requested to contac the veterinary advisor if any cases of bilateral joint swelling are detected.

Simons and Rumpler (1988) have proposed that *Lemur catta* is more closely related to the genus *Hepalemur* than to the other five species classified as *Lemur*. Because *catta* is the type species for *Lemur*, Simons and Rumpler have proposed that the others formerly placed in the *Lemur* be instead placed in a new genus *Eulemur*. This taxonomy has been adopted by a number of scientists.

Progress Toward Goals

1) Four *L.m. macaco*, representing six new founder lines, were imported into the SSP population.
2) Work on the black lemur medical manual continues. Currently, medical records are being coded and entered onto the data sheets. Modifications in the computer program were found to be necessary and will be completed soon. At that time, data entry and tabulation will be done.
3) A data sheet to collect information on the behavioral dynamics of extended family groups of black lemurs has been designed and is being tested at St. Louis. When completed, this data sheet will be available to other institutions to investigate appropriate group size and composition.
4) Discussions have been initiated with European holders of *flavifrons* to consider a global breeding program.

Short-Term Goals for Upcoming Year

1) Hold a meeting to masterplan both the *macaco* and *flavifrons* populations.
2) Investigate the best method to incorporate the Malagash zoos into the global captive propagation program for *flavifrons*.
3) Complete the medical and husbandry manual for the black lemur.

OLD WORLD MONKEY TAXON ADVISORY GROUP

Co-Chairs
Fred Koontz, New York Zoological Society
David Ruhter, Houston Zoological Garden
Eve Watts, Audubon Park Zoo

Primary Goals

The Old World Monkey Taxon Advisory Group was established to organize the cooperative management of North American's captive primates for the purpose of long term conservation. Optimum utilization of captive space for priority species serves as a final option in preserving genetic diversity of the earth's primate community. To achieve these objectives requires a concerted effort focused on the following goals:

1) Identify and monitor the taxa currently being held in North American zoological institutions.
2) Encourage the use of a standardized taxonomy, consistent with the IUCN's Action Plan.
3) Coordinate management objectives for each taxon, consistent with the conservation needs of Old World monkeys.
   a. Prioritize conservation needs of various taxa.
   b. Coordinate allocation of available housing space among various taxa.
   c. Coordinate development of husbandry manuals
4) Develop and coordinate captive breeding programs to enhance conservation of wild populations.
5) Develop an effective network between field researchers and captive population managers to enhance cooperative conservation efforts.
6) To become a North American clearinghouse for information on the captive management and propagation of Old World monkeys.

Data Table (current through 1 July, 1992)

	2 years ago	1 year ago	Current year
Number of meetings	0	2	2
Present number of studbooks	0	3	6
Present number of SSPs	0	2	2
Number of new studbooks petitions submitted	0	2	3
Number of new studbooks approved	0	2	3
Number of new SSPs petitions submitted	0	0	0
Number of new SSPs approved	0	0	0

Special Concerns

Eve Watts was elected as cochair at the Dallas meeting in April, replacing Wendy Turner who resigned in October, 1991.

During this meeting the concept of species manager was discussed in response to the pressing need to manage all taxa while trying to recruit studbook keepers. Species managers could serve in an expanded studbook keeper role facilitating management of several taxa under one SSP. Mean population per taxon is approximately nine individuals with only a handful of taxa greater than 100 individuals. Several taxa are subspecific designations which after further review may benefit from management at a higher organization level. Developing SSPs for each taxon are beyond available human and financial resources. This has immediate application with groups involving colobus, mangabey, langurs, guenons and baboons. Further consideration of this plan will be forthcoming.

There are numerous groups with insufficient individuals to achieve self-sustainable populations particularly among higher priority taxa. This is particularly apparent among langurs and *Cercopithecus*. *In situ* programs will be needed to facilitate conservation in some regions. Broader based development of faunal interest groups is needed to serve as conduits for TAG programs in various regions.

Progress Toward Goals

The annual meeting was held 16 September 1991 in San Diego. A Primate Captive Action Plan developed earlier in the year was reviewed. A report by Fred Koontz on the preliminary results of the primate survey including Old and New World primates was presented. This space survey indicated that a majority (112) of the 169 taxa surveyed had populations of 20 individuals or lower. Only 13 taxa had populations in excess of 100 animals. While

this survey data is preliminary, results indicate the need for greater coordination in collective management.

A midyear meeting was held in Dallas on 26 April 1992 with emphasis on colobus, mangabey and guenons. Specific taxon recommendations were made regarding guenons for review at the 1992 AAZPA annual meeting in Toronto. Leslie Field, North American regional studbook keeper for *cercocebus*, presented a report on information gathered. Cathi Lehn, North American regional studbook keeper for colobus, anticipates completion of an extensive study on *Colobus guereza* which will be presented at the annual meeting.

A priority was placed on developing interest groups for baboons, macaques and langurs. Studbook keepers are needed for many groups. A call has gone out for coordinators to provide interim development of interest groups among this group. Studbook keepers are needed for many groups among both Asian and African primates. Beth Schwenk, Philadelphia Zoo, has petitioned for a regional studbook for dusky leaf langurs.

Short-term Goals for Upcoming Year

During the upcoming year, development of management and interest groups is a high priority. These will ultimately be formalized as SSPs.

1) A regional Diana guenon studbook should be developed to augment the European management of this species.
2) A regional langur studbook in addition to the existing Francois langur studbook should be formed.
3) Recommendations to reduce the population of DeBrazza monkeys should be supported with the development of a species studbook.
4) Red-tailed guenons need a management program. Identification of a studbook keeper or species manager would be the first step in this process.
5) Gain approval for an SSP for colobus to implement recommendations to discontinue breeding of animals from questionable origin.
6) Gain approval for Drill/Mandrill SSP through the expansion of the existing Drill SSP.
7) To develop an avenue for *in situ* programs, a special committee should be organized focusing on regional potentials in Asia and Africa.
8) Numerous requests by biomedical research projects need to be addressed by the TAG. A mechanism needs to be developed to consider these requests.
9) Recruit interested individual to become studbook keeper or species manager for patas monkeys.
10) Interested individuals are needed to begin developing husbandry manuals.
11) Initiate discussions with other regional captive breeding programs to develop viable management for priority species.

LION-TAILED MACAQUE *(Macaca silenus)*

Species Coordinator and International Studbook Keeper:
Laurence Gledhill, Woodland Park Zoological Gardens

Introduction

As of 1 January 1992, there were approximately 130 spaces for 176 lion-tailed macaques in the 25 North American zoos participating in the Lion-tailed Macaque SSP. During our previous masterplan session it was determined that the population would be managed to maintain ninety percent (90%) of the original genetic diversity for 200 years. An analysis of the population suggests that to accomplish this level of genetic retention a total of 220 animals would be necessary. To accomplish this goal, the SSP would need to affect one of three options: 1) increase the number of institutions; 2) increase the space within the participating zoo; or 3) manipulate reproduction by increasing the generation time and N_e/N ratio to lower the MVP.

Based upon the need for other monkey species and the particular requirements for lion-tailed macaques, it is obvious that the additional institutions will not be available. Therefore it was decided that a plan that reduces the time span to 100 years and combines options (2) and (3) would be established. Several selected zoos would maintain large reproductive collections while the remainder of the participating zoos would house individual males with companion non-reproductive females. These males will be exchanged between breeding institutions to manipulate reproduction so that the SSP can achieve it's goal. It is obvious that the Lion-tailed Macaque SSP is still in a developmental stage.

Data Table (current through 1 January, 1992

	Two Years ago	One Year ago	Current year
Participating Institutions	33	33	26
Captive Population	120.124.01	113.113.01	124.118.03
# SSP animals managed	186	175	176
# SSP animals not required to meet goals	59	52	107
# animals in non-participant collections but desirable to SSP	0	0	1
Total # of births in SSP program	23	20	17
# surviving to six months	17	19	12
# of SSP recommended births	11	7	3
# of non recommended births	12	13	9
# of deaths of SSP animals	7	3	12
# of transfers recommended	18	10	0
# of transfers completed	17	9	0
# of imports	2	0	0
# of exports	8	16	9
# of founders w/ represented descendants	38	38	35

Current Population Status

The current Lion-tailed Macaque SSP population has undergone a major reduction in size to produce a population that is more in line with available cage space. By careful selection, this reduction in size has been accomplished without a loss in genetic diversity or founder representation. The current population remains secure, with the potential to be rapidly increased if the need arises. While the exact size of the wild population is debatable, it is apparently stable and not in need of a major recovery program requiring captive-bred animals.

Demographic Trends

Due to the recent culling, an analysis of the current population does not reflect it's true demographic status. However, it will provide an indication of possible areas of concern. The generation time (T) in years for males is 9.446 and 13.308 for females. This is a decrease from 14.1 years for males and an increase from 11.2 years for females. The growth rate (r), the rate of population increase (R_0) and the current net annual rate of increase (*lambda*) all are negative because of the recent culling operation.

None of these negative aspects of the demographic trends should give cause for alarm and are within a range that can be easily adjusted to an acceptable level.

Population Genetics

Inbreeding coefficients have been calculated for each animal in the SSP population, with no matings authorized over the last several years that would have resulted in inbred offspring. Prior to reconstitution, the founder representation of the North American SSP population was severely skewed. The representation in 1990 ranged from a low of 0.2% to a high of 10.9%. The current representation ranges from a low of 0.25% to a high of 9.3%. The current number of 34 represented founders (potential of 35) should be sufficient to maintain this population.

Gene drop analysis using 5,000 simulations shows that the current population retains 96.5% of the wild genetic diversity, with the potential of increasing this retention to 97.7%. The mean retention throughout the population is 59.2%.

Special Concerns

The major concern facing the Lion-tailed Macaque SSP is the disposition of surplus animals. With the restructuring of the population there are now 107 more lion-tailed macaques than necessary to meet the program's genetic requirements. While some of these animals will be used as "companions" for the individual breeding males, the majority will not serve a useful purpose within the program.

Compounding the problem is the fact that many of these surplus animals are males that are extremely difficult to house together for any length of time. Several zoos have attempted to maintain all-male groups but with little long-term success.

During the last five year time span, 30% of all lion-tailed macaques born in North America failed to survive past twenty-four hours. This high infant mortality is a concern that must be investigated.

An additional concern is the implementation of the restructuring of the population. Until the removal of many surplus animals it will be impossible to effect moves and until the moves are completed, implementation will be restricted. As there has been a moratorium on breeding during the last year, it is imperative that we resume reproduction without much additional delay.

Research

Current research projects include the following:

(1) Artificial insemination and embryo transplants - Baltimore Zoo.
(2) Troop behavior - San Diego Zoo and Wild Animal Park
(3) Reintroduction techniques - New York Zoological Society / St. Catherine's Wildlife Survival Center.
(4) Occurrence of herpes b virus in lion-tailed macaques - Woodland Park Zoological Gardens.
(5) The use of GnRH agonist implants to control aggression in male macaques - Minnesota Zoo

These projects are continuing studies.

Progress Toward Goals for Upcomming Year

(1) Formulated a management plan incorporating the behavioral and social aspects of lion-tailed macaques considering the available space.
(2) Published an updated bibliography.
(3) Reassessed the genetic and demographic goals using the revised management software programs.
(4) Helped the establishment of regional management programs in Australia.

Short Term Goals

(1) Implement the revised management plan.
(2) Continue to reduce the level of surplus animals within the SSP.
(3) Analyze the causes of infant mortality.
(4) Complete and publish the husbandry manual.
(5) Initiate the drafting of a Medical manual.

DRILL (*Mandrillus leucophaeus*)

Species coordinator: Cathleen Cox, Los Angeles Zoo
International Studbook Keeper: Michael Böer, Hannover Zoo

Introduction

MVP analyses for the North American drill population were done in June 1989 and updated in September 1991. The most recent analysis shows that the number of effective founders in the Drill SSP population ranges between 5-21, depending on whether or not individuals with unknown parentage are treated as founders. Clearly the number of effective founders lies somewhere in this range and work continues on further clarification of parentage. In the meantime, a somewhat conservative estimate of the number of founders is ten and if we take this as a realistic estimate it is clear that we cannot achieve the objective of maintaining 90% genetic diversity for 200 years, a goal adopted by many other SSP Programs. A more realistic goal is to strive to maintain 80% of genetic diversity for 100 years which requires a MVP of 97.

In fact, there are just 8.14 drills in North America and this number needs to be increased as quickly as possible if we are to maintain a substantial proportion of founder genomes. Two major focuses of the Drill SSP are to increase both the rate of reproduction of the existing population and the number of founders. The Drill SSP continues to develop and implement plans to meet these objectives.

Data Table (current through 1 July, 1992)

	Two Years ago	One Year ago	Current year
Participating Institutions	8	8	8
Captive Population	11.13	9.14	8.14
# SSP animals managed	22	22	22
# SSP animals not required to meet goals	0	0	0
# animals in non-participant collections but desirable to SSP	0	0	0
Total # of births in SSP program	0	0	1
# surviving to six months	0	0	0
# of SSP recommended births	0	0	1
# of non recommended births	0	0	0
# of deaths of SSP animals	0	3	1
# of transfers recommended	0	4	4
# of transfers completed	0	3	1
# of imports	1	3	0
# of exports	0	0	0
# of founders w/ represented descendants	20	21	21

Current Population Status

In the wild drills inhabit a very limited area on the west coast of Africa: the lowland rain forest of eastern Nigeria southward to the Sanaga river in Cameroon, and the island of Bioko, Equatorial Guinea. When the IUCN/SSC Primate Specialist Report was published in 1986 it was clear that the range of the drill had decreased substantially and it appeared that drills had been extirpated from Nigeria. Indeed, the drill was identified as being one of six African primate species that needed immediate conservation efforts. The picture improved somewhat in 1988 when drills were sighted in eastern Nigeria. Current estimates indicate that fewer than 4,000 drills reside in Nigeria. The area in which drills are found in Nigeria is contiguous with their range in Cameroon where the number remaining is unknown. A survey of drills in Cameroon is currently underway and more information should soon become available. The population found on Bioko represents a separate subspecies and the number on the island remains unknown. A major reason for the decline of the wild population is hunting of drills as a food source by local villagers and this pressure remains unchecked in all three countries where drills reside. Deforestation and fragmentation of the habitat are also contributing to the population decrease.

A rehabilitation center for young drills that are orphaned when the adults in their group are hunted has been established in Nigeria and during 1991 the number of drills held by the Drill Rehabilitation and Breeding Center (DRBC) increased from 2.1 to 6.6.

There are relatively few drills held in captivity and there was little fluctuation of the captive population in the northern hemisphere during the past year. The number of drills managed by the SSP did not change during the past year; just 8.14 drills are held in a total of five institutions. Because of the small population size there is no shortage of space in which to house North American animals.

In Europe the EEP managed a population of 9.15 drills in a total of six institutions, a net decrease of 1.1 since 1990. However, 6.5 resided in Asian institutions, a net increase of 1.1 since 1990.

International communication is increasing between institutions holding drills and it is clear that our ability to successfully maintain a self-sustaining captive population has great potential for improvement with the development of a global management plan under the IUCN. The drill SSP fully supports such efforts.

Demographic Trends

A basic problem in the North American population has been a dearth of breeding activity. In order to facilitate reproduction, changes in the composition of extant groups were proposed and the four transfers between SSP institutions that were recommended in the fall of 1990 have now been completed. In 1991 three additional moves were recommended but subsequent improvement in behavior has reduced the need for transfers; the moves will not be made unless they appear necessary. In addition to moves between SSP institutions, four males surplus to the EEP population have been brought into the SSP. As a direct result of these combined moves, breeding is now taking place at three institutions and one female gave birth in October 1991. This was the first birth that had occurred in North America since 1984 and was a very encouraging sign. Unfortunately, the infant died as a result of intraspecific injuries. Currently two females in the SSP population are known to be pregnant and careful plans are being made to encourage maternal care while minimizing the opportunity for injury.

Successful reproduction took place at two European zoos during 1991 and a total of three viable youngsters were produced. No births were reported for the Asian population in 1991 and the drills held in Nigeria are not yet of reproductive age.

Population Genetics

The recommended moves have been based on demographic and genetic analyses done in 1989 and 1991 as well as behavioral observations. Current groupings are such that offspring will be produced by adults who have a low degree of relationship and similar values of mean kinship. At this time the highest priority is to achieve successful reproduction.

Special Concerns

Reproduction is of paramount importance and steps to facilitate reproduction are being pursued. In four cases recommended moves have facilitated breeding. Nonetheless, in three cases males housed with cycling females are not breeding. These males do display considerable self-interest and, as a result, work on artificial insemination is being pursued at two institutions.

The need for recruitment of additional founders remains, and promoting the establishment and maintenance of captive breeding facilities in the drill's native habitat may ultimately lead to the exchange of genetic material. Such facilities will certainly enhance conservation efforts in the countries where they are established. In 1991, several SSP institutions contributed funds to support the maintenance and operation of the Drill Rehabilitation and Breeding Center in Nigeria.

There is a possibility that drills in captivity vary in subspecific origin and this matter needs exploration. For this reason, collection of blood and tissues continue and are being prepared for future analyses.

Research

Analysis of steroid hormones in urine collected on a daily basis from nine female drills suggests that six of the females are cycling while three do not appear to be in reproductive condition.

A variety of "enrichment" items for drills have been developed and their utility assessed. Items that could be widely scattered were found to be more suitable than "puzzles" which were more easily monopolized.

Results of the transfers described previously suggest that parent-reared drills are more successful than hand-reared drills in terms of reproduction. Behavioral data collected in the standardized manner described in the 1991 report are now being compared across institutions to assess differences in the behavior of parent-reared and hand-reared drills that may contribute to differential reproductive success.

Field Conservation

Zoo Atlanta supported a second expedition to Bioko where a preliminary survey of primates in the Punta Oscura region was made. This site is considerably more accessible than the Gran Caldera which had been visited in 1990. A logging road was under constuction and it was clear that drills in the more recently visited area were being hunted. It appears that fewer drills remain in the Punta Oscura region than in the Gran Caldera and a site suitable for long-term behavioral observations remains to be found.

SSP member institutions also made a second contribution to provide interim operating expenses for the Drill Rehabilitation and Breeding Center in Nigeria. In 1991, this developing project made substantial progress and the number of orphaned drills maintained increased from 3-12. The DRBC is a project extension of Cross River National Park and is to become an *in situ* captive breeding facility.

Progress Towards Goals

The following major goals were accomplished during the past year:

(1) Accomplished all recommended moves that were needed upon reevaluation and succeeded in establishing compatible groups in which breeding is taking place; two females are currently pregnant. Also continued work on artificial insemination.

(2) Converted the SSP Drill Studbook to SPARKS format, reassessed genetic and demographic goals, and updated Masterplan.

(3) Received drafts of questionnaires to be utilized in the collection of information needed for husbandry manual.

(4) Continued to collect tissue and blood samples for DNA analysis with respect to determination of subspecies. Funding for work still needed.

(5) Collected funds to support *in situ* captive breeding facility.

Short-term Goals For Upcoming Year

(1) No recommendations for moves at this time. However, breeding potential needs to be reassessed on a continuing basis. Work on artificial insemination for socially deficient drills needs to be continued and particular attention is to be given to improving the situations at the two institutions in which breeding is not occurring.

(2) Complete the drill husbandry manual.

(3) Continue to encourage work on the appropriate DNA analyses to resolve the drill subspecies question.

(4) Provide information and seek funding to support *in situ* studies and *in situ* captive breeding facilities.

(5) Provide information to facilitate the PHVA which is to be conducted in Nigeria by EEP personnel.

NEW WORLD PRIMATE TAXON ADVISORY GROUP

Chair:
Anne Baker, Brookfield Zoo

Primary Goals

The New World Primate Taxon Advisory Group began as an interest group in 1990 and was formally approved as a TAG in August of 1991. The group was formed to coordinate and facilitate North American captive breeding efforts for New World primates. At the time the group was formed there were six main goals:

- to assess the current and future captive habitat in North America for New World primates;
- to work with CBSG to establish guidelines for identifying those taxa critically in need of captive breeding efforts;
- to work with CBSG and the SSC Primate Specialist Group to target specific taxa for captive breeding efforts;
- to recruit studbook keepers and species coordinators for selected taxa;
- to assess current populations of and develop a management strategy for selected taxa; and
- to develop a management strategy for those species presently in captivity for which captive breeding efforts are not recommended.

Data Table (current through 1 July, 1992)

	Two years ago	One year ago	Current year
# of meetings	-	2	2
# of studbooks under umbrella	-	12	12
# of SSPs under umbrella	-	1	1
# of new studbook petitions submitted	-	0	2
# of new studbooks approved	-	0	pending
# of new SSP petitions submitted	-	0	1*
# of new SSPs approved	-	0	pending

* This was a petition for a callitrichid SSP. Both *Saguinus oedipus* and *Callimico goeldii* were considered as SSP species within that petition.

Special Concerns

The taxonomic status of many of the New World primates remains unclear. In an attempt to resolve taxonomic concerns related to captive breeding programs work is presently underway with *Lagothrix* (coordinated by John Walzack at Louisville and Arlene Kumamoto at San Diego) and *Ateles geoffroyi* (coordinated by Anne Baker and Bob Lacy at Brookfield and Lorena Calvo at Guatemala City). *Aotus* is still in need of work. ISIS lists one species; however, karyotypic evidence points to as many as nine species, with infertility problems evident in hybrids. Don Richardson has been investigating this.

Several health issues are currently under investigation. Drs. Richard Montali and Jamie Childs at National Zoo are looking at the relationship between rodent hepatitis and marmoset hepatitis. It is strongly recommended that zoos do not feed pinkie mice to marmosets and tamarins. Drs. Lyndsay Phillips, Susan Crissey and Anne Baker at Brookfield are investigating possible causes of a higher than normal incidence of renal failure in callimico in North America. Marmoset wasting syndrome still appears to be a problem in many callitrichid colonies. Dr. Perry Wolff at Minnesota is developing a necropsy protocol that will allow us to assess the percentage of deaths in North America attributable to this problem. Maternal incompetence is an infrequent, but recurring, problem in callitrichids. Recent work indicates that there is a correlation between maternal competence and hormone level, raising the possibility that administering estradiol postpartum may improve maternal care in cases where it is inadequate. Dr. Andy Baker at Philadelphia is developing a protocol for this.

Progress Toward Goals

In coordination with the other primate Taxon Advisory Groups, a primate space survey was developed and sent to all North American zoos. Approximately 65% of the zoos responded. While we have not yet completely finished analyzing the information, it appears that over the next ten years there will be very little growth in the amount of captive habitat available for primates.

Presently held populations of all of the New World primates have been evaluated with respect to the number of (potential) founders and demographic status. Comparing findings from this analysis with recommendations from the CBSG Primate Specialist Group Global Captive Primate Action Plan, we have identified top priority species for North American captive breeding efforts. These include *Leontopithecus rosalia* and *L. chrysomelas, Saguinus oedipus, S.bicolor, S. leucopus, Callithrix aurita, Callimico goeldii, Cebus xanthosternus* and *Ateles geoffroyi*. An application for establishing a Callitrichid SSP is pending. Within this SSP *S. oedipus* and *C. goeldii* would be identified as SSP species. We are examining possibilities for establishing North American populations of *S.bicolor, S. leucopus* and *C. xanthosternus*. A studbook proposal for *A geoffroyi* is pending.

One of the goals over the past year has been to publish a number of the studbooks which have not yet been published, or have not been published recently. In several instances this involved converting large datasets into the SPARKS format. The studbook for *Saguinus geoffroyi* has been published and distributed by studbook keeper Alan Sironen at Cleveland. The *Callimico* and *Lagothrix* studbooks have been converted to the SPARKS format and should be published later this year.

Several SSPs and studbooks were identified as being important in the management of New World primates. Applications for a callitrichid SSP (Dr. Anne Savage, Roger Williams Zoo, coordinator and species coordinator for *S. oedipus*; Dr. Anne Baker, Brookfield Zoo, species coordinator for *Callimico goeldii*), for a *Callicebus* studbook (Ken Kaemmerer, Dallas Zoo, studbook keeper) and for an *Ateles geoffroyi* studbook (Kathryn Pingry, Brookfield Zoo, studbook keeper) have been submitted.

Short-term Goals for Upcoming Year

- studbooks for *Callithrix geoffroyi, S. imperator, Callimico goeldii* and *Lagothrix lagotricha* will be published by early September, the *S. oedipus* studbook will be converted to the SPARKS format,
- Master Plans will be developed for SSP species and intermediate management plans will be developed for those species with studbooks,
- a recently formed Development Subcommittee will explore funding possibilities and develop a strategy for establishing a fund that will support *in situ* and *ex situ* conservation efforts and initiatives in Central and South America.
- a Cebid workshop will be planned and probably will be held at the Northeastern Regional AAZPA Conference in Pittsburgh in 1993,
- a quarterly newsletter, coordinated by Brint Spenser at the Beardsley Zoo, will be established, the minutes from the mid-year and September will serve as two "issues" of this informal newsletter.
- a mid-year meeting will be held at the Northeastern Regional AAZPA Conference in Pittsburgh in 1993.

GOLDEN LION TAMARIN (*Leontopithecus rosalia*)

Species Coordinator: Devra Kleiman, Ph.D., National Zoological Park
International Studbook Keeper: Jonathan Ballou, National Zoological Park

Introduction

The Golden Lion Tamarin (GLT) SSP is part of the International Golden Lion Tamarin Cooperative Research and Management Committee's (GLTMC) global strategy for conservation of the species. The primary mission of the program is to maximize the probability of survival of a naturally evolving population of golden lion tamarins. This is to be achieved through an integrated program which includes captive propagation, reintroduction, conservation education, and habitat protection and restoration. The GLTMC was formed in 1981 by close collaboration among zoos breeding and maintaining GLTs. Today, the GLTMC is an advisor to the Brazilian government and oversees management of both the captive and wild populations of golden lion tamarins. Any institution wishing to participate in this research, conservation, and management program must apply to and be approved by the Committee. The current goal for golden lion tamarins is maintenance of 90% of the heterozygosity contained in the wild population for at least 200 years. This goal requires a globally managed captive population of about 550 animals. As the reintroduction program (started in 1984) continues to develop, this requirement will be modified to allow for genetic and demographic interactions between the captive and wild populations.

Data Table (current through 31 December 1991)

	Two Years ago	One Year ago	Current year
Participating Institutions	104	112	125
Captive Population	567	558	545
# SSP animals managed	260.274.33	264.270.24	265.259.21
# SSP animals not required to meet goals	0	0	0
# animals in non-participant collections but desirable to SSP	0	0	0
Total # of births in SSP program (w/ stillborns)	116	96	91
# of deaths of SSP animals	91	94	106
# of imports	0	0	3
# of exports (reintroductions)	10	9	11
# of founders w/ represented descendants	51	47	48

Demographic Trends and Current Population Status

Since the captive population is currently at its target size (about 550 animals), it is being managed at zero population growth (ZPG) through use of contraceptive implants, establishment of single-sexed groups (pairs), and reintroduction of animals to the wild. To achieve ZPG status, 40 pairs of captive golden lion tamarins need to be bred in a typical year. However, the 1992 reintroduction will include about 60 animals (reintroductions to date have averaged 10-15 animals). We will need to maintain 72 breeding pairs during the next few years to replace the reintroduced animals and maintain the captive population at a size of 500 to 550. These pairs were identified during a Master Plan meeting in June of 1992. Population Genetics Pedigree analyses indicate that the founder genome equivalent is about 12.5. This is considered inadequate. Management recommendations to increase the founder contribution include production of more offspring from underrepresented founders and incorporation of additional founders into the program. Breeding pairs were established on the basis of mean kinship (a measure of an individual's relatedness to all animals in the captive population) and genome uniqueness (the proportion of an individual's genome that is not present elsewhere in the captive population). As of 1991, the captive population contained about 96% of the heterozygosity brought in by the founders.

Special Concerns

A significant problem facing the captive population is balancing the need for zero population growth with the husbandry of the species. GLTs can produce two litters per year and can breed until 14-16 years old. Assuming approximately 50% infant mortality, a single pair could produce more than 30 offspring during its reproductive years. Clearly, breeding must be regulated in order to ensure a relatively constant population size. The removal of 60 animals for the 1992 reintroduction will enable us to establish

more breeding pairs this year than in recent years, but we still need to control reproduction to keep the captive population's size below 550.

Several institutions, now housing breeding animals, have been informed of the need to implant contraceptives into females which have produced sufficient offspring to contribute genetically to the succeeding generation. For those zoos encountering legal difficulties with importation of the implants, the only other way of removing animals from potential breeding situations is to separate males from females, a less desirable option since it disturbs group structure. Also, groups comprised entirely of females are usually very unstable.

Research

The Golden Lion Tamarin Conservation Program involves research in the areas of behavioral ecology and evolutionary biology. Studies include: social systems and evolution of monogamy (J. Dietz, University of Maryland and A. Baker, Philadelphia Zoological Garden); population genetics (J. Ballou and R. Fleischer, National Zoological Park), locomotor development (A. Rosenberger and B. Stafford, National Zoological Park); analysis of vocalization (C. Ruiz-Miranda and D. Kleiman, National Zoological Park); food-sharing (L. Rapapport, University of New Mexico); reintroduction strategy (B. Beck and D. Kleiman, National Zoological Park); hormonal studies through fecal analysis (E. Ribeiro, University of Sao Paulo); metabolism and energetics (M. Power, National Zoological Park); reproductive physiology (J. French, University of Omaha); Callitrichid hepatitis (R. Montali, National Zoological Park); hyperbilirubinemia (R. Montali and Y. Schulman, National Zoological Park); and diaphragmatic hernia (M. Bush, National Zoological Park). Publications and research updates for these projects can be obtained by contacting the Studbook Keeper.

Field Conservation

The golden lion tamarin inhabits the Atlantic Coastal Forest of eastern Brazil. Field conservation efforts are focused in this area and include: habitat assessment and population censuses (C. Kierulff, University Federal Minas Gerais); studies on the population biology of GLTs in their only protected reserve, Poco das Antas (J. Dietz and A. Baker); and reintroduction strategy and adaptation of GLTs to the wild (B. Beck, D. Kleiman, A. Rosenberger). The Reintroduction Program, ongoing since 1984, involves the release of captive and wild born (confiscated) animals into available, privately owned habitat. To date we have released a total of 91 animals. Many reintroduced GLTs have successfully reproduced and the Reintroduction Program has resulted in a net total of 71 new animals, alive today, being added to the wild.

This year, due to a generous grant from the Frankfurt Zoological Society, the Reintroduction Program is being expanded. We are planning the release of an additional 60 animals (12 family groups) into an area of suitable habitat (lacking GLTs) in Rio Vermelho, which has been designated by its owner as a private reserve. This area has enough space to potentially hold a population of 20 family groups. The 60 golden lion tamarins destined for release this year will contribute significantly to the Golden Lion Tamarin Conservation Program's efforts to secure new habitat and expand the population in the wild population.

These successes were made largely through the efforts of an extensive conservation education program (L. Dietz, World Wildlife Fund), which has been integrated with other aspects of the Conservation Program to further protect forested areas suitable for GLTs. Inside Brazil, the International Golden Lion Tamarin Conservation Program is supported by the following institutions: Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renovaveis (IBAMA); Centro de Primatologia do Rio de Janeiro-Fundacao Estadual de Engenharia do Meio Ambiente; Fundacao Brasileira para a Conservacao da Natureza; Canadian Embassy in Brazil; and Golden Cross.

Outside of Brazil, the project is currently supported by the following organizations: International Environmental Sciences Program - Smithsonian Institution; World Wildlife Fund for Nature; National Science Foundation; Wildlife Preservation Trust International; Frankfurt Zoological Society; Friends of the National Zoo; National Zoological Park; The University of Maryland; and National Geographic Society.

Progress Toward Goals

(1) The goals of the captive population continue to be met with the outstanding cooperation of all 125 zoos currently participating in the program.

(2) For each of the last four years we had 100% return on studbook update inquiries.

(3) Significant progress towards securing additional Atlantic Coastal Rainforest through the efforts of the Conservation Education and Reintroduction Program has also been made (see above).

Short-term Goals

(1) Execution of the captive management recommendations developed in 1992. The recommendations involve shipping approximately 100 animals, establishing new breeding pairs, and halting the reproduction of other breeding pairs.
(2) Bringing about a further increase in the involvement of Brazilian Zoos in the Captive Program.
(3) Completion of habitat assessment and population censusing for wild GLT populations.
(4) Establishing a studbook and register for wild populations of golden lion tamarins based on data collected during censuses and field research as the first step in interactively managing both the captive and wild populations.

GIBBON (*Hylobates sp.*)

Species Coordinator: Ronald L. Tilson, Minnesota Zoo
Species Co-Coordinator: Katherine Castle, Minnesota Zoo
Siamang (*H. syndactylus*) Regional Studbook Keeper: William Fiore, Montgomery Zoo
White-handed Gibbon (*H. lar*) Regional Studbook Keeper: Don Moore, Burnet Park Zoo
Black Gibbon (*H. concolor*) International Studbook Keeper: Jean Marc Lernould, Mulhouse Zoo
Javan Grey Gibbon (*H. moloch*) International Studbook Keeper: Beatrix Rau, Munchen Zoo
Pileated Gibbon (*H. pileatus*) International Studbook Keeper: Christian Schmidt, Zurich Zoo

Introduction

The Gibbon SSP is a developing program for the nine recognized species of gibbons. Sixty-eight AAZPA facilities participate in the SSP, managing seven of the nine gibbon species.

Data Table (current through 1 July, 1992)

	All SSP spp.	*H. concolor*
Participating Institutions	68	13
Captive Population		
# SSP animals managed	255.280.10 apx	19.25.2
# SSP animals not required to meet goals	-	0
# animals in non-participant collections but desirable to SSP	-	0
Total # of births in SSP program		
# surviving to six months	-	1.0
# of SSP recommended births	-	-
# of non recommended births	-	-
# of deaths of SSP animals	-	1.0
# of imports	-	1.0
# of exports	-	0
# of founders	-	4.7

Current Population Status

A moratorium on breeding has been declared for two species of gibbons, *H. lar* and *H. syndactylus*, until genetic studies identifying evolutionary significant units within the North American populations can be completed.

The *H. concolor leucogenys* population was assessed in July 1991. Pairing recommendations were made to facilitate breeding in non-reproductive founders at that time. Not all recommendations have been followed and work continues to encourage cooperation among all facilities managing this subspecies.

Demographic Trends

This analysis will not be performed until the molecular genetic analysis is complete.

Population Genetics

This analysis will not be performed until the molecular genetic analysis is complete.

Special Concerns

SUBSPECIES: A primary concern of the Gibbon SSP centers on the issue of species and subspecies definition. The validity of the nine recognized species of gibbons and their subspecies (approximately 28 separate taxa) is based upon conventional taxonomic characteristics that may or may not have relevance to evolutionary significant units (see RESEARCH).

Research

The Gibbon SSP recognizes an immediate need to resolve long-standing questions surrounding the

biological relevance of existing subspecies-level taxa. To effectively design and implement appropriate management plans, we must be able to recognize the evolutionary significant units, sort captive gibbons into such units, and take action to prevent undesirable hybridization between genetically differentiated populations. To achieve these goals we identified a number of specific research questions and identified investigators potentially capable of resolving these issues within a period of one to two years.

Dr. David Woodruff, University of California at San Diego, and the Gibbon SSP have agreed to a joint research effort, mostly funded by the Gibbon SSP participating institutions (additional funding requests to be developed), to characterize the natural patterns of genetic variability of gibbons in as many sites in Southeast Asia as samples are available. The laboratory is initiating the project in July/August 1992 (as soon as the appropriate laboratory technician can be hired) and will be reporting to the Gibbon SSP at the 1992 AAZPA National Conference.

First priority should be given to identifying genetically coherent units among the gibbons currently referred to as *H. concolor* and its eight subspecies. Published reports from France and Wisconsin indicate a reasonable probability of achieving this goal using chromosomal rearrangements as markers. The Gibbon SSP will karyotype the approximately 24 founding lineages (founders or their immediate descendants) in the *concolor* population (in progress as of June 1992). This information is necessary to sort the gibbons into genetically appropriate management units. At the same time, the SSP is encouraging efforts to characterize the natural patterns of genetic variability of *H. concolor* in Cambodia, Laos, Viet Nam and China. The results of such field-based studies should be integrated into the management of captive apes as they become available.

Second priority will be given to resolve the relevance of existing subspecies taxa to the management of *H. lar* and *H. syndactylus*. Such information is urgently required to manage SSP populations to containment. In the absence of marked chromosomal differentiation in these species, the founder stocks of known geographic provenance will be genotyped by other methods. Under consideration is the potential applicability of non-invasive nuclear and mitochondrial DNA genotyping, based on gene sequences amplified from hair. Thus, hair of all SSP animals will be collected opportunistically for possible genotyping by 1992. Specific questions requiring attention:

1. Are the Sumatran and Peninsular Malaysian populations of *H. syndactylus* sufficiently different to warrant separate breeding programs ?
2. Are the four Thai-Peninsular Malaysia and Sumatran subspecies of *H. lar* sufficiently different to warrant separate breeding programs ?

If these geographically defined races are found to be significantly differentiated, then the other SSP population members must be screened for racial/stock affinity, and identification of hybrids.

As a third priority, the Gibbon SSP recognizes the need to stimulate similar genetic studies of other species, especially the taxonomically problematic *H. agilis*, *H. muelleri* and *H. hoolock*. The SSP Group will seek to foster such research when funding permits.

Field Conservation

GIBBON REHABILITATION AND REINTRODUCTION, THAILAND: The Royal Thai Forest Department has requested the Gibbon SSP and IUCN/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.

The above program is in line with the Gibbon SSP support of a proposal to develop a gibbon conservation and management center for Thailand, submitted by Dr. W. Brockelman on behalf of the Thai Royal Forest Department, the Zoological Park Organization, Mahidol University and Wildlife Fund Thailand. In abstract: "Gibbons in protected areas in Thailand are gradually declining in number as poaching and a flourishing local pet trade take their toll. Enforcement of the ban on primate exports has caused an accumulation of unwanted animals in captivity in Thailand. The proposed center for gibbon conservation will help alleviate these problems by establishing a scientifically sound breeding program, promoting conservation-related research, implementing a reintroduction program in depleted protected areas and carrying out a public awareness program."

HYLOBATES KLOSSII, MENTAWAI ISLANDS, INDONESIA: A field effort to develop a protected area for *H. klossii* [and three other endemic primate species] on the southern Mentawai Island of South Pagai, west of Sumatra, Indonesia, is being coordinated by Dr. Richard Tenaza, University of Stockton, California, in conjunction with the Indonesian Directorate General of Nature Conservation and Forest Protection (PHPA). Support for this field program is being provided by the Fort Wayne Children's Zoo, Indiana, USA.

HYLOBATES MOLOCH, JAVA, INDONESIA: The Gunung Halimun Reserve, a 360-km^2 primary forest in west Java, Indonesia, was surveyed for moloch gibbons and other primates by K. Kool, University of Sydney, Australia. Results suggest a density of 8.6 animals/km^2, a group size of 4.0, and a total population of 618 animals for a 72-km^2 forest ranging from a 500-1,000 meters altitude. A total estimate for the moloch gibbon population in Gunung Halimun Reserve is placed at 852-1,320 by the investigator (*Oryx*, 26 (1): 29-33, 1992).

An *in situ* regional captive breeding program for *H. moloch* is being developed in conjunction with appropriate Indonesian authorities. The goal is to: (1) initiate an *in situ* captive breeding program for this species along the lines of the Gibbon SSP's programs for gibbon management in North America, (2) assist a regional Indonesian zoo in the planning and construction of a captive breeding gibbon facility for gibbons, (3) conduct a workshop focusing on captive management protocols including health treatment for gibbons.

Progress Toward Goals

1) A grant to support costs for the molecular genetic study is being developed for submission to appropriate agencies for funding (principal investigators D. Woodruff and R. Tilson).
2) A total of $14,100 has been donated by 14 participating facilities for molecular genetic studies. An additional $3,000 has been pledged by three participating facilities. Our target for this initial part of the program is $18,000.
3) Nine institutional representatives (all former members of the Gibbon Action Group and Interest Groups) were elected by participating facilities to the Propagation Group.
4) Andrew Tear, DVM, Milwaukee County Zoo, was chosen to advise the Propagation Group on veterinary issues.
5) In conjunction with the AAZPA Contraceptive Task Force, surveys were sent to all participating facilities to monitor use of MGA implants in gibbons. A database has been initiated and will be updated on a yearly basis.

Short-Term Goals for Upcoming Year

Immediate goals for the Gibbon SSP are (1) secure additional necessary funds and initiate the molecular genetic study as outlined above; (2) investigate cost and protocols for karyotype analysis of *H. concolor*; (3) follow-up on nonresponsive MOP institutions and finalize our membership; (4) continue the drafting of the Gibbon Management Handbook; (5) monitor the implementation of MGA hormonal implants in gibbons (there is a breeding moratorium for all *H. lar* and *H. syndactylus* until molecular genetic analyses can be performed for these species within the next three years); and (6) draft and submit a letter of concern from the Gibbon SSP to countries within the extant range of gibbons supporting legislation prohibiting the keeping of gibbons as pets.

GREAT APE TAXON ADVISORY GROUP

Chairs:
Terry L. Maple, Ph.D., Zoo Atlanta and Georgia Institute of Technology
Les Schobert, North Carolina Zoological Park

Primary Goals

The Great Ape TAG (GATAG) was formed in January of 1992 with the election of nine individuals who comprise the committee along with the co-chairs and four standing representatives of the designated *pongid* taxa (bonobo, chimpanzee, gorilla and orangutan). The elected members are A. Baker (Chicago Zoological Park), I. Porton (St. Louis Zoological Park), D. Farst (Gladys Porter Zoo), B. Beck (National Zoological Park), K. Gould (Yerkes Primate Center), B. Frank (Milwaukee County Zoological Gardens), J. Mellen (Metro Washington Park Zoo), B. Conway and F. Koontz (New York Zoological Park). Standing committee members include M. Bond (orangutan; National Zoological Park), L. Perkins (orangutan; Zoo Atlanta), G. Reinartz (bonobo; Zoological Society of Milwaukee County), D. Wharton (gorilla; New York Zoological Park). Les Schobert represents the Chimpanzee SSP and serves as co-chair..

In Chicago, at the first midyear meeting of the elected TAG, the 13 participating members noted that all four *pongid* taxa were covered by active studbooks and SSP propagation groups. Only the chimpanzee lacks an international studbook. The TAG also agreed that its mission would include: (1) sustained contact with field biologists; (2) establishing a network for communicating about SSP programs; (3) helping to define husbandry guidelines for each *pongid* taxon; (4) encouraging cooperation and planning to better utilize space for each taxon; (5) responding to questions from conservation and governmental organizations; (6) assisting in animal acquisition for SSPs; (7) assistance in resolving surplus problems; and (8) providing advice for all issues affecting great apes.

Data Table

	One year ago	Current year
# of meetings	-	2
# of studbooks under umbrella	-	7
# of SSPs under umbrella	4	4
# of new studbook petitions submitted	-	0
# of new studbooks approved	-	0
# of new SSP petitions submitted	0	0
# of new SSPs approved	0	0

Special Concerns

Space: The number one priority of the GATAG at present is the allocation of space. Currently, the only taxon benefiting from new exhibit construction is the gorilla. Orangutans and chimpanzees are particularly in need of more exhibit space. Through publicity in COMMUNIQUÉ and ZOO BIOLOGY, we are promoting the idea of increased (and improved) exhibit space for groups and individuals.

Orphanages/Sanctuaries: The committee is gathering information on existing orphanages and sanctuaries for study during the 1993 midyear meeting of the TAG. This information will be provided to participating institutions to guide their responses to solicitations, and to help formulate conservation plans in targeted locations.

Communication. Members of the committee suggested better representation at national and international primate conferences. To this end, Zoo Atlanta provided travel support for Dr. J. Erwin (an advisor to the orangutan committee) to provide representation at the 1992 International Primatological Society meeting in France.

Ethics: The TAG coordinators participated in the Atlanta BioEthics conference in the spring of 1992. Many of the issues discussed at this meeting concerned the management of great apes. Some of the discussion will be shared at the Toronto meeting in the TAG session and in the formal program. A follow-up conference is under discussion, while proceedings of the first conference will be published in book form.

Apes in the Entertainment Industry. Following the lead of the Orangutan SSP, the TAG will formulate a policy statement for all great apes. The orangutan model has been circulated for study, and the broader issue will be introduced for discussion in Toronto.

Behavior/Life History Data: Lincoln Park Zoological Garden staff are planning a workshop to standardize husbandry formats and behavioral data for improved management and communication. A

meeting in Chicago will be organized before the next midyear meeting.

Midyear Meeting: The 1993 midyear meeting of the GATAG will take place in Fort Worth, Texas. Dates for the meeting are under consideration and will be coordinated by the TAG.

Progress Toward Goals

(1) Elected initial members to the TAG.
(2) Held first organizational meeting of the GATAG in Chicago.

Short-Term Goals for Upcoming Year

(1) Short-term goals and long-range planning will be discussed at the annual meeting in Toronto.

BONOBO OR PYGMY CHIMPANZEE (*Pan paniscus*)

Species Coordinator: Gay E. Reinartz, Zoological Society of Milwaukee County
Studbook Keeper: Bruno Van Puijenbroeck, Royal Zoological Society of Antwerp, Antwerp Belgium

Introduction

Pan paniscus is a rare species in captivity. The North American population numbers 48 individuals. The world captive bonobo population (outside Africa) is about 94 bonobos (four unconfirmed studbook entries) making it the smallest captive population among the great apes. Because of the extremely small population size, intensive management strategies to preserve genetic diversity are necessary if the current population is to be a self-sustaining. Furthermore, captive propagation and management must be conducted globally in order to attain the minimum viable population size required for long-term survival. Therefore the Bonobo SSP works in coordination with the European Endangered Species Program, the EEP; jointly they manage 85 bonobos.

Pedigree analyses indicate that the current captive population is minimally large enough to preserve 90% genetic diversity for 200 years (approximately 10 bonobo generations). It will require intensive management, increased population growth rate and inclusion of all potential founders from institutions not yet participating in the global management program. Even though three potential founders have entered the EEP from Japan since last year, whether remaining potential founders can be assimilated into the management group is questionable at this time. Because bonobos are genetically/physiologically very similar to humans, advances in human reproductive technology, genetics and cryopreservation may allow a shorter management period, possibly 100 years (Primate Action Plan, Captive Breeding Specialists Group, IUCN), or they may help stem loss of genetic diversity over a longer period. In light of these difficult challenges, the SSP goals are to work in coordination with the EEP and develop a global breeding regimen initially aimed at preserving 90% genetic diversity for a period up to 200 years.

Depending on the eventual number of effective founders and the average population growth rate, a stable captive population size of approximately 300-400 bonobos will be required to meet genetic/demographic goals. Six SSP institutions are constructing new or expanded bonobo facilities; the additional space is expected to be sufficient to almost double the existing SSP population. Reaching projected goals of 400 spaces worldwide, or approximately half this for the SSP, is tenable, but it requires coordination (under the Great Ape Taxon Advisory Group) with other great ape SSPs with competing space needs.

While the Master Plan (1991-1992) describes basic population parameters and thus identifies important genetic management objectives, behavior and husbandry demand equal attention. Because every species exhibits a different behavioral repertoire, fewer standardized protocols exist for SSPs to assess behavioral needs of species in captivity. The Bonobo SSP, therefore, is working with several behavioral specialists and field primatologists to address questions concerning social and developmental behavior, environmental health and husbandry standards. The SSP is considering means by which certain behavioral data can be standardized, collected by every institution and centralized to develop behavioral profiles for individual bonobos (e.g., ovarian cycles and reproductive behavior). By combining management activities with research, we can develop a supplemental database to be used to refine management decisions and breeding recommendations.

With respect to establishing a stable population, the Bonobo SSP is still developing working towards the following objectives: (1) to increase the population size to carrying capacity as rapidly as possible in order to overcome the present bottleneck; (2) to increase annual population growth rate to 2-3% if possible by reducing infant mortality and increasing breeding opportunities; (3) to increase number of founder genome equivalents by giving breeding priority to individuals with the lowest mean kinship values; and, (4) to address social behavioral needs (e.g., reproductive behavior, optimal group size and composition, infant development, social dynamics).

Data Table (current through 1 July 1992)

	Two Years ago	One Year ago	Current year
Participating Institutions	7	8	8
Captive Population[1]	38.46.0	42.49.0	44.50.0
# SSP animals managed	33	38	43
# SSP animals not required to meet goals	0	0	0

# animals in non-participant collections but desirable to SSP	4	4	5
Total # of births in SSP program	4	2	4
# surviving to one year	3	2	-
# of SSP recommended births	4	2	4
# of non recommended births	0	0	0
# of deaths of SSP animals	1	1	1
# of imports	1	4	2
# of exports	1	0	0
# of founders w/ represented descendants[2]	7	7	11

[1] World Captive Population

[2] SSP Population

Current Population Status

The SSP bonobo population is presently very small totaling 43 bonobos. All bonobos in the United States are included in the SSP managed population. Two non-SSP institutions in Mexico hold two pairs of wild born bonobos (plus 1.0 infant), bringing the total captive population for North America up to 48. Increasing the population size and growth rate is a top SSP priority, thus all births are desirable, and no individual is considered surplus, even though their genetic lineage may be over represented. There are no reliable current estimates of bonobo numbers in the wild; estimates range from 5,000 to 15,000. Past surveys (prior to 1974) indicate a discontinuous, fragmented population scattered over a small percentage of its historical range. Political uprisings in Zaire currently impede many conservation efforts, and they underscore the urgent need for species protection, contingent conservation strategies, and unified conservation efforts.

Demographic Trends

Reproduction among captive bonobos has been near capacity and relatively constant. Adult captive born females are successfully reproducing and in most cases rearing their own offspring. Nevertheless, fecundity in this species is inherently low with interbirth intervals averaging five years for mothers rearing offspring to weaning age. The annual population growth rate (*lambda*) is estimated to be 1% (maximum is 2% using massaged data set) or just slightly above replacement. In addition to low fecundity, population growth is hindered by first year mortality which, for captive bonobos, is estimated at 21%. Causes of infant mortality has been identified as a research priority. All SSP breeding recommendations have been carried out to date.

Population Genetics

Even though the amount of genetic variation retained in the captive population has increased since the SSP/EEP programs began, the founder representation within each subpopulation remains severely skewed. Worldwide, 22 founders have living descendants in the current population, but because of pedigree bottlenecks and variance in founder family size, the number of founder genome equivalents (FGE) is 10 for the world population and five for North America (data as of 03 March 1992). Given the present annual growth rate of 1-2% observed for captive bonobos, 10 FGE (world) are not sufficient to preserve 90% genetic diversity for even 100-200 years. At least 20-25 FGEs are needed for a 100-200 year management period, respectively. The best strategy for increasing FGE includes reproduction of potential founders and increasing *lambda* to arrive at a reasonable carrying capacity (less than 400 animals). However, doubling existing FGE to meet the 100-200 year period is only possible, given current growth rates, if all nonrepresented and underrepresented founders reproduce maximally and if efforts to annex potential founders residing in non-SSP institutions (four in Mexico) are successful. To date, the EEP has acquired three additional wild born bonobos from confiscation efforts. Efforts to annex Mexican institutions into the SSP are on-going but administrative and political changes in Mexico have limited progress to date.

Special Concerns

Several special problems facing the Bonobo SSP are associated with small population size, low reproductive capacity, and the inherent genetic and demographic consequences discussed above. These are as follows: (1) In order to pair individuals of genetic priority or to prevent inbreeding, disruption of social groups is a primary concern. Skewed founder representation and demographic history have led to a number of related F_1 reproductive-aged males, 83% (n=6) of whom have few or no unrelated female partners in the

SSP population. High levels of inbreeding (f=0.125 or higher) would result if these males were to breed at the present time. A temporary measure is formation of a bachelor group. In this way, compatible males who are not needed immediately for breeding can be housed together in a socially enriched environment and still contribute to the SSP. The SSP has solicited the assistance of several behavioral specialists to review breeding recommendations and help meet social and genetic requirements. (2) The high neonatal mortality rate must be investigated and addressed with the help of veterinary advisors and appropriate specialists. (3) With the exception of the five bonobos in Mexico, all other bonobos known to exist in captivity (confirmed by site visits) have been assimilated as potential founders into either the SSP or EEP. However, in order to reach SSP goals, the SSP, with the assistance of AAZPA and other advisory groups, must continue to focus attention in Mexico and facilitate expeditious inclusion of these bonobos (potential founders) into the global management program.

Research

Projects in progress include the following: (1) establishment of cell line and long-term storage of genetic samples for future research needs (Dr. Oliver Ryder, Center for Reproduction of Endangered Species (CRES), San Diego Zoo); (2) allozyme and DNA assessment of genetic diversity of the captive population and founder relatedness (Gay Reinartz, Zoological Society of Milwaukee County; Dr. Jean DuBach, Chicago Zoological Society); (3) development of standardized methodology to monitor ovarian cycles and reproductive behavior (Dr. Jeremy Dahl, Yerkes Primate Center; Dr. Nancy Harvey, CRES, San Diego Zoo); and, (4) preliminary assessment of necropsy protocols, results and infant mortality (Dr. Lynn Kramer, Columbus Zoo). Research on artificial insemination, *in vitro* fertilization and embryo transfers have been discussed and research in *Pan troglodytes* continues (Dr. Ken Gould, Yerkes Primate Center). The effects of husbandry practices, reproduction and social development has been identified as a research priority.

Field Conservation

The SSP has been involved in several international forums concerned with developing a conservation action plan for this species. The SSP and EEP coordinators are members of the Bonobo Task Force under the auspices of the Primate Specialist Group, IUCN. The SSP is exploring ways to support *in situ* projects as part of the action plan.

Progress Toward Goals

(1) Due to the continued cooperation of SSP institutions, intensified efforts to breed priority bonobos resulted in significant births. All breeding recommendations and transfers have been carried out or are in progress. Animal exchanges are underway between the SSP and EEP (export/import permits pending).
(2) Adopted guidelines (proposed by the EEP) for development of social groups. In keeping with the above guidelines, formation of an SSP all male group is underway.
(3) EEP collaboration and collection of pertinent husbandry information have been reorganized and reassigned, identifying the Chimpanzee SSP Husbandry Manual and appropriate chapters as a prototype.
(4) Veterinary advisors were selected.
(5) The SSP continues to build a working relationship and communication network with field conservationists and related organizations to promote conservation of wild bonobo populations.
(6) Carrying capacity and facility design were assessed (attachment to Master Plan 1991-1992).

Short-Term Goals for Upcoming Year

(1) Meet with the EEP (August 1992) to further the global master plan and establish a mechanism to jointly review breeding recommendations, behavioral information and research objectives.
(2) Begin developing protocols and collecting information (and training materials) on reproductive behavior, social dynamics and behavioral development in order to facilitate creation of stable social groups. Monitor development of the all male group. Refine plans for multi-male/multi-female and mixed aged groups commensurate with facility designs.
(3) Circulate husbandry questionnaires and collect husbandry data.
(4) Centralize research requests and protocols (the coordinator serving as an information clearinghouse) to facilitate record keeping, support of on-going projects and appropriate sample use.
(5) Intensify efforts to annex Mexican bonobos into the founding population.
(6) Continue work with field conservation organizations and promote the development of the bonobo conservation action plan.

CHIMPANZEE (*Pan troglodytes*)

Species Coordinator and Regional Studbook Keeper:
Les Schobert, North Carolina Zoological Park

Introduction

The Chimpanzee SSP was initiated in 1989. The first Master Plan was published in 1990, covering the years 1991 and 1992. The second Master Plan, covering 1993 and 1994, will be published this fall. The genetic and demographic goals are to retain 90% of the founding stock's genetic heterozygosity for 200 years. Meeting this goal will require a minimum viable population (MVP) of 180 ($N_e/N = 0.3$). The target population size is 220 to allow stabilization of the age structure and to protect the population against the loss of genetic diversity. Since the last report, two institutions have been added to the SSP (Montgomery Zoo, and Riverside Zoo) raising the captive space available for chimpanzees to 191 (55.136) adults, with 65-70 additional spaces for dependent juveniles. Renovations and new chimpanzee exhibits are planned by three other institutions which will provide additional space for chimpanzees. Unfortunately, two institutions plan to eliminate their chimpanzee collections; therefore, the amount of space available to chimpanzees will remain at its present level for the next 2-3 years. The need for additional space for chimpanzees remains a problem. Lack of space continues to make stabilizing the population difficult since breeding must be limited. The outcome of continuing research on the possibility that the population contains subspecies groups may result in further limitations on space.

The SSP has nearly completed the preparation of an extensive husbandry manual for chimpanzees, with a grant from the Institute of Museum Services secured by the North Carolina Zoological Park. The manual will be published in the Fall of 1992, and will cover the status of the species in the wild and in zoos, behavior, social groupings, introductions, hand rearing, reproduction and contraception, exhibit and holding facility design, general care, nutrition, and health.

Data Table (current through 1 January 1992)

	One Year ago	Current year
Participating Institutions	34	36
Captive Population	75.142.1	83.149
# SSP animals managed	218	232
# SSP animals not required to meet goals	0	0
# animals in non-participant collections but desirable to SSP	0	0
Total # of births in SSP program	11	13
# surviving to one year	10	9
# of SSP recommended births	2	2
# of non recommended births	9	11
# of deaths of SSP animals	6	8
# of imports	0	0
# of exports	0	0
# of founders w/ represented descendants	12.15	12.16

Current Population Status

Two managed populations of chimpanzees exist in the U.S. One is the SSP population and the other population contains approximately 350 chimpanzees in the NIH breeding program. Besides the breeding group, NIH facilities contain approximately 1,450 chimpanzees that either have been used or are available for use in research protocols. An as yet undetermined and potentially large number of chimpanzees are also held in private hands.

The chimpanzee SSP population contains a sufficient founder base to establish a self-sustaining population. Therefore, no imports of wild chimpanzees are needed to secure the population's survival.

Demographic Trends

Most reproduction in the SSP population has been by wild born chimpanzees. This trend is likely to continue for several years because the majority of animals in the population are less than 10 years old. As the wild born chimpanzees age, recruitment of captive born animals as breeders will become more

critical. Current trends toward providing socially and psychologically complex environments for chimpanzees will likely enhance the development of species-typical mating and mothering behaviors and increase the reproductive potential of captive born chimpanzees.

Population Genetics

The founder genome equivalents (FGE) for the population is 28.9. As most reproduction in the population has been by wild born animals, the fraction of wild gene diversity retained is high (0.983), and mean inbreeding in the population is low (0.005).

Mean kinship analysis indicates that 59 males and 92 females (151) are either adequately or underrepresented. Of these, 11 males and 18 females are unrepresented wild born animals. Recruiting these potential founders into the breeding population will remain a priority. Breeding recommendations for underrepresented founders and the recruitment of captive born breeders will be addressed in the upcoming Master Plan.

Special Concerns

Space limitations and the development of species-typical social and parental skills remains a concern. The SSP will continue to promote new chimpanzee exhibits in collaboration with the other great ape SSPs through the Great Ape TAG. The development of species-typical social and parental skills by captive born chimpanzees is critical to the survival of the population as well as to the psycho-social well-being of captive animals. The SSP will continue to support efforts to better understand the role of environmental and social complexity on development. The chimpanzee husbandry manual is a first step toward disseminating existing information on the psycho-social needs of the species and for encouraging continued research into designing care protocols to enhance the quality of life of captive chimpanzees.

Field Conservation

The SSP is in discussions with Dr. Jane Goodall and Dr. Geza Teleki on the role it can play in establishing and operating sanctuaries in Africa for orphaned chimpanzees.

Research

A technique for genetically assessing subspecies designations will be published soon by Phillip Moran, University of California, San Diego. The development of this technique brings us one step closer to determining the representation of the various subgroups in the captive population.

In preparing the chimpanzee husbandry manual, several areas in need of further research became apparent. Observational data on social interactions in a variety of environments (e.g., on exhibit vs. in holding) would help assess the environmental and social factors that contribute to species-typical development of reproductive and parental skills, the affects of various contraception methods on social interactions, the success of introductions of new animals, the integration of hand reared chimpanzees into existing groups, and the utility of various enrichment procedures among other subjects.

Progress Toward Goals

(1) Secured funding for the production of the chimpanzee husbandry manual
(2) Gathered and analyzed data, and prepared the chimpanzee husbandry manual.
(3) Developed veterinary protocols for chimpanzee transfers.

Short-term Goals for Upcoming Year

(1) Distribute the chimpanzee husbandry manual.
(2) Work closely with the Great Ape TAG on the allocation of space for captive chimpanzees.
(3) Assess the likelihood of future reproduction by aging, unrepresented wild born animals.
(4) Expand contraception efforts and explore various means of contraception to prevent nonrecommended births.

LOWLAND GORILLA (*Gorilla gorilla gorilla*)

Species Coordinator and North American Regional Studbook Keeper:
Dan Wharton, Ph.D., New York Zoological Park

Introduction

The Gorilla Species Survival Plan was initiated by the AAZPA in 1982. The Master Plan was completed in March 1988. The primary purpose of the Gorilla SSP to date has been to optimize social adjustment and resulting captive reproduction in North American zoos. This is being accomplished through programs of research, on-going animal exchange and the cooperative assembling of potential breeders from small groups to form larger, more complex social groups. The Gorilla SSP recognizes that group dynamics change as new animals are born or acquired, juveniles mature and older animals die. This requires constant monitoring of groups and sensitivity to the normal processes which, in nature, would compel individual animals to emigrate.

Carrying capacity for gorillas in North America is estimated at 400 animals while long-term stability is probably achievable with a captive population of 150, given an N_e/N of 0.5. To date, reproduction has not been reliable enough to suggest that we should attempt to reduce numbers from the current 300 in North America. Also, there is a perception of under-population of captive gorillas because of public and professional demand for the species as first-class "wildlife ambassadors" as well as for conservation and human interest exhibits. The Gorilla SSP has not actively discouraged the construction of new and larger, more naturalistic facilities for this species since they have a positive impact on SSP goals for ideal social group formation; however, we do encourage institutions to consider the construction or renovation of facilities that will serve the other great ape species as well.

Data Table (current through 1 July 1992)

	Two years ago	One year ago	Current year
Participating Institutions	46	48	50
Captive Population (Total world)	648	651	665 est
# SSP animals managed	296	295	147.163
# SSP animals not required to meet goals	0	0	0
# animals in non-participant collections but desirable to SSP	6	6	4
Total # of births in SSP program	17	15	21
# surviving neonatal period	15	11	19
# of SSP recommended births	17	15	21
# of non recommended births	0	0	0
# of deaths of SSP animals	7	15	9
# of imports (incl non-SSP)	2	0	1
# of exports	0	0	0
# of founders w/ represented descendants	106		

Current Population Status

There are no animals in North America that are considered surplus to the population. Although perhaps "surplus" to breeding plans in the literal sense, non-breeders and/or aged animals are still extremely useful for creating good social groups. Recent importations into North America include 1.1 captive born animals from Germany in 1988 and 1.0 from Jersey in 1991. The importation of 1.1 wild caught animals into Mexico in 1989, although technically legal because Mexico and the African country of origin (Equatorial Guinea) are not signatory to CITES, is nevertheless not condoned by the Gorilla SSP nor the wildlife conservation community in general. Otherwise, importation from Africa all but ceased after 1974. The current population in North America of 315 (including non-SSP is a net increase of 13 over the 302 recorded for last year. The majority of animals in North America are captive born and all but five are under SSP management.

Demographic Trends

The 1988 Master Plan analyses indicated that this population would decline given its birthrate, age status and other demographic variables. However, the Master Plan goals to (1) produce at least seven

newborn females each year and (2) recruit at least two captive born females between ages 6-15 into the breeding population (as first-time mothers) have actually been achieved for the last few years. A much more recent analysis shows the North American gorilla population to be growing at the rate of one to two percent per year from births. The indication is that this is a population that can be managed for long-term stability if cooperative efforts in socialization and breeding management are continued.

Population Genetics

Of the 171 potential founders in the North American population, 106 have produced offspring as of 1992. Founders have not contributed equally to the population. Gene drop analysis gives an FGE=50 (or 50 founder genome equivalents, if the 106 actual founders are adjusted for underrepresentation). A similar analysis of the European population gives an FGE=34.

Special Concerns

Concerns traditionally center on managing the population for a positive rate of growth and ensuring excellent mental and physical health of the animals. In 1991 and 1992, a new element to this concern emerged with the attempts by animal rights organizations to block SSP-recommended gorilla transfers. Since the movement of captive gorillas among institutions is a critical part of maximizing social adjustment, male/female compatibility and concomitant reproduction in this species, restrictions on movement could easily begin the process of dooming the population. In the case involving the transfer of Cleveland Metroparks Zoo's "Timmy" to the New York Zoological Park, a federal court judge dismissed the claim of the animal rights groups and declared that ". . . there is not cause of action under the federal Endangered Species Act" and ". . . the Plaintiffs cannot state any claim for relief pursuant to the Animal Welfare Act. . ." The move of Timmy went well and he was successfully introduced to three breeding females at the New York Zoological Park. This case, plus a similar one at the Los Angeles Zoo involving the moves of two females, underscores the need for participating institutions to educate staff, governing authorities and the community on gorilla social biology and the implications for captive conservation programs.

Research

Gorillas have been an attractive area of research for a number of disciplines, much to the benefit of the species. Data on diet in wild populations in West Africa (Calvert, Ph.D. Thesis, 1985) plus studies on serum cholesterol in captive animals (McGuire et al. 1989, JOURNAL OF MEDICAL PRIMATOLOGY) are having a significant impact on formulation of captive diets. Reproductive studies are providing valuable insight on the breeding biology of gorillas. Artificial insemination, *in vitro* fertilization (sans implantation) and pregnancy maintenance with progesterone therapy have all been accomplished in the last few years. There are number of good behavioral studies and more recently a study of social group size and reproductive success has been initiated. Veterinary research is focusing on cardiomyopathy observed in gorillas in the 25-40 year old age class. In genetics, karyotype and protein variation have been examined in over 70 animals in North America. The subspecies question is also being addressed. A recent report on mountain gorilla social biology and implications for captive management provides a good summary of the phenomena that are addressed in current SSP management.

Field Conservation

The Gorilla SSP has joined with the IUCN/SSC Primate Specialist Group, the AAZPA and the IUDZG in condemning any action which would engender demand for, and trade in, gorillas from Africa.

Short-Term Goals

(1) Complete transfer of approximately 20 animals for the purposes of socialization, formation of larger groups and/or greater breeding opportunities.
(2) Place greater attention on genetic management. Some overrepresented males need to be rotated with socially competent but underrepresented males.

ORANGUTAN (*Pongo pygmaeus*)

Species Coordinator and International Studbook Keeper: Lori Perkins, Zoo Atlanta
Regional Studbook Keeper: Melanie Bond, National Zoological Park

Introduction

For both subspecies, Bornean and Sumatran, the genetic goal is preservation of 90% of the present variability (heterozygosity). Again for both subspecies, the length of time this variability is to be preserved is 100 years. We have chosen this program length over the more typical 200 years because we believe that we can expect significant advances in reproductive technology with this species during that period of time. Such advances can be anticipated because of the physiological similarities between apes and humans; the rapid pace of the development of such technologies for humans may readily translate to rapid progress for apes as well. This in turn will provide additional and perhaps significant options for preserving genetic variability in this species via the implementation of such technologies.

The Orangutan SSP can be categorized as developing, due to a major problem that remains a consistent obstacle to the program's success: captive holding space. We anticipate that this will continue to be a significant and intractable problem as long as zoos continue to build exhibits for such species as the gorilla (which is not in need of more space at the present time) to the exclusion of species like the orangutan, which is in desperate need of additional captive habitat. Were it not for this obstacle, we would probably be able to categorize the Orangutan SSP as mature, because we do not face significant problems of compatibility, reproduction, etc.

Data Table (current through 30 June 1992)

	Two Years ago	One Year ago	Current year
Participating Institutions	51	55	50
Captive Population	138.153.3	135.152.3	135.154.4
# SSP animals managed	244	241	244
# SSP animals not required to meet goals	57	57	57
# animals in non-participant collections but desirable to SSP	7	6	4
Total # of births in SSP program (w/ stillborns)	7	6	4
# surviving to six months	6	5	-
# of SSP recommended births	6	4	1
# of non recommended births	1	1	3
# of deaths of SSP animals	7	9	1
# of transfers recommended	-	18	28
# of transfers completed	-	12	5
# of imports	0	0	0
# of exports	0	0	0
# of founders w/ represented descendants	49	51	60

Current Population Status

In the data table above under "Captive Population", the entire population in the U.S. and Canada is reported. Thus the number of orangutans in North America but not managed under the SSP program can be determined by subtracting the "number of SSP animals managed" from the "captive population" total (e.g., in the current year, there are 293 - 244 = 49 orangutans in North America that are not managed within the SSP program). The "number of SSP animals not required to meet goals" reports the number of subspecific hybrid orangutans that are housed in SSP participating institutions (i.e., no Bornean or Sumatran orangutans are considered surplus to the SSP program at the present time).

Demographic Trends

Reproduction is occurring, and it is occurring within the pure (not the hybrid) populations. Instead of increasing, however, the populations are stable. Meaningful increases will be impossible until: (1) more captive holding space becomes available within the SSP, and (2) the size of the hybrid population declines. Recommendations concerning breeding, birth control and transfers are being followed by the participating institutions. Especially within the present and last versions of the Master Plan, the participating institutions are to be commended for their level of cooperation, and the promptness with which recommendations have been (and are

being) implemented.

Population Genetics

As was the case last year, we see no need to increase the number of founders in either sub-population, neither from the wild nor from other regional programs.

The results of the latest "gene drop" analyses can be summarized as follows: The Orangutan SSP has a more than sufficient number of actual and potential founders to attain its goals (42 Bornean, 58 Sumatran); we do, however, need to ensure that all potential founders become represented in the living descendent population. With the recruitment of presently unrepresented founders, we have the potential to attain a mean retention of approximately 0.8 (as opposed to the present retention of approximately 0.7) for each subspecies. With better management, there is the potential to almost double founder genome equivalents for each subspecies. As has been stated, the main obstacle to such better management is the shortage of captive holding space. With increases in such space, we feel confident that we can approach these "ideals" in genetic management.

Special Concerns

The major problem facing the orangutan SSP is identical to that discussed in last year's ANNUAL REPORT ON CONSERVATION AND SCIENCE. We reprint last year's discussion verbatim:

The overriding problem facing the Orangutan SSP at this time is a severe shortage of captive holding space. Due to this constraint, many institutions have (at least temporarily) ceased breeding their animals, as there is no room for the offspring at their own or other SSP facilities. There is apparently a pervasive misconception throughout the zoo community that orangutans are doing well in captivity because so many zoos house them. They are very visible, and the impression is that "everybody has them, they must be doing okay." However, as has been stated, the tremendous space constraints combined with the substantial size and longevity of the surplus hybrid population make it extremely difficult to encourage the level of reproduction necessary to expand and stabilize the captive Bornean and Sumatran populations. It is increasingly clear that zoos building or planning new ape exhibits are doing so in the hope of acquiring gorillas, which are seen as more "glamorous" or appealing to the visiting public. What is unfortunate is that these facilities often have to wait years to acquire gorillas, while orangutans are available now, and they do make for exciting, popular exhibits. There is a wide variety of housing options, as orangutans are adaptable to a range of types of housing situations (i.e., solitary animals to multi-male groups) and, in fact, the need for placing animals [spans] this range of options. Facilities are needed to house older, "retired" males as well as younger males together in groups, in addition to the more typical breeding group of 1.2 or 1.3 animals.

Progress Toward Goals

(1) We have accomplished the goal of completing a Master Plan update, and distributing it to all participants.
(2) We continue to work with the Great Ape TAG to find solutions to the conflicting needs for "great ape space" in North America.
(3) We continue our efforts toward reversing the historically negative demographic trends within the Bornean and Sumatran populations.

Short-term Goals for Upcoming Year

(1) Of the 28 new animal transfers recommended in the current Master Plan, five have already been completed. We hope to complete the remaining 23 transfers over the next six months to one year. We have recommended 15 Bornean matings (with the supposition that 10 will result in actual births) and 11 Sumatran matings (with the supposition that eight will result in actual births). Once the required transfers have been accomplished, we hope that these matings will be successfully achieved within the upcoming year (to the extent that space constraints allow).
(2) Within the next year, we plan to produce an orangutan husbandry manual.
(3) In coordination with the Great Ape TAG, we plan to publish in AAZPA's COMMUNIQUE a "notice to the membership" concerning the disparate needs of the four species for captive holding space, in a concerted effort to encourage member institutions to devote space to species based on each species' actual needs.
(4) Under the direction of the IUCN/SSC/CBSG, we will participate in the Orangutan Population & Habitat Viability Analysis (PHVA) and Global Captive Master Plan Workshops, scheduled for early 1993 in Indonesia.

AAZPA PRIMATE DATABASE

As of 1 September 1991, the Primate Database contains primate collection information from 88 AAZPA-member zoos. See Table 1. There are over 16,000 data elements in the current database. I roughly estimate that I have captured about 60% of the hoped for AAZPA primate information. A few summary statistics which illustrate the usefulness of the Primate Database, include:

1. The Primate Database currently has a total of 169 primate taxa represented with just over 4500 individual living specimens registered from 88 zoos.

2. The juvenile to adult ratio was 0.208.

3. The average present total population size per taxa was 26.5.
   The variation was great - standard deviation was 40.6.

4. The median present population size per taxa was only 9.0.
   25 taxa had populations = 0
   87 taxa had populations $\leq$ 20
   Only 26 taxa had populations > 50
   Only 13 taxa had populations $\geq$ 100

5. The average future capacity per taxa was 37.1 animals.
   The variation was great - standard deviation was 54.4.

6. The median future capacity per taxa was only 14.0 animals.
   22 taxa had predicted future space = 0
   73 taxa had predicted space $\leq$ 20
   Only 36 taxa had predicted space > 50
   Only 20 taxa had predicted space > 100

7. The present holding capacity currently in the Primate Database = 6290
   The future holding capacity currently in the Primate Database = 6263

   Net Loss = 27

   Future capacity increased for 71 taxa.
   Future capacity decreased for 76 taxa.
   Future capacity remained equal for 22 taxa.

8. Approximately, 63% of the individual taxa were marked by the respondents as flexible for change based on taxonomy (e.g. would consider switching one marmoset species for another).

9. Approximately, 33% of individual taxa were marked by the respondents as flexible for change based on geographic region (e.g. would consider an African species for an Asian one).

10. Based on the current Primate Database, future primate space (based on animal numbers) will be distributed as:

Prosimians	18.2%
New World Primates	42.3%
Old World Monkeys	29.6%
Apes	9.9%
	100.0%

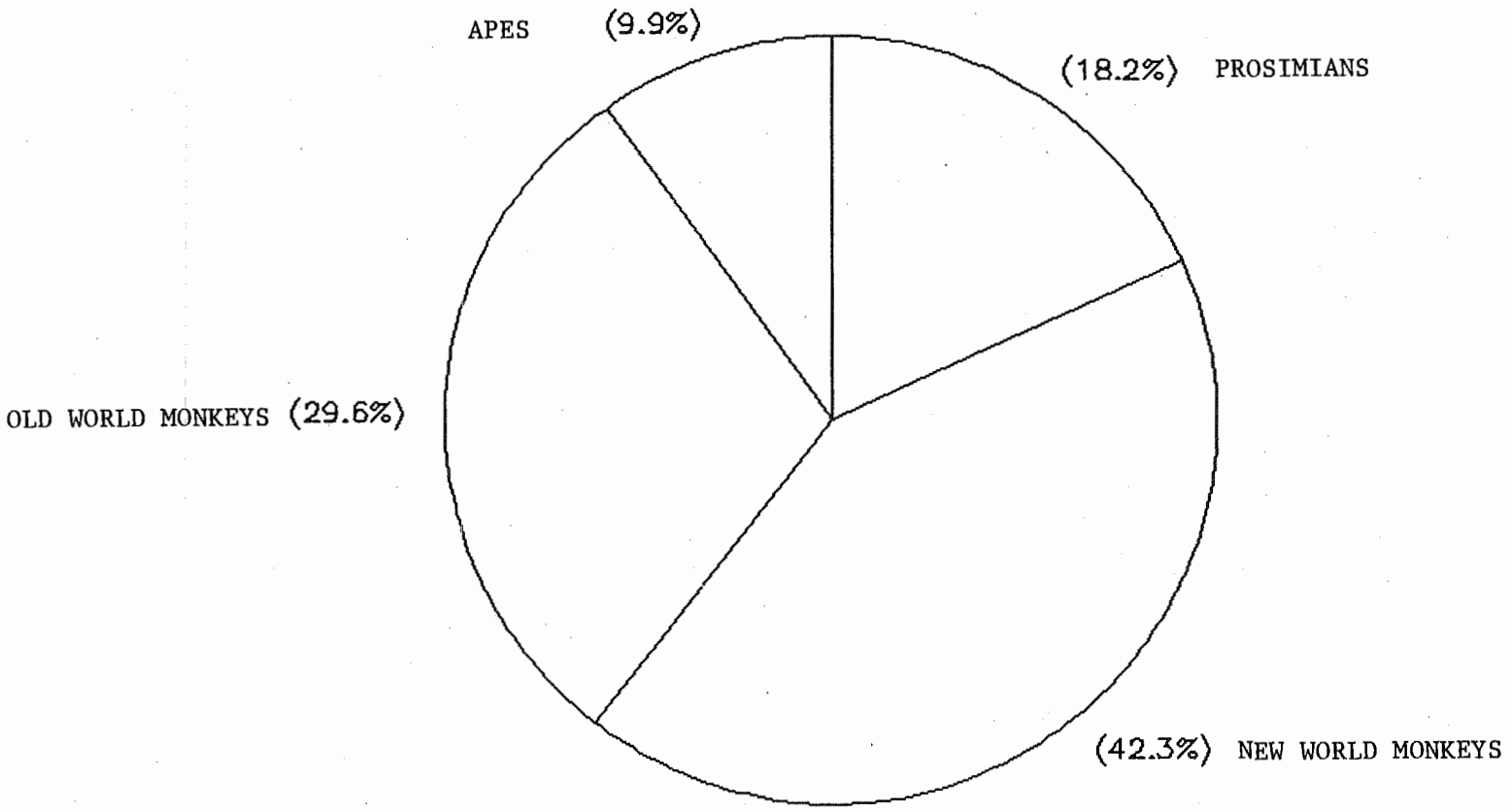
CONCLUSIONS

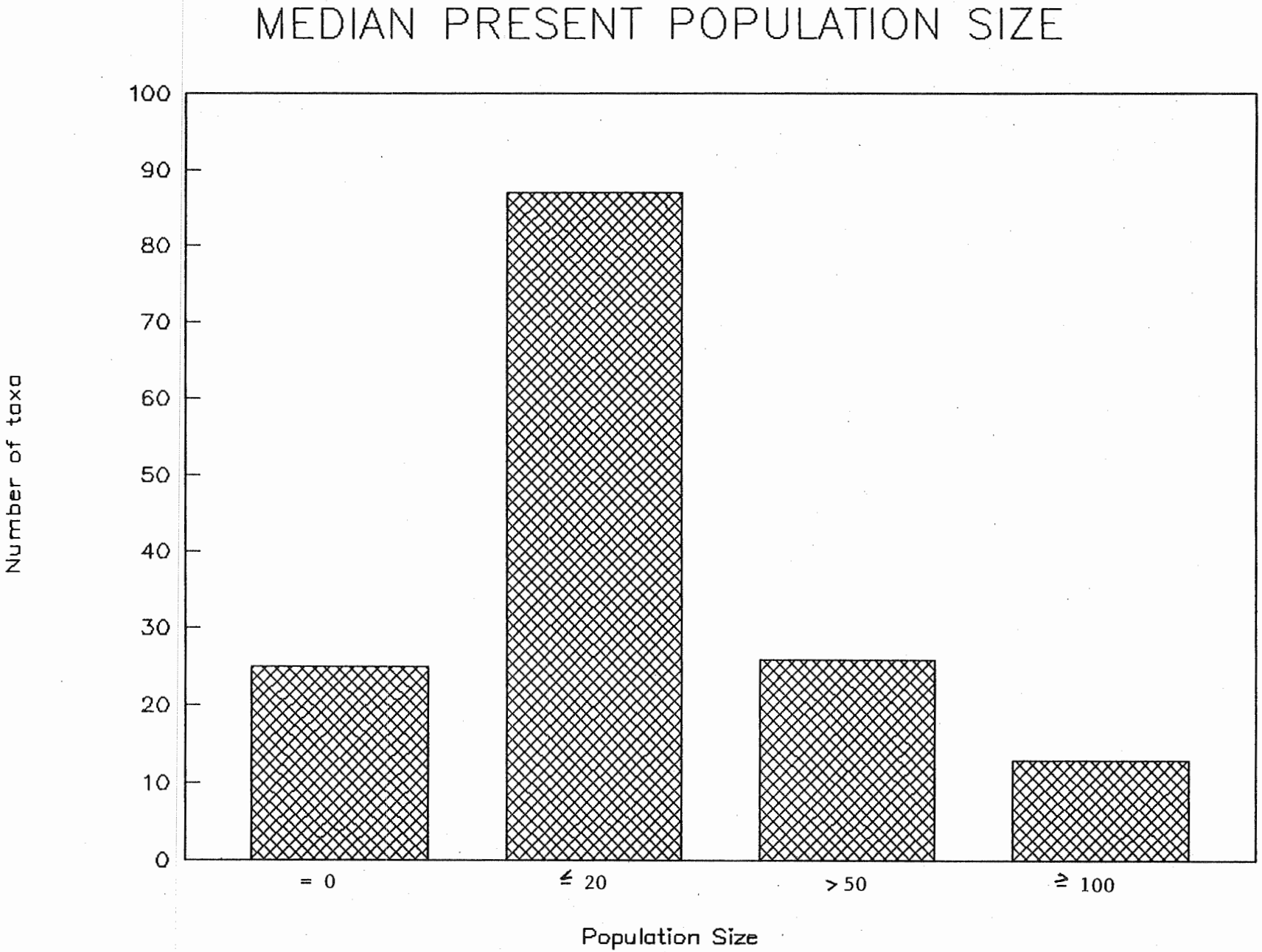
While the AAZPA Primate Database is far from complete, preliminary work suggests that it could prove to be a valuable information tool for primate managers. Its success depends, however, on better cooperation of zoos. There must be prompt return and careful completion of the collection surveys.

While the data presented are preliminary, trends clearly illustrate the need for better and more holistic AAZPA collection planning for the Primates. Future plans, as provided by members' surveys, predict that there will be far too many taxa with insufficient numbers for long-term population management. As the 21st century arrives, there will still be too many primate taxa with too few animals for proper management. The challenge will be to change AAZPA's primate collection plans, before it is too late.

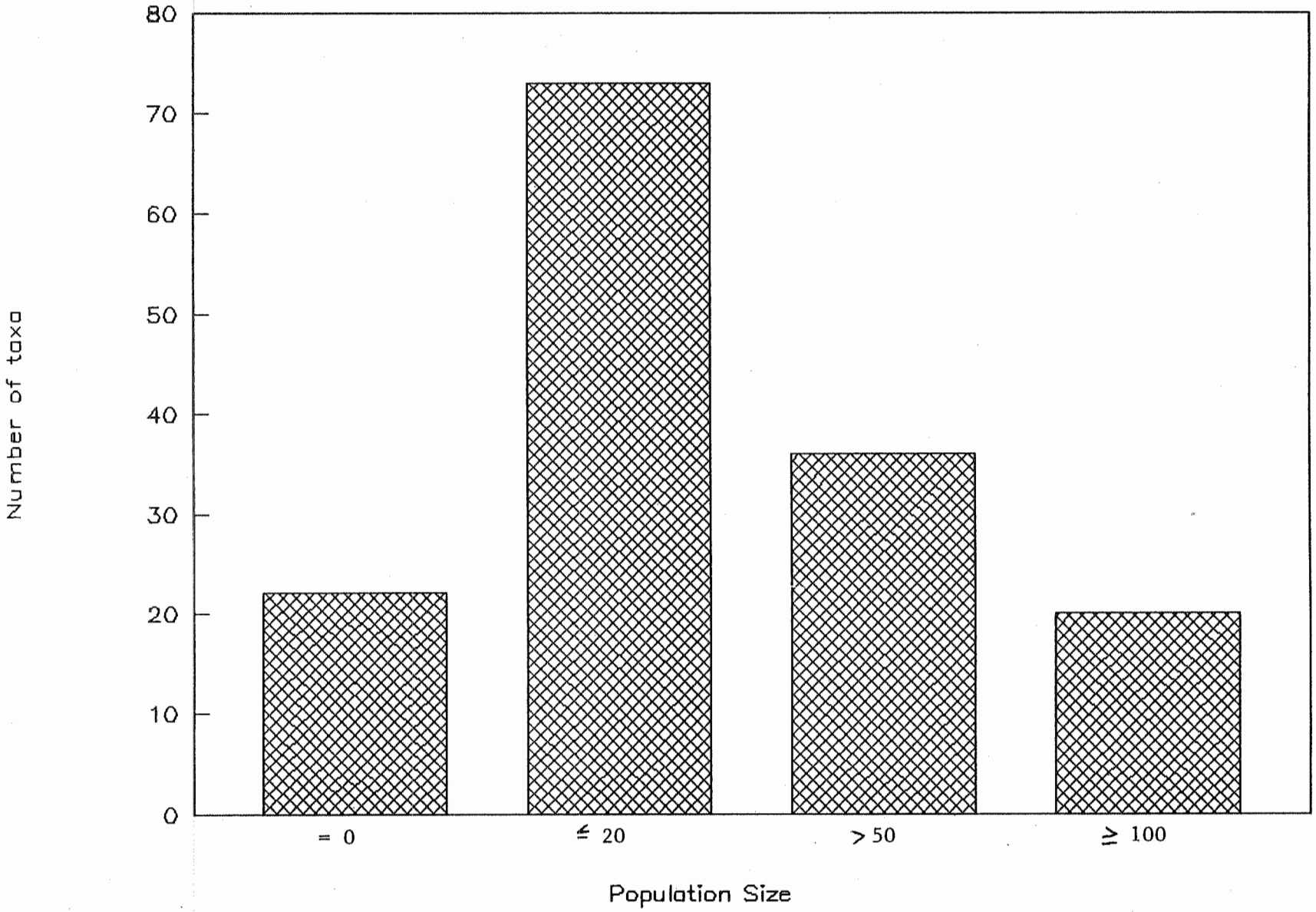
Fred Koontz
Co-Chair
AAZPA Old World Monkey TAG

FUTURE CAPACITY




MEDIAN PRESENT POPULATION SIZE
Number of taxa
100
90
80
70
60
50
40
30
20
10
0
= 0
≤ 20
> 50
≥ 100
Population Size

MEDIAN FUTURE CAPACITY



PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 10

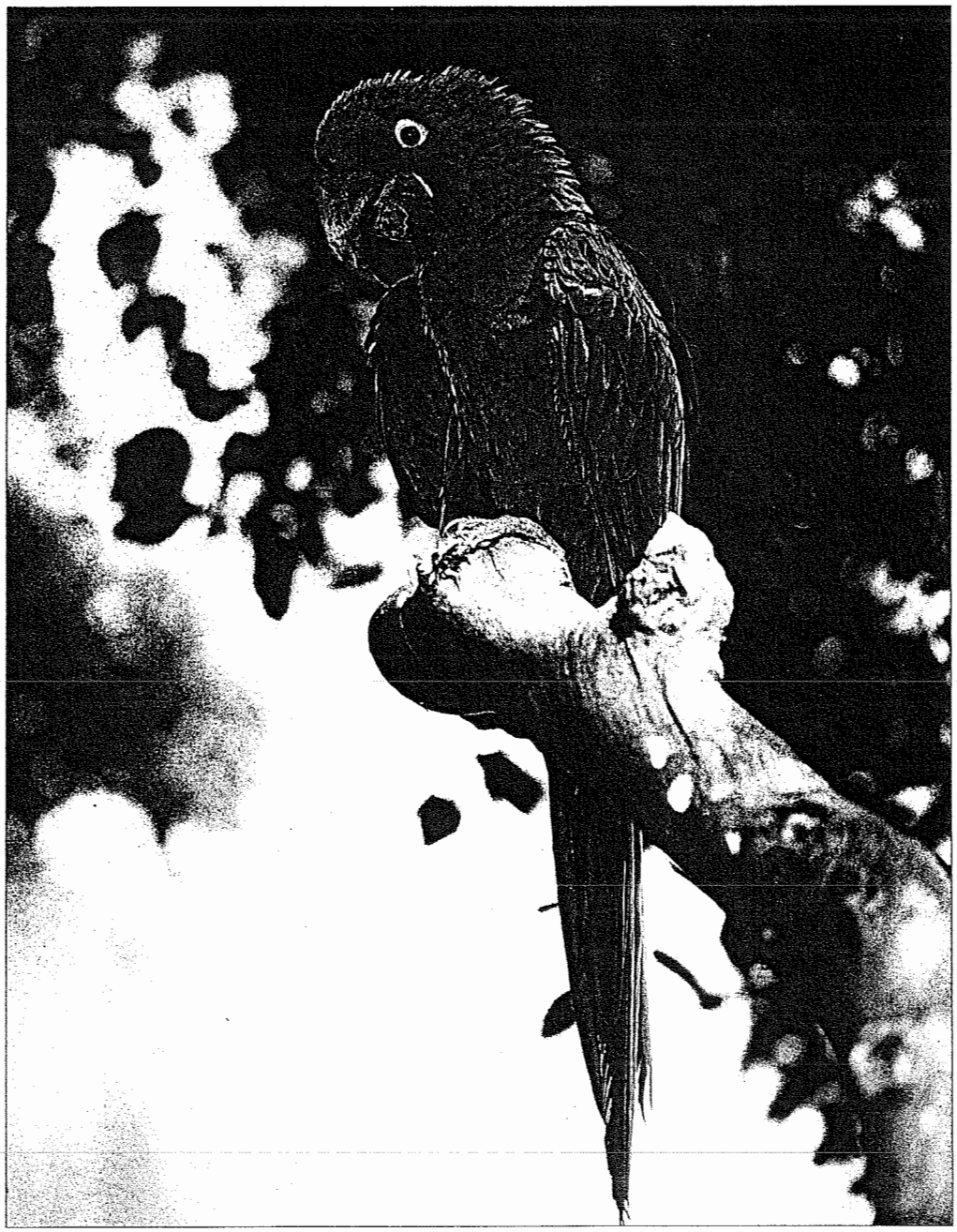
REGIONAL CAPTIVE CONSERVATION PROGRAMS/EUROPE EEP

EEP Yearbook 1990

with
Summaries of Contributions and Discussions
of the

8th EEP Conference, Budapest

12-15 May 1991



EEP

Published by the EEP Executive office, Amsterdam; October 1991
Compiled and edited by Koen Brouwer, Simone Smits and Leobert de Boer

Ruffed lemur (*Varecia v. variegata* and *V. v. rubra*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Uta Ruempler
Zoologischer Garten Köln
Riehler straße 173
5000 Cologne
Germany

Studbook keeper: Ingrid Porton, St. Louis Zoo (International)

Species committee:
Molly Badham, Twycross Zoo
Pierre Gay, Doué la Fontaine Zoo
Angela Glatston, Rotterdam Zoo
Bengt Holst, Copenhagen Zoo
Sean McKeown, Carrigtwohill, Fota Park
Arnd Kuijnenburg, Tierpark Berlin
J.M. Lernould, Mulhouse Zoo
Jeremy Mallinson, Jersey Zoo
Bruno van Puijenbroeck, Antwerp Zoo
Beatrix Rau, Munich Zoo
Götz Ruempler, Münster Zoo
Christian R. Schmidt, Zürich Zoo

Committee meetings: No meetings were held in 1990

Studbook: International Studbook: 1989

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Tables 1a, 1b and 1c

Age and sex distribution of the EEP population: see Tables 2a and 2b

3/4. Recommendations/Problems: not yet formulated/identified

Table 1a: Status and development of the *Varecia v. variegata* EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
* Aalborg/DK	-	-	1.1	-	-	-	-	1.1
Amsterdam/NL++	-	-	-	-	-	-	-	-
Apeldoorn/NL	0.1	-	-	-	1.1	-	-	1.2
Asson/F	8.4	1.2	-	-	-	-	-	9.6
Banham/GB	1.4	0.2	-	0.1	-	-	-	1.5
Basel/CH	1.1	-	-	-	-	-	-	1.1
Belfast/GB	1.5	-	1.0	-	-	-	-	2.5
Bekesbourne/GB	5.7	3.0	-	-	-	-	-	8.7
Berlin (Tierpark)/G	2.3	-	-	-	-	-	-	2.3
Berlin (Zoo)/G++	-	-	-	-	-	-	-	-
Bristol/GB	2.2	-	-	1.1	-	-	-	1.1
Budapest/H++	-	-	-	-	-	-	-	-
Burford/GB	3.2	2.2 (2.1)	0.1	-	-	1.0	0.1	2.3
Carrigtwohill/IRL	2.1	-	-	-	-	-	-	2.1
Cheshire/GB	2.2	-	-	-	-	-	-	2.2
Colchester/GB	1.1	0.1	-	-	-	-	-	1.2
Cologne/G	12.6	2.1	2.0	-	-	-	-	16.7
Copenhagen/DK	1.1	-	-	-	-	-	-	1.1
Cricket St.Thomas/GB	1.2	1.1+1.2 (0.1)	-	-	-	-	-	3.4
Doué la Fontaine/F	3.5	0.2.2 (0.0.2)	-	1.1	-	-	-	2.6
Dresden/G	1.1	-	-	1.0	-	-	0.1	-
Dvur Kralove/CS++	1.1	-	-	1.0	-	-	-	0.1
Frankfurt/G++	3.1	-	-	-	-	-	-	3.1
Fréjus/F++	0.1	-	-	-	-	-	-	0.1
Jersey/GB	7.4	0.0.2	-	0.0.1	-	-	-	7.4.1
* Les Mathes/F	-	-	0.1	-	-	-	-	0.1
Montpellier/F	1.1	0.0.3	-	-	-	-	1.0	0.1.3
Munich/G	3.2	0.1	-	-	0.1	-	1.0	2.4
Münster/G	3.2	0.1	-	-	-	-	-	3.3
Mulhouse/F	2.2	-	-	-	-	-	-	2.2
* Olomouc/CS	-	-	0.1	-	-	-	-	0.1
Ozoir la Ferrière++	-	-	-	-	-	-	-	-
Paris/F	0.1	-	-	-	-	-	-	0.1
Romanèche/F	1.1	(0.1)	-	-	-	-	0.1	1.0
Rotterdam/NL	1.2	-	1.0	-	-	-	-	2.2
Saarbrücken/G	2.3.1	0.0.6 (0.0.2)#	-	1.0	-	-	-	1.3.5
Stockholm/S++	2.1	(0.0.1)	-	-	-	-	-	2.1
Stuttgart/G++	-	-	-	-	-	-	-	-
Tel Aviv/ISR	-	-	1.0	-	-	-	-	1.0
Twycross/GB	4.7	3.0	-	1.0	-	-	-	6.7
* Wroclaw/PL	-	-	-	-	-	-	-	-
Totals 46 participants	76.77.3	12.12.16 (2.3.6)	6.4	6.3.1	1.2	1.0	2.3	85.84.13

* New EEP participants ++ Hybrids # = 0.0.3 (1) + 0.0.3 (1)

Table 1b: Status and development of the *Varecia v. rubra* EEP population in 1990

	Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
				in	out	in	out		
	Amsterdam/NL	0.1	-	1.0	-	-	-	-	1.1
	Antwerp/B	1.1	-	-	-	-	-	-	1.1
*	Apeldoorn/NL	0.0	-	0.1	-	-	-	-	0.1
*	Asson/F	0.0	-	0.1	-	-	-	-	0.1
	Berlin (Tierpark)/G	6.5	0.2	-	4.4	-	-	-	2.3
	Berlin (Zoo)/G	1.1	-	-	-	-	-	-	1.1
	Cologne/G	5.4	(0.0.1)[1]	-	0.1	-	-	-	5.3
	Doué la Fontaine/F	3.2	-	-	-	-	-	1.0	2.2
	Jersey/GB	4.4.6	-	-	1.0	-	-	-	3.4.6
	London/GB	1.1	-	-	-	-	-	-	1.1
	Munich/G	1.1	-	1.1	-	-	-	-	2.2
	Mulhouse/F	4.5	2.1 (1.0)	-	0.1	-	-	-	5.5
	Wuppertal/G	1.2	-	-	-	-	-	-	1.2
	Zürich/CH	1.1	1.1.1 (0.0.1)[1]	-	-	-	-	-	2.2
	Totals 15 participants	28.28.6	3.4.2 (1.0.2)	2.2	6.5	-	-	1.0	24.27.6

* New EEP Participant
[1] (0.0.1) is still birth

Table 2a: Age distribution of the Black and white ruffed lemur (*Varieca v. variegata*) in the EEP as on 31 December 1990

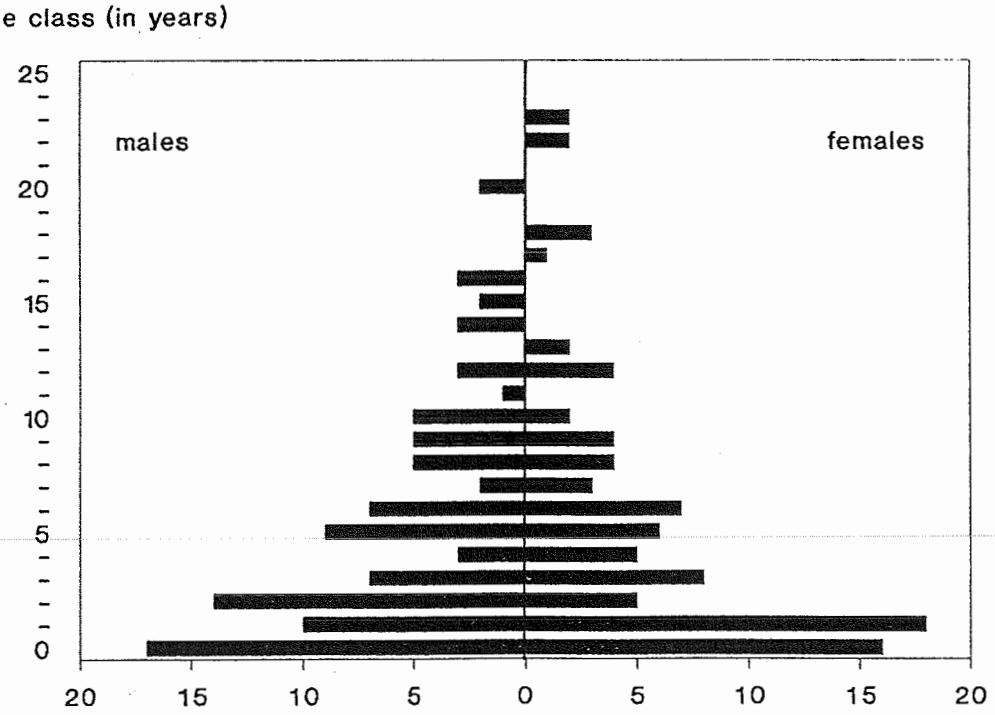
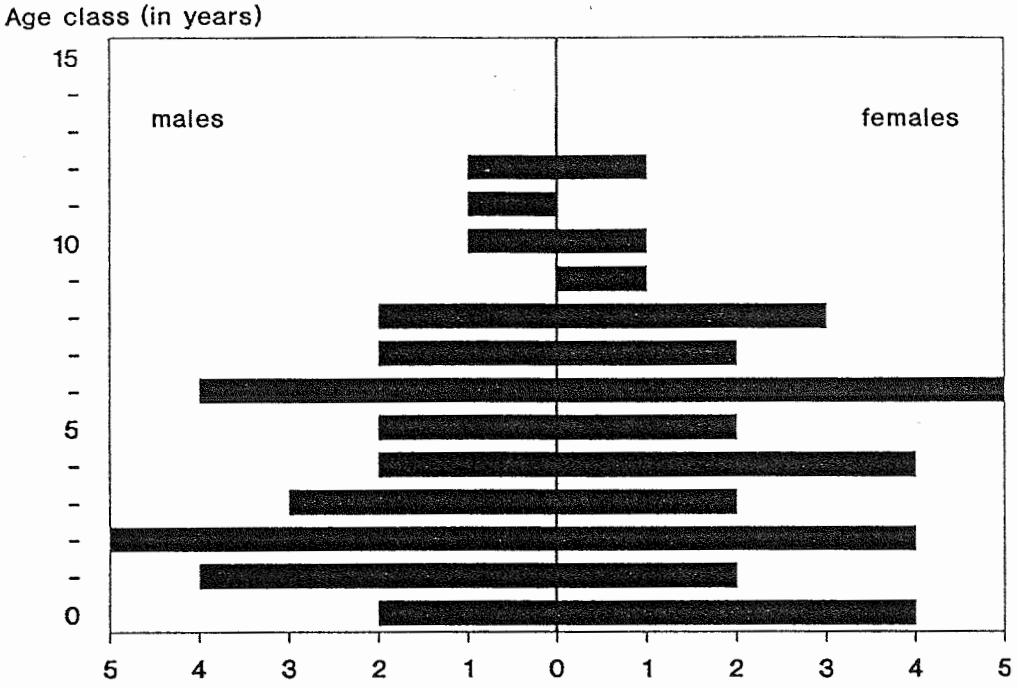


Table 2b: Age distribution of the Red ruffed lemur (*Varieca v. rubra*) in the EEP as on 31 December 1990



Woolly monkey (*Lagothrix lagotricha*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Wim B. Mager
Apenheul Zoo
J.C. Wilslaan 21-31
7313 HK Apeldoorn
The Netherlands

Studbook keeper: Wim B. Mager

Species committee: Consists of representatives of all participants

Committee meetings: No meetings were held in 1990

Studbook: A preliminary report compiled by K. Albers and W. Mager was published in June 1990

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: see Table 2

A total of 11 institutions responded to our questionnaire, 8 of which currently keep woolly monkeys. Two institutions did not respond; however, these both keep only one specimen. The current European population consists of 29.40 woolly monkeys.

Summary:

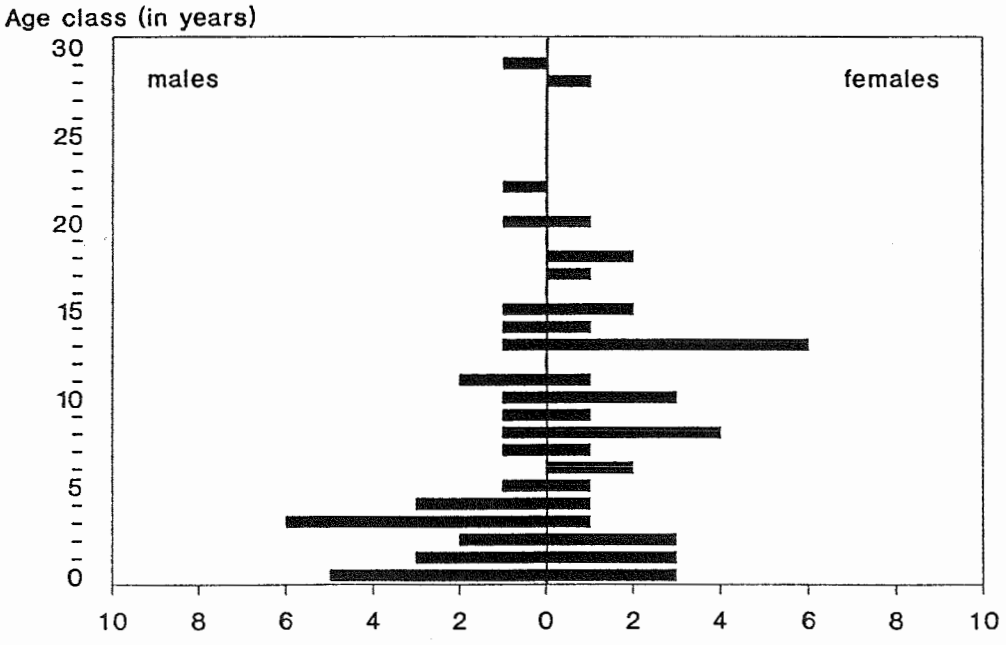
Of the current population, 24.34 animals are captive born and 5.6 animals are wild-born. The age distribution on 1 January 1990 is shown in table 2. No exact data on population growth are available since we only asked for data on the current population and their ancestors, but at best the population is self sustaining at this moment. Only three institutions have good breeding groups of *Lagothrix lagotricha* and 73% of the animals are currently held at two locations. This makes the population very vulnerable to contagious diseases and other calamities. An increase in the number of animals as well as the number of breeding groups on different locations is urgently needed. The latter measure should be accompanied by sharing of knowledge on husbandry

Table 1: Status and development of the Woolly monkey (*Lagothrix lagotricha*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Antwerp/B	1.1	-	-	-	-	-	1.0	0.1
Apeldoorn/NL	10.20	4.3 (1.1)	-	-	-	-	1.1	12.21
Asson/F	2.1	-	-	-	-	-	1.0	1.1
Basel/CH	4.5	1.0	-	-	-	-	1.0	4.5
Bergeyk PPE/NL	2.0	-	-	-	-	-	1.0	1.0
* Doué de Fontaine/F	0.0	-	-	-	-	-	-	0.0
Looe/GB	9.11	-	-	-	-	-	-	9.11
Tenerife/ES	1.0	-	-	-	-	-	-	1.0
Twycross/GB	1.1	-	-	-	-	-	-	1.1
Totals 9 participants	30.39	5.3 (1.1)	-	-	-	-	5.1	29.40

* New EEP participant, will receive woolly monkeys in 1991

Table 2: Age distribution of the Woolly monkey (*Lagothrix lagotricha*) in the EEP as on 31 December 1990



and management of woolly monkeys in captivity.

3. Recommendations for the next year(s)

The current population was founded by at least 36 animals. As in most populations the founders are not equally represented in the current population, which is mainly due to differences in reproductive success of the different founders and their offspring. Five potential founders are still alive and

have not reproduced yet, namely #0035, #0036, #0037, #0038 and #0016. Inbreeding has occurred in at least 10 cases, which could have been avoided if animals were exchanged more often.

4. Problems

Subspecies

The division of the population by subspecies is shown below.

subspecies	males	females
cana	3	6
poeppigii	5	5
lagotricha	1	1
lugens	1	0
hybrids:		
cana / lagotricha	7	10
cana / poeppigii	4	6
cana / lugens	5	4
rest	2	6
unknown	2	1

Only 10.12 animals are considered to be non-hybrid animals, most of which are *L. l. cana* or *L. l. poeppigii*. It may be possible to separate *L. l. cana* and *L. l. poeppigii* as sub-populations, but their numbers are very low, too low for a good breeding programme. If any subspecies is to be separated it will clearly be necessary to seek cooperation with zoos outside of Europe and to start a breeding programme on a global scale.

It is clear though that with a species as difficult to maintain in captivity as the woolly monkey we cannot afford to mainly focus on subspecies populations. As long as so few institutions manage to successfully breed woolly monkeys we will need all specimens available, if long term propagation of *Lagothrix lagotricha* in captivity is our goal. Keeping this in mind and with rough knowledge of the situation in North America separation of a subspecies is probably only possible for *L. l. poeppigii*.

International Cooperation

As the number of woolly monkey holding institutions in Europe is low, it will be important to seek cooperation with institutions that keep this species outside of Europe. In North America a regional studbook for the woolly monkey already exists, and is kept by Mary Jo Stearns of the Fossil Rim Wildlife Center, Forth Worth. An SSP may be initiated in the near future. We have already started to determine the current status of woolly monkeys in captivity outside of Europe and North America, and we have asked woolly monkey holding institutions if they are interested in participating in an international breeding programme. We already received a positive response from a number of institutions.

Pygmy marmoset (*Cebuella pygmaea*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Wim Mager
Apenheul
J.C. Wilslaan 21-31
7313 HK Apeldoorn
The Netherlands

Studbook keeper: Wim Mager (international); Joost van Linge (registrar)

Species committee: Not yet formed

Committee meetings: Committee not yet formed

Studbook: The second edition of the International studbook was published in 1990.

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: not available

Age and sex distribution of the EEP population: not available

The following institutions have indicated their interest in participating in the Pygmy marmoset EEP:

Amsterdam Zoo/NL
Cologne Zoo/G
Gelsenkirschen Zoo/G
Les Mathes Zoo/F
Magdeburg Zoo/G
Moscow Zoo/USSR
Mulhouse Zoo/F
Odense Zoo/CH
Rotterdam Zoo/NL
Szeged Zoo/H
Zürich Zoo/CH

3. Recommendations for the next year(s): not yet formulated

4. Problems

- Genetical/biochemical methods for subspecific identification are urgently required.

Goeldi's monkey (*Callimico goeldii*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: J. Bryan Carroll
Jersey Wildlife Preservation Trust
Les Augres Manor
Trinity
Jersey Island

Studbook keeper: Mark Warneke, Brookfield (International)

Species committee: Not yet elected

Committee meetings: None

Studbook: UK studbook current to January 1990. Awaiting database from International studbook keeper before compiling EEP studbook.

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

Summary:
Table 1 lists the institutions in continental Europe that have indicated their willingness to participate in the EEP. The list includes two university colonies and one private collection. The stock list gives the stock held at the time that willingness to participate in the EEP was indicated.

In addition to these animals there are some 100 registered under the JMSG programme, most of which will come under EEP auspices.

It must be stressed that there are undoubtably more *Callimico* in Europe than these 81 specimens. This preliminary list was based on the 1988 International Studbook and I suspect that the information was already out of data when published. I would like to hear from anyone who knows of other institutions in Europe that hold the species.

My preliminary impression is that there are a good number of founders in

Table 1: European institutions that have expressed their willingness to participate in the Goeldi's monkey (*Callimico goeldii*) EEP programme

Institution	Stock held
Amsterdam/NL	2.4
Apenheul, Apeldoorn/NL	3.4.1
Frankfurt/G	2.1
Kassel University/G	11.6.2
Cologne/G	8.9.2
Skansen/S	3.3
Stuttgart/G	5.5
Les Mathes/F	2.3
Station Eichberg, private/CH	2.3
Zürich/CH	1.1
Zürich University/CH	not yet available
Total stock	39.39.3

the population and that no husbandry problems are being encountered.

3. Recommendations for the next year(s)

1. The studbook should be updated and corrected.
2. When the list of institutions holding the species is reasonably complete, an election of the Species Committee will take place.
3. A genetic and demographic analysis will be undertaken.

4. Problems

I suspect that there will be a shortage of space for this species in the future. It will then become necessary to control breeding through the use of contraceptive implants in the way that the golden lion tamarin programme is controlled.

Douc langur (*Pygathrix n. nemaeus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Uta Ruempler
Cologne Zoo
Riehler Strasse 173
D-5000 Köln 60
Germany

Studbook keeper: Prof. Lois Lippold, San Diego (International)

Species committee: Uta Ruempler, Cologne Zoo
Dieter Ruedi, Basel Zoo
Lois Lippold, San Diego

Committee meetings: No meetings were held in 1990

Studbook: Not yet compiled

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

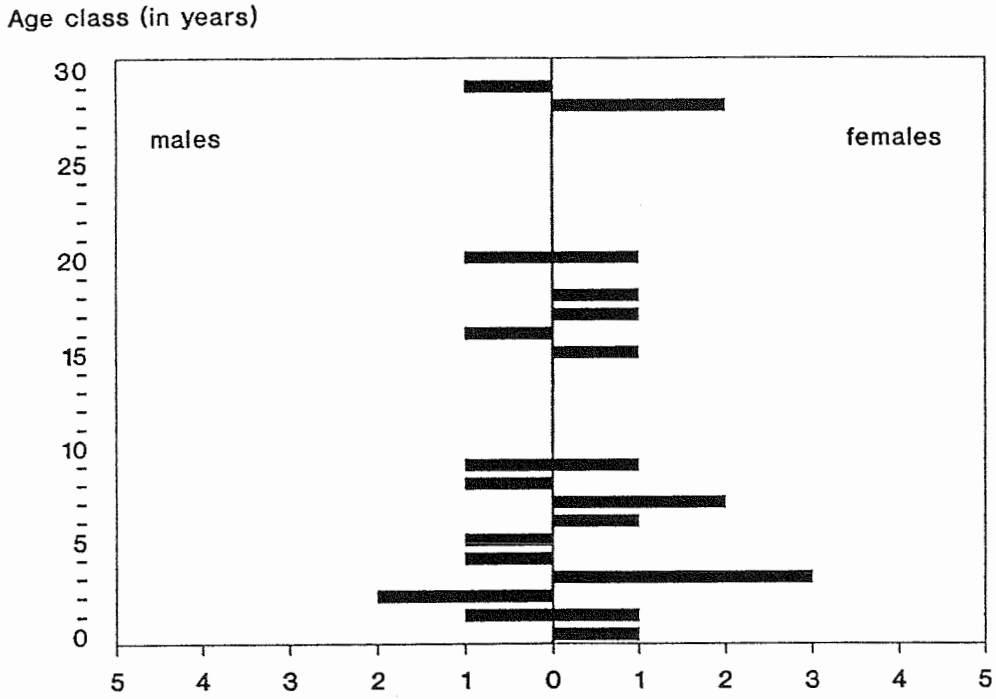
Age and sex distribution of the EEP population: see Table 2

3/4. Recommendations/Problems: not specified

Table 1: Status and development of the Douc langur (*Pygathrix n. nemaeus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Basel/CH	2.4	-	-	-	-	-	0.1	2.3
Cologne/G	6.10	0.1	1.1	-	1.0	1.0	-	7.12
Stuttgart/G	1.1	-	-	1.1	-	-	-	0.0
Totals 3 participants	9.15	0.1	1.1	1.1	1.0	1.0	0.1	9.15

Table 2: Age distribution of the Douc langur (*Pygathrix n. nemaeus*) in the EEP as on 31 December 1990



Drill (*Mandrillus (= Papio) leucophaeus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Dr. Michael Böer
Zoologischer Garten Hannover
Adenauerallee 3
3000 Hannover 1
Germany

Studbook keeper: Dr. Michael Böer (International)

Species committee: Not yet formed

Committee meetings: Not yet held

Studbook: Last edition of International Studbook published in 1987.

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

3/4. Recommendations/Problems: not specified

Table 1: Status and development of the Drill (*Mandrillus (= Papio) leucophaeus*) world population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP/SSP zoos		Transfers with non-EEP/SSP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
EEP								
Arnhem/NL	1.0	-	-	-	-	1.0	-	-
Barcelona/ES	1.1	0.1	-	-	-	-	-	1.2
Romaneche-Thorin/F	0.2	-	-	-	-	-	-	0.2
Hannover/G	3.6	2.1 (0.1)	-	1.2	-	1.0	-	3.4
Madrid/ES	-	-	-	-	-	-	-	-
Saarbrücken/G	1.2	-	0.1	-	-	-	-	1.3
Stuttgart/G	2.2	-	-	-	-	-	1.0	1.2
Wuppertal/G	2.2	-	1.1	-	-	-	-	3.3
SSP								
Atlanta	2.1	-	1.0	1.0	-	-	-	2.1
San Diego WAP + Zoo	1.3	-	-	-	1.2	-	1.0	1.5
Knoxville	1.2	-	-	-	1.0	-	-	2.2
Los Angeles	3.5	-	1.0	1.0	-	-	1.1	2.4
Philadelphia	1.2	-	-	-	-	-	-	1.2
OTHERS								
Bangkok Zoo	0.1	-	-	-	-	-	-	0.1
US Embassy Malabo, Equat. Guinea	1.0	-	-	-	-	-	-	1.0
Mrs. L. Gadsby, Calabar/Nigeria	0.1	-	-	-	2.0	-	-	2.1
Colombo Zoo, Sri Lanka	1.0	-	no reply	-	-	-	-	1.0?
Jap. Monkey Center	2.3?	-	no reply	-	-	-	-	2.3?
Hamamatsu Zoo	1.0	-	-	-	-	-	-	1.0
Osaka Tennoji Zoo	1.1	-	-	-	-	-	1.0	0.1
Carmen Hall	2.0	-	-	-	-	-	1.0	1.0
Totals								
EEP	10.15	2.2 (0.1)	1.2	1.2	-	2.0	1.0	9.16
SSP	8.13	-	2.0	2.0	2.2	-	2.1	8.14
OTHERS	8.6	-	-	-	2.0	-	2.0	8.6 +?
WORLD Participants	26.34	2.2 (0.1)	3.2	3.2	4.2	2.0	5.1	25.36 +?

Gelada baboon (*Theropithecus gelada*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Achim Johann
Tierpark Rheine
D-W-4440 Rheine
Germany

Studbook keeper:
Achim Johann (International)

Species committee:
F. Hanak, Brno Zoo
F. Ostenrath, Duisburg Zoo
A. Johann, Tierpark Rheine
R. Revers, Salzburger Tiergarten Hellbrunn
P.C. Baisle, Parque Zoologique Le Pal
M. Holtkötter, Wilhelma, Stuttgart
C.R. Schmidt, Zürich Zoo

Committee meetings:
No meetings were held in the report year

Studbook:
The members of IUDZG endorsed the establishment of an International Studbook for the Gelada Baboon in 1990. The EEP species coordinator was appointed as International Studbook Keeper. Meanwhile most of the Geladakeeping facilities have returned the first questionnaire, so there will be a survey on the current stock. It is already obvious that genetic analyses will be very difficult: most of the zoos do not know the relationship in their groups.

Husbandry guidelines:
The experiences in maintenance and management of geladas collected in Rheine Zoo are summarized in a report, which will be offered for publication to the Int. Zoo Yb. A brief summary of the article will be sent to all EEP-participants.

Research:
Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

Summary: see next page

Table 1: Status and development of the Gelada baboon (*Theropithecus gelada*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
* Brno/CS	0.3	-	1.0	-	-	-	-	1.3
Duisburg/G	1.5	1.2 (0.1)	-	-	-	-	0.1	2.5
Rheine/G	8.8	2.3 (0.1)	1.0	-	-	-	-	11.10
Salzburg/A	-	-	-	-	-	-	-	-
St. Pourcain/F	1.3	-	-	-	-	-	0.1	1.2
Stuttgart/G	5.10	1.1.2 (0.1.2)	-	-	-	-	-	6.10
Wuppertal/G	1.1	-	-	0.1	-	1.0	-	-
Zürich/CH	6.7	1.3 (1.1)	0.1	2.0	-	-	0.1	4.9
Totals 8 participants	22.34	5.9.2 (1.4.2)	2.1	2.1	-	1.0	0.3	25.39

* New EEP participant

Nine (4.5) geladas were born and raised in 1990, adding a very valuable contribution to the population. Three females have been added because of the participation of Brno Zoo (CS), but it is unlikely that these animals will reproduce because of their old-age and condition. Two of the three females that died in 1990 were certainly not or no more capable of reproduction. The numbers of not-raised young also include a stillbirth and two abortions (presumably caused by social troubles in the group). A three year old male from Zürich Zoo has been integrated in the Rheine group. The animal is on breeding-loan from Zürich (as also is the male from Brno).

3/4. Recommendations/Problems: not specified

Miscellaneous

- The EEP-coordinator visited two gelada-keeping facilities in the USA in 1990. One of these has two (1.1) young geladas surplus. Tierpark Rheine will endeavour to importing these animals. A decision on their final European destiny will be made after confirmation of a possible transfer.
- Currently no other European zoo but Salzburg has indicated interest in establishing a group of geladas. On the other hand there are currently no animals surplus. However, this situation can change quickly when the large number of younger males will get older.
- Stabilizing of existing groups is an ongoing task. Unrelated animals have to be integrated in certain groups in near future (immature animals to avoid social trouble). In the case of geladas the establishment of heterogenous groups offers the most careful possibility of long-term reduction and avoidance of inbreeding.

Lion-tailed macaque (*Macaca silenus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Dr. Werner Kaumanns
German Primate Center
Kellnerweg 4
D-3400 Göttingen
Germany

Studbook keeper: There is no regional studbook keeper; the International Studbook keeper is: Laurence G. Gledhill, Woodland Zoological Gardens, 5500 Phinney Avenue North/Seattle, Washington 98103-5897, USA

Species committee: The species committee is constituted by representatives of every zoo which participates in the EEP.

Committee meetings: There was no meeting of the species committee in 1990, but a meeting was held on 2 March 1991.

Studbook: A new version of the International Studbook will be edited in a few months. Last updating of the existing version has been done in 1990.

Husbandry guidelines: There are no specific printed husbandry guidelines available at the moment, but several publications which refer to this aspect (one of them written by the coordinator). Efforts to define guidelines are ongoing.

Research: A comparative study on social structure and behavioural profiles in five different colonies is ongoing. The study intends to work out whether there are hints for species specific problems in adapting to captive conditions. It refers to the observation that lion-tailed macaques are more likely to develop behavioural disturbance than other macaques. Linked to this study, an elaborated ethogram was produced, literature searches were performed and provided to the participants of the EEP.

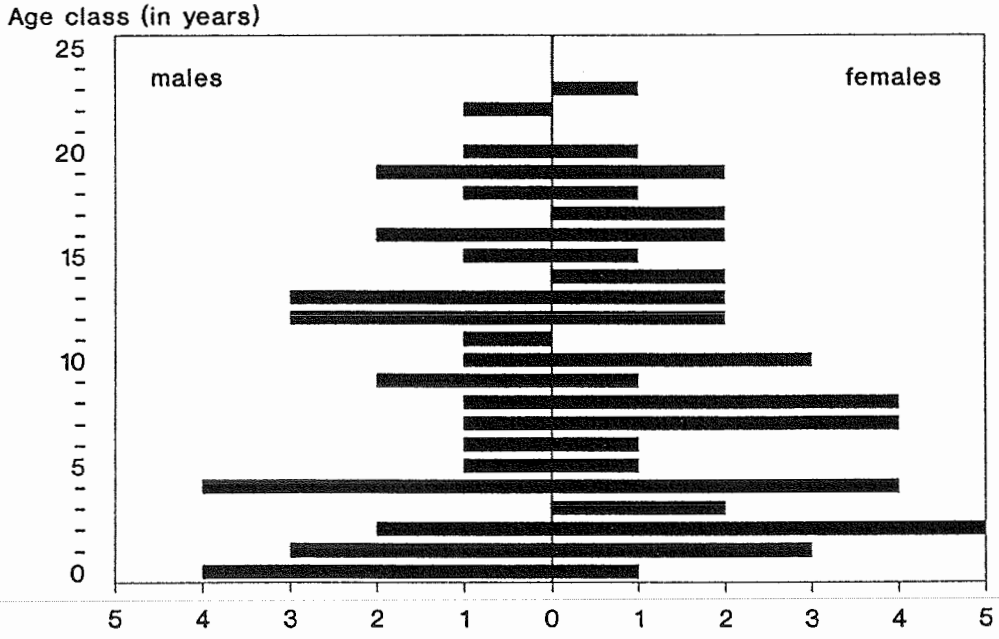
A proposal for another study on the nature of the social system of the species with specific regard to the dominance system is currently being developed and will be started in May 1991. In order to assess the genetic situation of the lion-tailed macaque population in Europe, an opportunity to get genetic finger-printing analysis performed was arranged. The EEP-participants were invited to take blood samples from their colonies whenever they have an opportunity.

Table 1: Status and development of the Lion-tailed macaque (*Macaca silenus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Berlin (Zoo)/G	4.6	-	-	-	-	-	-	4.6
* Doué-la-Fontaine/F	2.1	0.0.2	-	-	-	-	-	2.1.2
Dresden/G	1.3	-	-	-	-	-	-	1.3
Duisburg/G	5.5	2.0 (1.0)	-	-	-	-	-	6.5
Erfurt/G	1.3	-	-	-	-	-	-	1.3
Göttingen/G	7.11	1.1 (1.0)	-	-	-	-	0.2	7.10
Leipzig/G	5.3	0.1	-	-	-	1.1	-	4.3
Magdeburg/G	2.3	-	1.1	-	-	-	-	3.4
Pilsen/CS	1.0	-	-	-	0.1	-	-	1.1
Rheine/G	1.5	1.2 (0.2)	-	-	-	-	-	2.5
Rostock/G	1.3	-	-	1.1	-	-	-	0.2
Stuttgart/G	2.3	1.0	-	-	-	-	-	3.3
Wuppertal/G	4.3	1.0	-	-	-	-	-	5.3
Totals 12 participants	36.49	6.4.2 (2.2.0)	1.1	1.1	0.1	1.1	0.2	39.49.2

* potential EEP participant

Table 2: Age distribution of Lion-tailed macaque (*Macaca silenus*) in the EEP as on 31 December 1990



2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: see Table 2

Summary:

The analysis of the development of the population in 1990 shows that it is in a more vulnerable status than originally was expected. Besides a small population size, a low birth rate, high infant mortality and a tendency towards an unfavourable age structure within many colonies, there is a strong possibility of losing genetic variability because several genetically important individuals do no breed. Behavioural disturbances can be found in many colonies (e.g. hair-pulling), but there seems to be no simple correlation between breeding success in a colony and the occurrence of abnormal behaviours.

3. Recommendations for the next year(s)

There is evidence that the problems the lion-tailed macaque population are suffering from are a consequence of slightly disturbed individuals producing slightly disturbed offspring - thus perpetuating unfavourable breeding conditions. This vicious circle is supported in some cases by suboptimal physical environments and small enclosure sizes, respectively. Efforts to increase the individuals behavioural and especially social competence are needed. Since the problems differ between the colonies specific schedules have to be worked out. Drastic changes in the composition of existing groups are not required and even would be counterproductive. The establishment of new groups which are allowed to develop towards large (more than ten members) units is encouraged.

4. Problems

One of the main problems the lion-tailed macaque EEP is confronted with is that a high proportion of the enclosures available are rather small and do not allow the establishment of larger groups and a diversified environment. Fortunately some zoos are planning to enlarge or replace their enclosures.

Diana monkey (*Cercopithecus d. diana*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Miranda F. Stevenson
Royal Zoological Society of Scotland
Murrayfield
Edinburgh EH12 6TS
Great Britain

Studbook keeper:
Miranda F. Stevenson (International)

Species committee:
Miranda F. Stevenson, Edinburgh Zoo
Bruno Van Puijenbroeck, Antwerp Zoo
Richard Faust, Frankfurt Zoo
Stanislav Rudek, Ostrava Zoo
Jo Gipps, London RP
John Strong, Belfast Zoo

Committee meetings:
The first meeting of the Species committee will be held in May 1991 in Budapest.
One of the subjects on the agenda at this meeting will be research projects that are needed. One obvious possibility is a study of post mortem results, and subsequent analysis of causes of death. Another possibility is methods which result in the formation of successful breeding groups of captive bred animals.

Studbook:
European Studbook: number one with data up to March 1991 is currently available.
International Studbook: number one, with data up to 31 May 1990 will be available very shortly.

Husbandry guidelines:
Husbandry guidelines will be published in the International Studbook.

Research:
Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

Summary: see next page

Table 1: Status and development of the Diana monkey (*Cercopithecus diana diana*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
* Aalborg/DK	0.0	-	1.0	-	-	-	-	1.0
Antwerp/B	1.1	-	-	-	-	-	1.0	0.1
Belfast/GB	4.5	(0.1)	0.1	2.1	-	-	0.4	2.1
Champrepus/F	1.1	-	-	-	-	-	-	1.1
Chessington/GB	1.2.2	(1.0)	-	-	-	-	-	1.2.2
Colchester/GB	1.1	-	-	-	-	-	-	1.1
* Duisburg/G	1.3.2	0.0.1	-	0.1	-	-	-	1.2.3
Edinburgh/GB	3.3	0.1.1	1.0	1.0	-	-	0.1	3.3.1
* Fota/IRE	0.0	-	1.1	-	-	-	-	1.1
* Frankfurt/G	1.2	-	0.1	-	-	-	-	1.3
Les Mathes/F	1.2	1.0	-	-	-	-	-	2.2
London RP/GB	2.3	-	-	1.1	-	-	-	1.2
Newquay/GB	1.1	-	-	-	-	-	-	1.1
* Ostrava/CS	2.3	0.0.2	-	-	-	1.0	-	1.3.2
Paignton/GB	1.2.1	0.0.1	-	0.1	-	-	-	1.1.2
Punte Verde/I	1.0	-	-	-	-	-	-	1.0
* Shaldon/GB	0.0	-	1.1	-	-	-	-	1.1
Twycross/GB	2.3	-	-	-	-	-	-	2.3
Totals 18 participants	23.32.5	2.2.5 (1.1)	4.4	4.4	-	1.0	2.6	21.29.10

* New EEP participants

The current status of the EEP population is shown in Table I. The population, as it stands, is the same as at the beginning of 1990. The total number of collections now participating in the EEP is 18, of these seven currently breed the species. Two new pairs were set up in Fota and Shaldon and a young trio in Edinburgh.

There are 27 institutions currently holding Diana monkeys in Europe. Most of the institutions that have not actually signed the EEP participation agreement do co-operate in the programme. Table II therefore shows the total population of Diana monkeys in Europe as of April 1991. The only query is Lesna Zoo which may no longer have the species. Information on this would be appreciated. Of the 27 institutions ten currently breed the species.

Because there is co-operation between the European holders I prefer to look at the whole population, as listed in the European Studbook, rather than just the EEP animals. Table III summarises the situation.

The age structure of the population is fine, the critical factor being to establish more young captive bred animals as breeding pairs and groups. At present there is a shortage of females, and three institutions are at present looking for potential breeding females. Unfortunately six of the eight deaths in EEP institutions were of females.

3. Recommendations for the next year(s)

1. Swap males between Banham and Colchester (0678) and (0803).
2. Male at Newquay to go to Battersea (0760) to pair with female (0453) and male (0841) to go to Newquay.
3. Male (0861) at Battersea to be paired with female (0848) at Twycross and go to another collection, possibly Punta Verde.
4. Male at Punta Verde to go to Antwerp to be paired with female (0556).
5. Three collections need females: Aalborg, Champrepus and Warsaw.

Once the genetic and demographic analysis of the International population has been completed this will be applied to the formulation of future plans for the European population. There is little inbreeding and a sufficient number of founders. Additional females may need to be imported from North America.

4. Problems

The main problem at present is the difficulty of setting up a captive group that subsequently breed. The moves listed above are intended to try and create more potential breeding pairs of captive bred animals.

Concolor gibbon (*Hylobates concolor* sspp.) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Dr. J.-M. Lernould
Zoo de Mulhouse
51 rue du Jardin
68100 Mulhouse
France

Studbook keeper: Dr. J.-M. Lernould (International)

Species committee: Not yet formed

Committee meetings: Committee not yet formed

Studbook: EEP population included in International Studbook

Husbandry guidelines: Not yet available

Research: Potential projects are listed under "Recommendations for the next year(s)".

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

3. Recommendations for the next year(s)

- To observe behaviour of newly formed pairs of adults and to analyse results, keeping in mind that gibbons may take time to "decide" to reproduce.
- To split pairs of individuals living together since years without reproducing.
- To stop the production of subspecific hybrids. The reproduction of hybrids should only occur if this is necessary for scientific research, and should be controlled.
- New young pairs will have to be established in the near future. Space will be needed. It is easy to find zoos to take gibbons but some are of lower standard. I suggest that zoos actually keeping only one family of concolor gibbons try to increase their capacity even behind the scene. It would be nice also that zoos breeding other gibbon hybrids stop this practice and start working with most endangered gibbon species like H. concolor.

Table 1: Status and development of the Concolor gibbon (*Hylobates concolor* sspp.) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Amsterdam/NL								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
Asson/F								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
Beekse Bergen/NL								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
H. c. gabriellae	0.1	-	-	0.1	-	-	-	0.0
Budapest/H								
H. c. leucogenys	1.0	-	-	-	-	-	-	1.0
H. c. gabriellae	1.0	-	-	-	-	-	-	1.0
Cleres/F								
H. c. leucogenys	4.3.2	-	-	-	-	-	-	4.3.2
H. c. gabriellae	1.0	-	1.1	-	-	-	-	2.1
Duisburg/G								
H. c. leucogenys	2.2	2.0	-	-	-	-	-	4.2
Doue la Fontaine/F								
H. c. leucogenys	2.2	0.0.1	-	-	-	-	-	2.2.1
Eberswalde/G								
H. c. leucogenys	0.1	-	-	-	-	-	-	0.1
H. c. gabriellae	1.1	-	-	-	-	-	-	1.1
Hannover/G								
H. c. leucogenys	3.2	-	-	-	-	-	-	3.2
Hong-Kong/HK								
H. c. gabriellae	2.4.2	-	-	-	-	-	-	2.4.2
Jihlava/CS								
H. c. gabriellae	1.1	0.0.1	-	-	-	-	-	1.1.1
Leipzig/G								
H. c. gabriellae	1.1	-	-	-	-	-	-	1.1
Les Mathes/F								
hybrids	1.2	(0.0.1)	-	-	-	-	-	1.2
Liberec/CS								
H. c. leucogenys	2.1	-	-	-	-	-	-	2.1
Melbourne/AUS.								
H. c. leucogenys	3.1	0.0.1	-	-	-	-	-	3.1.1
Mulhouse/F								
H. c. leucogenys	2.1	1.0	-	-	-	-	1.0	2.1
H. c. gabriellae	3.2	1.0	-	1.0	-	-	-	3.2
Munich/G								
H. c. siki	3.2	-	-	-	-	-	1.0	2.2
Olomouc/CS								
H. c. gabriellae	1.1	-	-	-	-	-	-	1.1
Ozoir/F								
H. c. leucogenys	1.1	0.0.1	-	-	-	-	-	1.1.1
Paris-Ménagerie/F**	-	-	-	-	-	-	-	-
Paris-Vincennes/F								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
hybrids	1.1	-	-	-	-	-	-	1.1
Planckendael/B								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
* Pretoria/RSA	-	-	-	-	-	-	-	-
Saint-Augustin/F								
H. c. leucogenys	1.0	-	-	-	-	-	-	1.0

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Table 1: continued

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Twycross/GB								
H. c. leucogenys	1.2	-	-	-	-	-	-	1.2
H. c. hainanus	1.0	-	-	-	-	-	-	1.0
hybrids	0.1.1	0.0.1	-	-	-	0.0.2	-	0.1
Usti nad-Labem/CS								
H. c. leucogenys	1.2	-	-	-	-	-	-	1.2
H. c. gabriellae	6.1	-	-	-	-	3.0	-	3.1
H. c. siki	1.0	-	-	-	-	-	-	1.0
Totals	52.41.5	4.0.6 (0.0.1)	1.1	1.1	-	3.0.2	2.0	51.41.8
H. c. leucogenys	28.23.2	3.0.3	-	-	-	-	1.0	30.23.5
H. c. gabriellae	17.12.2	1.0.1	1.1	1.1	-	3.0	-	15.12.3
H. c. siki	4.2	-	-	-	-	-	1.0	3.2
H. c. hainanus	1.0	-	-	-	-	-	-	1.0
hybrids	2.4.1	0.0.2 (0.0.1)	-	-	-	0.0.2	-	2.4

26 participants

* New EEP participant
** gibbons out on loan

- Cooperation will be developped with the Gibbon Advisory Group of AAZPA.
- It is important to establish a cooperation with Vietnam, and if possible Laos, in order to set up programs directed towards conservation of Concolor gibbon in-situ.
- Behavioural studies of concolor gibbons families are needed.
- A compilation of the pathology of gibbons should be undertaken as well as a comparative nutrition study.

4. Problems: not specified

Western lowland gorilla (*Gorilla g. gorilla*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:

Priv. Doz. Dr. Rosl Kirchshofer
Zoologischer Garten der Stadt Frankfurt am Main
Alfred-Brehm-Platz 16
6000 Frankfurt am Main 1
Germany.

Studbook keeper:

The EEP species co-ordinator is also International studbook keeper, in which the different breeding regions are separately represented.

Species committee:

Kuno Bleijenberg, Rotterdam Zoo
Anton Brotzler, Wilhelma, Stuttgart
Richard Faust, Frankfurt am Main Zoo
Bengt Holst, Copenhagen Zoo
Heinz-Georg Klös, Berlin Zoo
Wim B. Mager, Apenheul, Apeldoorn
Gunther Nogge, Cologne Zoo
D. Rüedi, Basle Zoo
Christian Schmidt, Zürich Zoo
Paul Vogt, Krefeld Zoo

additionally elected:
K. Tomásová, Dvur Kralove
Jaume Xampeny i Baró, Barcelona Zoo

Committee meetings:

Two meetings were held in 1990: Cologne, 13 June 1990 (1/2 day) and Frankfurt am Main, 28/29 September 1990 (1 1/2 day).

Studbook:

The most current version available in print is the 1989 International Gorilla Studbook; the 1990-version is in preparation (i.e. all information is available), the 1990 version of the EEP-region is available in typescript fotostatic copies.

Husbandry guidelines:

These are being developed (sections on accommodation; grouping; introducing of adult females into a group/to a single male; medical problems in connection with transfers and on hand-rearing are available as second drafts; sections on feeding, introducing infants in a group are in preparation).

Research:

Meder, A. (1990): Sex differences in the behaviour of

Table 1: Status and development of the Western lowland gorilla (*Gorilla g. gorilla*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Aalborg/DK	0.0	-	-	-	-	-	-	0.0[1]
Amsterdam/NL	1.1	-	1.1	-	1.1	-	-	3.3
Antwerp/B	0.0	-	-	-	-	-	-	0.0[1]
Apeldoorn/NL	7.13	1.0	-	1.0	-	-	-	7.13
Arnhem/NL	1.5	-	-	-	-	-	-	1.5
Barcelona/ES	3.6	-	-	-	-	-	-	3.6
Basle/CH	2.5	1.0	-	-	-	-	-	3.5
* Berlin (Tierpark)/G	1.1	-	-	-	-	-	-	1.1
Berlin (Zoo)/G	2.4	-	1.0	-	-	-	1.0	2.4
Budapest/H	1.1	-	-	-	-	-	-	1.1
Cologne/G	3.3	1.1	-	-	-	-	-	4.4
Copenhagen/DK	1.2	-	-	-	-	-	-	1.2
Dresden/G	1.1	-	-	-	-	-	-	1.1
Duisburg/G	2.2	-	-	-	-	-	0.1	2.1
Dvur Kralove/CS	2.2	-	0.2	1.0	-	-	-	1.4
Frankfurt/G	3.5	-	0.1	1.1	-	-	-	2.5
Hannover/G	1.3	-	-	-	-	-	-	1.3
Heidelberg/G	2.2	-	-	-	-	-	-	2.2
Ibadan/Nigeria	1.1	-	-	-	-	-	-	1.1
Johannesburg/RSA	1.0	-	-	-	-	-	-	1.0
Kiev/USSR	1.1	-	-	-	-	-	-	1.1
Kolmarden/S	1.1	-	-	-	-	-	-	1.1
Krefeld/G	3.5	-	-	0.1	-	-	-	3.4
Leipzig/G	2.3	-	-	-	-	-	-	2.3
Les Mathes/F	6.4	1.1 (0.1)	-	-	-	-	1.1	6.3
Madrid/ES	2.4	(0.1)[2]	-	-	-	-	1.0	1.4
Moscow/USSR	1.1	-	-	-	-	-	1.0	0.1
Munich/G	3.4	-	-	-	-	-	-	3.4
Munster/G	3.2	-	-	-	-	-	-	3.2
Nuremberg/G	2.2	-	-	-	-	-	-	2.2

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immature captive lowland gorillas. Primates, 31(1): 51-63, January 1990.

Meder, A. (1990): Integration of handreared gorillas into breeding groups. Zoo Biology 9: 157-164.

Meder, A. (in press): Introduction and socialization techniques - primates. In: Lumpkin, S. and Kleiman, D. (eds.): Wild mammals in captivity.

Meder, A.: Studies on the effects of the behaviour of visitors on Western lowland gorillas in Zoological Gardens. (in preparation)

Kopff, H.O.: Studies on the social behaviour and the social relationships of adult female gorillas (*Gorilla g. gorilla*, Savage and Wyman 1847) before and after a transfer from one group into another under zoo conditions as well as on the changes in the social group structures caused by it. Doctoral thesis (in preparation, Univers. Heidelberg. Supervisor: Priv. Doz. Dr. Rosl Kirchshofer).

Table 1: continued

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Prague/CS	1.3	-	1.0	0.2	-	-	1.0	1.1
Plaisance-du-Touch/F	1.1	-	-	-	-	-	-	1.1
Pretoria/RSA	2.2	(1.0)	-	-	-	-	-	2.2
Romaneche-Thorins/F	1.1	-	-	-	-	-	-	1.1
Rome/I	1.1	-	-	-	-	-	-	1.1
Rostock/G	1.1	-	-	-	-	-	-	1.1
Rostov-on-Don/USSR	1.1	-	-	-	-	-	1.0	0.1
Rotterdam/NL	2.5	-	-	0.1	-	-	-	2.4
Saarbrucken/G	0.0	-	-	-	-	-	-	0.0[1]
St. Martin-la-Plaine/F	2.4	-	-	-	-	-	-	2.4
Stuttgart/G	4.9	-	2.1	1.2	-	-	-	5.8
Tel Aviv/Israel	1.1	-	0.1	-	-	-	-	1.2
Wuppertal/G	3.2	-	-	-	-	-	-	3.2
Zürich/CH	2.4	0.1	0.1	1.0	-	-	-	1.6
Totals	80.118 (+1.1*)	5.4 (1.2)	5.7	5.7	1.1	-	6.2	80.120
44 Participants	198	9 (3)	12	12	2	-	8	200

* New EEP Participants

1) animals on loan to other collections
2) delayed notification for 1988

Non participants

Institutions	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Abu Dhabi/UAE	1.1	-	-	-	-	-	-	1.1
(Berlin (Tierpark)/G	1.1	-	-	-	-	-	-	-)[3]
Franceville/Gabon	4.6	-	-	-	-	-	-	4.6
Lisbon/P	2.0	-	-	-	-	-	-	2.0
Totals	8.8	-	-	-	-	-	-	7.7
EEP-region 48 localities	88.126	-	-	-	-	-	-	87.127
Total	214	-	-	-	-	-	-	214

3) 1.1 now included in EEP listing

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: see Tables 2a and 2b

Table 2a: Age distribution of the Western lowland gorilla (*Gorilla gorilla gorilla*) in the EEP as on 31 December 1990

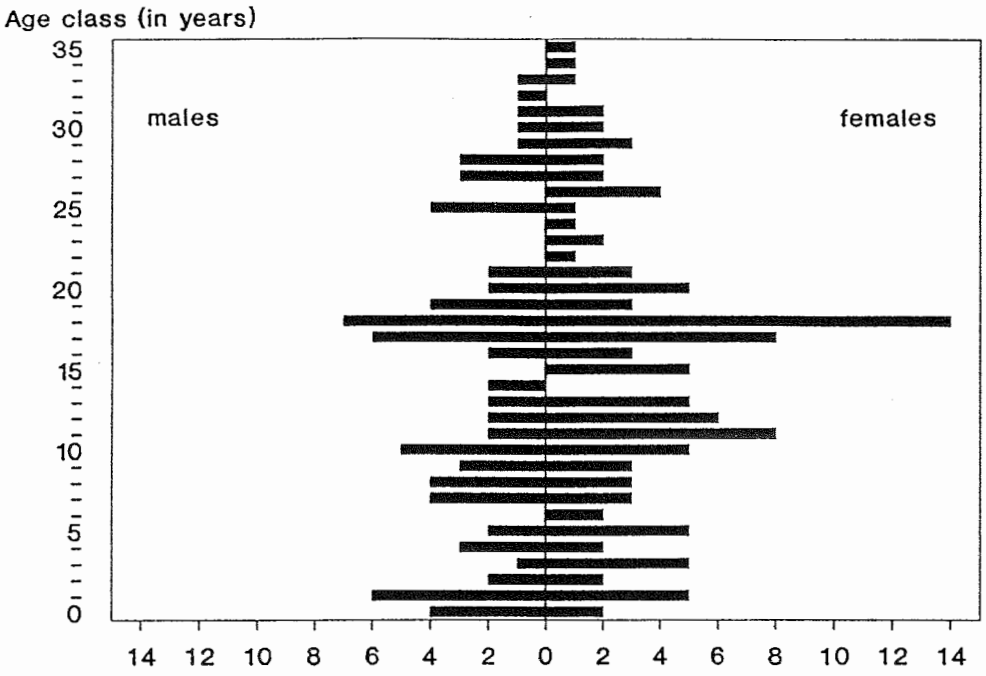
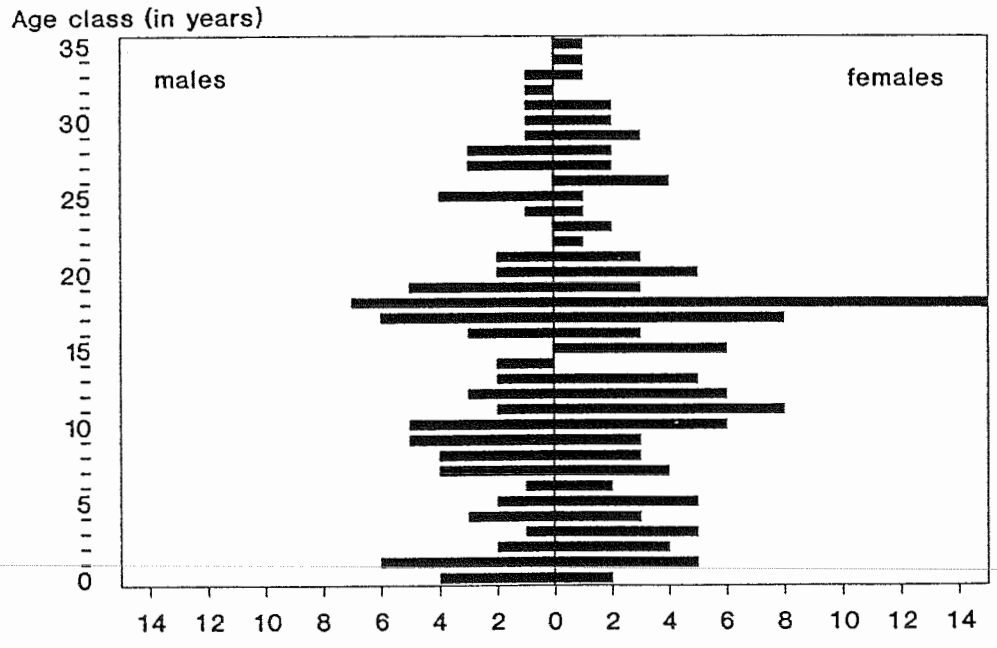


Table 2b: Age distribution of the Western lowland gorilla (*Gorilla gorilla gorilla*) in the entire European population as on 31 December 1990



Summary:

44 out of 46 zoos with gorillas and one research institute within the EEP-region participated in the gorilla-EEP at the end of 1990. This is one zoo more than in 1989. The participating zoos are situated in three geographic regions: Europe, Near East, Africa and they are located in 16 countries.

Contrary to 1989, in which year the EEP-population increased by 21 gorillas (12 surviving babies, two new registered wild born animals, nine gorillas from three zoos joining the EEP), an increase of two gorillas only took place in 1990 (see also Table 1):

31 December 1989: 198* (80.118 ; 111wb : 87cb)
31 December 1990: 200 (80.120 ; 107wb : 93cb)

+2 (+2f : -4wb : +6cb)

* In the EEP-report of 1988, erroneously 199 gorillas are mentioned (one captive-bred female too many).

This very small increase is *on one hand due* to the fact that six (4.2) surviving babies, two (1.1) juveniles on loan returning from Dublin to Amsterdam and two (1.1) adults added by a joining zoo (Berlin Tierpark) were counter-balanced by the death of 11 (7.4) gorillas (including two not surviving babies and one fetus removed by cesarean on behalf of a placenta previa). *On the other hand* it also has to do with the fact that mother-rearing increased over the last years (1986 4 out of 7; 1987 3 out of 6; 1988 2 out of 4; 1989 6 out of 12; in 1990 even all of the 6 surviving babies were mother-reared!). An increase in mother-rearing also lengthens the birth-intervals of the nursing mothers from 1 or 2 years (if the baby would have been hand-reared) to 3 or until even 5 years. This has to cause greater fluctuations in the number of births over the years as will be the case in species with shorter nursing periods. But nevertheless a greater increase in births will still be needed to secure a steady growth of the population. Even if there are still more wild-born gorillas in the population than captive bred ones, the difference is becoming smaller by the year: in the male population the turning point has already been reached.

As there are still some zoos with very small and/or non-breeding groups in the EEP, the committee and the coordinator recommended several changes by way of transfers (loans/exchanges) in 1989, of which some were already realized in the same year. Others took place in 1990:

- by transferring 1.1 infants and 1.1 juveniles to the Amsterdam Zoo an age-graded group of 3.3 could be established;
- by transferring an adult female from Frankfurt to Tel Aviv, a trio 1.2 could be formed;
- by bringing a young adult captive-bred female from Krefeld to Frankfurt, the "loss" of two captive-bred daughters on loan was partly compensated;
- the transfer of a young adult captive-bred Frankfurt male to Berlin Zoo allowed the socialization with a captive-bred female who could so be removed from the natal group where very probably her first child was sired by her own father (as the latter is also about 27 years old, the new male

is thought to become his successor too);
- some other transfers were from or to the nursery of the Stuttgart Zoo, meaning that babies were brought to be reared with conspecifics and late infants or juveniles left to be integrated in groups (f.i. Zurich, Amsterdam). The Stuttgart Zoo has opened its nursery to all EEP-zoos. This has been a tremendous help, as the skill of the staff in hand-rearing gorillas is outstanding. There were no losses during quite a number of years.

3. Recommendations for the next year(s)

Some of the transfer-recommendations have still to be honoured in 1991, f.i.:

- One young-adult male will be transferred from Stuttgart to Barcelona in early 1991 and another one from Barcelona to Kolmarden. Through these transfers 1.1 gorillas of the Barcelona breeding line will be provided with unrelated partners and the group in the Wuppertal Zoo will become more stabilized with only one adult male remaining.
- The female of the Rostock Zoo will be transferred to Hannover to give her a last breeding chance.
- It will be necessary to use the two females in the Soviet Union, whose males died in 1990 to establish a broader breeding basis in one or the other of the small 1.1 groups, foremost of all to finally find (after some unsuccessful tries) a solution to the very unsatisfying father-daughter-situation in the Rome Zoo.

The discussion of a new set of recommendations will take place at the next committee-meeting in May 1991.

In addition to table 2 a which shows the population-structure in the EEP, table 2 b shows the population-structure in the EEP-region. There are still three institutions which have not joined the EEP so far (see also table 1, bottom). They keep 7.7 gorillas, including two captive bred ones. Of special interest is the Primate Research Institute in Franceville in Gabon, which maintains a colony of 4.6 gorillas and has already established a breeding line. Further attempts will be made to get this centre to join the EEP.

The International Gorilla Studbook (which is kept by the EEP-coordinator) will be computerized at last in 1991 and therefore also the EEP-data, so that genetic analyses of the population can be carried out. The latter were not a pressing problem till now, but with the steady increase of the captive-bred population over the last years it slowly has become a necessity.

4. Problems

One main problem in this EEP lies in the individuality of the gorillas. They are not "cats and dogs", so to speak, but are animals with which no zoo parts easily, be it on account of the superintendance of zoos, on behalf of the visitors or with regard to the special relationship that exists between the gorillas and the zoo personnel. Another problem seems to be the difficulties related to paperwork and different veterinary laws when regarding shipment from one country to another. Some zoos are quite used to the exchange of

apes, but others are not and those are very shy of the possible risks involved. So it takes some time to arrange a transfer and very often a lot of more time to get it realized.

Bonobo (*Pan paniscus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Bruno Van Puijenbroeck
Royal Zoological Society of Antwerp
Koningin Astridplein 26
2018 Antwerpen
Belgium

Studbook keeper:
Bruno Van Puijenbroeck (International)

Species committee:
B. Van Puijenbroeck, Antwerp Zoo
P. Rahn, Berlin Zoo
R. Faust, Frankfurt Zoo
U. Ruempler, Cologne Zoo
I. Halle, Leipzig Zoo
M. Holtkötter, Wilhelma, Stuttgart
U. Schürer, Wuppertal Zoo

Committee meetings:
Meeting in Wuppertal, 27th November 1990

Studbook:
Most current version available in print: 31 December 1989. In preparation: 31 December 1990.

Also available:
- summary SSP/EEP masterplan workshop bonobo, Antwerp, December 1-2, 1989.
- report EEP workshop bonobo, Wuppertal, November 27, 1990.

Husbandry guidelines:
Official EEP-SSP husbandry protocols in preparation (follow-up masterplan).

Research:
- ethology: social structure, mother-infant behaviour, environmental enrichment
- demographics and population genetics

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

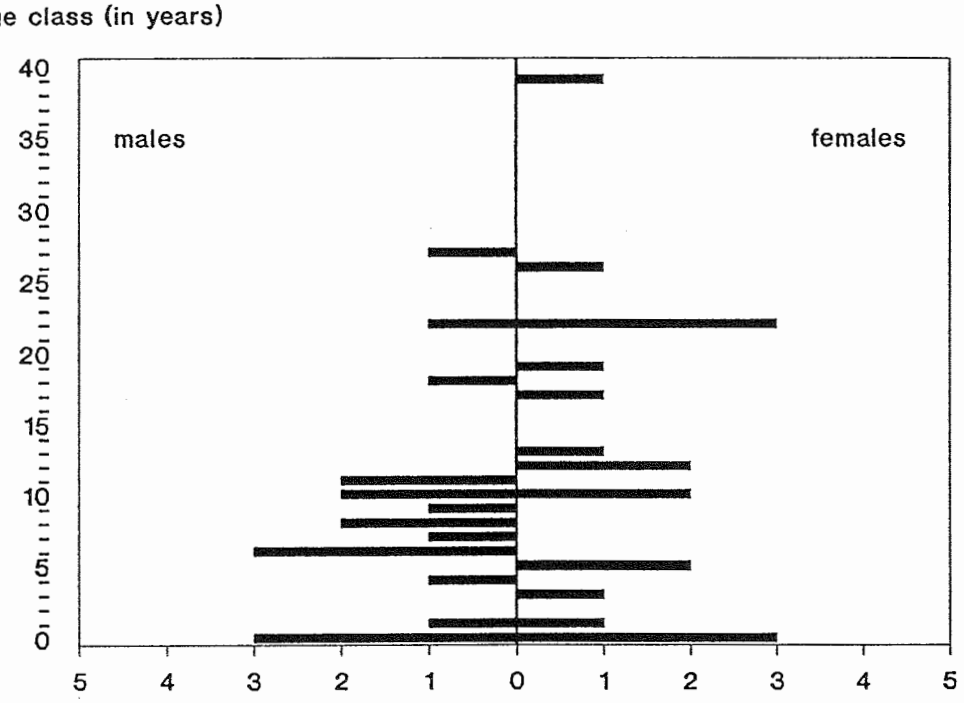
Age and sex distribution of the EEP population: see Table 2

Summary: see next page.

Table 1: Status and development of the Bonobo (*Pan paniscus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Antwerp/B	4.3	2.0	-	-	-	-	-	6.3
Berlin (Zoo)/G	1.1	-	-	-	-	-	-	1.1
Cologne/G	3.1	0.1	-	-	-	-	-	3.2
Frankfurt/G	3.5	0.2	-	-	-	-	-	3.7
Leipzig/G	3.0	-	-	-	-	-	-	3.0
Stuttgart/G	1.5	-	-	-	-	-	-	1.5
Wuppertal/G	3.2	1.0	-	-	-	-	-	4.2
Totals 7 participants	18.17	3.3	-	-	-	-	-	21.20

Table 2: Age distribution of the Bonobo (*Pan paniscus*) in the EEP as on 31 December 1990



In 1990, 3 male and 3 female bonobos were born within the EEP. All six survived their first months of life. Both Antwerp newborns are the first offspring of wild-born females, which raises the number of founders of the EEP population to 16. No deaths or transfers occurred in 1990. Twelve EEP bonobos are wildborn, all captive born animals are first or second generation zoo-born.

3. Recommendations for the next year(s)

* **Transfers:**

SSP-EEP exchanges:
- male Maiko (# 128, seven years old) and male Congo (#137, five years old) from Frankfurt to SSP.
- female Kuni (# 131, at the moment six years old) from Stuttgart to

SSP at the age of 7-8 years (1992-1993).
- a female from SSP to EEP (Connie-Lenore or another female, this will be discussed within the SSP).

Within EEP:
- female Dzeeta (# 67, 20 years old) from Antwerp to Leipzig, to provide male Kakowet (# 93, 11 years old and imported from the SSP) female company.

* **Enlarge/adapt holding facilities** to be able to bring every EEP male in a breeding situation (see Problems)

* Develop official **management and husbandry guidelines**

* Develop **EEP initiatives for the bonobo in Zaire**, including setting up a bonobo fund.

* **recruit bonobos in captivity outside in Zaire** to enlarge founder basis.

More details on above recommendations can be found in the "Report EEP workshop bonobo, Wuppertal 1990" and in "Summary SSP/EEP masterplan workshop bonobo, Antwerp 1989".

4. Problems

Main problem = avoiding "surplus" males
Most zoos prefer to keep a group consisting of one male and several females. However, equal numbers of males and females are born, and males are genetically as important as females. Long-time isolation of a male will lead to abnormal breeding behaviour. In the wild, bonobos live in small parties (on average six animals) within larger groups. There is frequent interaction between groups and between parties, and there are no surplus males! Zoos should adopt management plans that simulate this natural group composition as closely as possible and should allow frequent interaction between sub-groups. This way, it will be possible to use every male for breeding. This will require larger and flexible holding facilities, and more experience and knowledge on holding adult males together, on optimal group sizes and interactions between groups.

Orang utan (*Pongo pygmaeus* sspp.) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Dr. Clemens Becker
Zoo Karlsruhe
Ettlinger Straße 6
D-7500 Karlsruhe 1
Germany

Studbook keeper:
Dr. Clemens Becker (European)
Lorraine Perkins, Atlanta (International)

Species committee:
M.C.K. Bleijenberg, Rotterdam Zoo
D. Dekker, Amsterdam Zoo
M.C. Demontoy-Bomsel, Paris Zoo
R. Faust, Frankfurt Zoo
M. Holtkötter, Wilhelma, Stuttgart
T. de Jongh, Arnhem Zoo
J. Lilleör, Aalborg Zoo
W. Ludwig, Dresden Zoo
Ms. V. Meshik, Moskau Zoo
F. Ostenrath, Duisburg Zoo
B. Rau, Munich Zoo
D. Rüedi, Basel Zoo
Ch. R. Schmidt, Zürich Zoo
K. Tomasova, Dvur Kralove Zoo

Committee meetings:
First meeting to be held in Budapest May 1991

Studbook:
The European members of IUDZG approved an EEP for orang utans at the annual IUDZG conference held in San Antonio (TX, USA), 18 September 1989. The co-ordinator has kept a regional studbook for countries in Middle Europe since 1982. This was extended to Continental Europe in 1988 (last regional studbook: VIII/1989).

Husbandry guidelines:
Not yet available

Research:
Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1a, 1b and 1c

Age and sex distribution of the EEP population: see Table 2a, 2b and 2c

Table 1a: Status and development of the Bornean orang utan (*Pongo p. pygmaeus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Aalborg/DK	2.2	-	-	-	-	-	-	2.2
Amsterdam/NL	4.3	-	-	-	-	-	-	4.3
Antwerpen/B	1.2	-	-	-	-	-	-	1.2
Arnhem/NL	2.7	(1.0)	-	0.1	-	-	1.0	1.6
Barcelona/ES	0.1	-	-	-	1.0	-	-	1.1
Berlin (Zoo)/G	2.3	-	-	-	-	-	-	2.3
* Boras/S	-	-	0.1	-	1.0	-	-	1.1
Cologne/G	4.7	-	-	-	-	-	-	4.7
Duisburg/G	2.6	0.1	-	-	-	-	-	2.7
Dvur Kralove/CS	0.1	-	-	-	-	-	-	0.1
Frankfurt/G	1.2	-	-	-	-	-	-	1.2
Hannover/G	1.1	-	-	-	-	-	-	1.1
Krefeld/G	2.4	-	-	-	-	-	-	2.4
Les Mathes/F	0.1	-	-	-	-	-	-	0.1
(Madrid/ES	0.1	-	-	-	-	-	-	0.1)
Moskau/USSR	0.2	-	0.1	-	-	-	-	0.3
Münster/G	2.1	-	-	-	-	-	-	2.1
Neunkirchen/G	1.1	-	-	-	-	-	-	1.1
Osnabrück/G	0.1	-	-	-	-	-	-	0.1
Paris/F	1.2	-	-	-	-	0.1	-	1.1
Rhenen/NL	4.2	-	0.1	-	-	-	1.0	3.3
Rostock/G	0.1	-	-	-	-	-	-	0.1
Rotterdam/NL	5.3	-	-	-	-	-	1.0	4.3
Studen/CH	3.2	-	-	-	-	-	-	3.2
Tallin/USSR	0.1	-	-	0.1	-	-	-	-
Usti nad Labim/CS	1.1	-	-	-	-	-	-	1.1
Vienna/A	1.1	-	-	-	-	-	-	1.1
Wuppertal/G	1.1	-	-	-	-	-	-	1.1
Zürich/CH	0.1	-	-	0.1	-	-	-	-
Totals 26 participants	40.61	1.1 (1.0)	0.3	0.3	2.0	0.1	3.0	39.61

* New EEP participants
() No EEP participant

Bornean orang utan (*Pongo pygmaeus pygmaeus*)

Altogether 27 zoos in Continental Europe hold 100 Bornean orang utans (39.61). Only one zoo (Madrid) does not yet participate in the EEP, however it has shown interest in joining the EEP.

The age of 41 wildborn Bornean animals (17.24) varies between 3 and 41; only seven of these are less than 20 years old.
The 59 zooborn Bornean animals (22.37) are up to 21 years old; more than half of these are older than 8 years.

Table 1b: Status and development of the Sumatran orang utan (*Pongo pygmaeus abeli*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Basel/CH	1.2	1.0	-	-	-	-	-	2.2
Berlin (Tierpark)/G	2.4	-	-	-	-	-	1.0	1.4
Berlin (Zoo)/G	2.3	0.2	-	0.2	-	-	-	2.3
Budapest/H	1.1	(1.0)	-	-	-	-	-	1.1
Dortmund/G	2.1	-	-	-	-	-	-	2.1
Dresden/G	2.6	1.0	-	-	-	-	-	3.6
Duisburg/G	2.0	-	-	-	-	-	-	2.0
Dvur Kralove/CS	1.0	-	-	-	-	-	1.0	-
Frankfurt/G	2.1	-	-	-	-	-	-	2.1
Gävle/S	1.1	-	-	-	-	-	-	1.1
Hamburg/G	1.4	-	-	-	-	-	-	1.4
Hannover/G	0.1	-	-	-	-	-	-	0.1
Heidelberg/G	4.4	-	-	-	-	-	-	4.4
Kaliningrad/USSR	1.1	-	-	-	-	-	-	1.1
Le L. Bottereau/F	1.0	-	-	-	-	-	-	1.0
Leipzig/G	0.2	-	-	-	-	-	-	0.2
Moscow/USSR	1.1	-	0.1	-	-	-	-	1.2
Munich/G	2.5	0.1	-	-	-	-	-	2.6
Münster/G	1.1	-	-	-	-	-	-	1.1
Nuremberg/G	3.3	-	-	1.0	-	-	-	2.3
Ostrava/CS	1.0	-	-	-	-	-	-	1.0
Peaugres/F	1.1	-	-	-	-	-	-	1.1
Poznan/PL	1.1	-	-	-	-	-	-	1.1
Prague/CS	1.0	-	-	-	-	-	-	1.0
Rome/I	1.0	-		-	-	-	1.0	-
Rostock/G	-	-	0.2	-	-	-	-	0.2
Rotterdam/NL	0.1	-	-	-	-	-	-	0.1
Stuttgart/G	2.6	1.0	1.0	-	-	-	-	4.6
Tallin/SU	1.1	-	-	0.1	-	-	-	1.0
(Wroclaw/PL	1.0	-	-	-	-	-	-	1.0)
Zürich/CH	2.9	-	-	-	-	-	-	2.9
Totals 28 participants	41.60	4.3 (1.0)	1.3	1.3	-	-	3.0	41.63

* New EEP Participants
() no EEP Participant

Sumatran orang utan (*P. p. abeli*)

Altogether 29 zoos in Continental Europe hold 104 Sumatran orang utans (41.63). Only one zoo (Wroclaw) does not participate in the EEP.

The age of 20 wildborn Sumatran animals (8.12) varies between 23 and 50, i.e. for the first time there are no wildborn animals under the age of 20. Seventy-five percent of these animals are older than 30 years.The zooborn Sumatran animals (33.51) are up to 24 years old; 51 of these are older than 8 years.

Table 1c: Status and development of the Orang utan hybrids and unknown subspecies in the EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Barcelona/ES	1.1	-	-	-	-	-	-	1.1
Basel/CH	0.1	-	-	-	-	-	-	0.1
Berlin (Zoo)/G	1.1	-	-	-	-	-	-	1.1
Budapest/H	1.0	-	-	-	-	-	-	1.0
Dvur Kralove/CS	1.1	-	-	-	-	-	0.1	1.0
Hamburg/G	2.0	-	-	-	-	-	-	2.0
Hannover/G	2.2	-	-	-	-	-	-	2.2
Le L. Bottereau/F	0.1	0.1	-	-	-	-	-	0.2
(Leningrad/USSR	1.1	-	-	-	-	-	-	1.1)
Les Mathes/F	3.1	-	-	-	-	-	-	3.1
Lisbon/P	1.0	-	-	-	-	-	-	1.0
Moscow/USSR	2.0	-	1.0	-	-	-	-	3.0
Münster/G	1.0	-	-	-	-	-	-	1.0
Osnabrück/G	1.0	-	-	-	-	-	-	1.0
Prague/CS	1.0	-	-	-	-	-	-	1.0
Rome/I	1.2	-	-	-	-	-	-	1.2
Romaneche/F	1.2	(0.1)	-	-	-	-	0.1	1.1
Rostock/G	2.1	0.1	-	-	-	-	-	2.2
Rostow-on-Don/USSR	1.1	-	-	-	-	-	-	1.1
Tallin/USSR	1.0	-	-	1.0	-	-	-	-
Vienna/A	1.0	-	-	-	-	-	1.0	-
(Wingst/G	1.2	-	-	-	-	-	-	1.2)
(Wroclaw/PL	2.1	-	-	-	-	-	-	2.1)
Wuppertal/G	1.3	-	-	-	-	-	-	1.3
Totals 19 participants	29.21	0.3 (0.1)	1.0	1.0	-	-	1.2	28.21

() No EEP participant

Hybrids and unknown subspecies

Altogether 22 zoos still hold 49 hybrid orang utans or animals of unknown subspecies. Nineteen of these holders are participants in the EEP. Animals of unknown subspecies are held by four zoos participating in the EEP (1.0 in Budapest, 1.0 in Dvur Kralove, 1.0 in Moscow and 1.1 in Rostov-on-Don) and by one zoo not participating in the EEP (1.1 Leningrad). Thus 23.19 hybrids remain in Continental Europe.
The remaining 42 zooborn hybrids (23.19) are up to 29 years old; 29 of these animals are older than 8 years.

Table 2a: Age distribution of Bornean orang utan (*Pongo p. pygmaeus*) in the EEP as on 31 December 1990

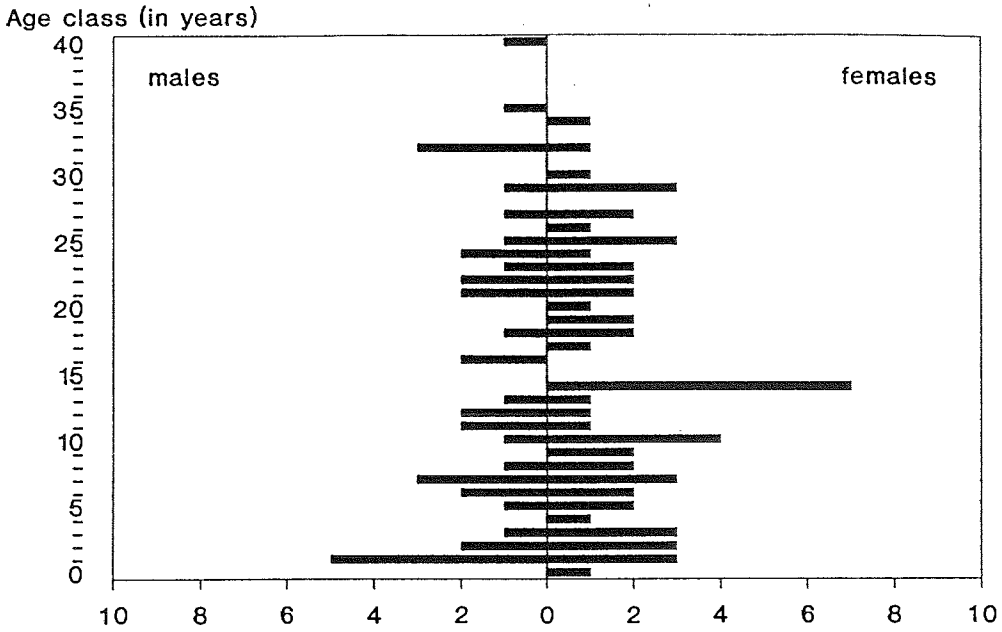


Table 2b: Age distribution of Sumatran orang utan (*Pongo pygmaeus abeli*) in the EEP as on 31 December 1990

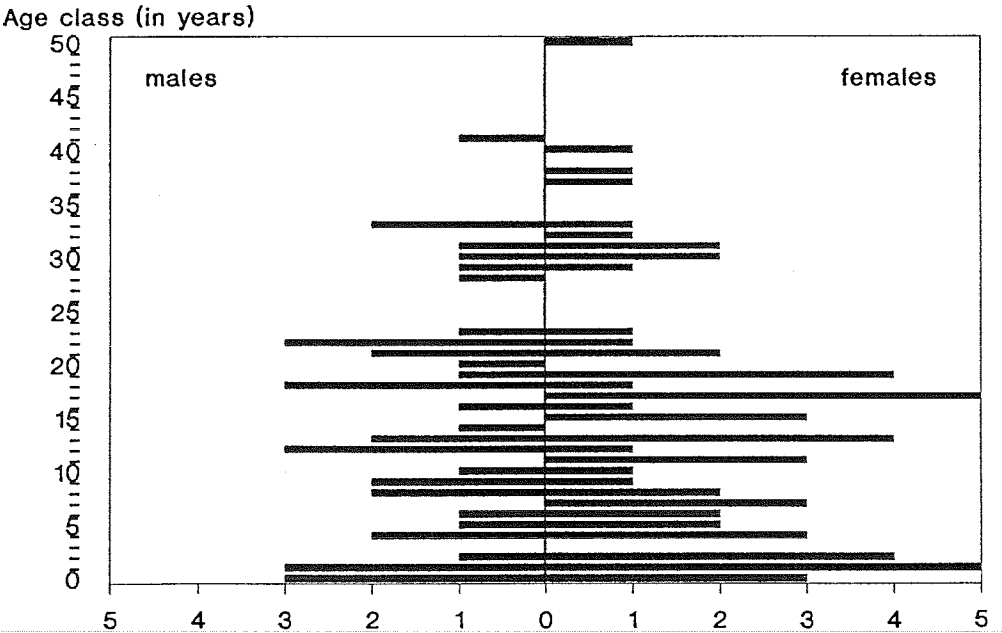
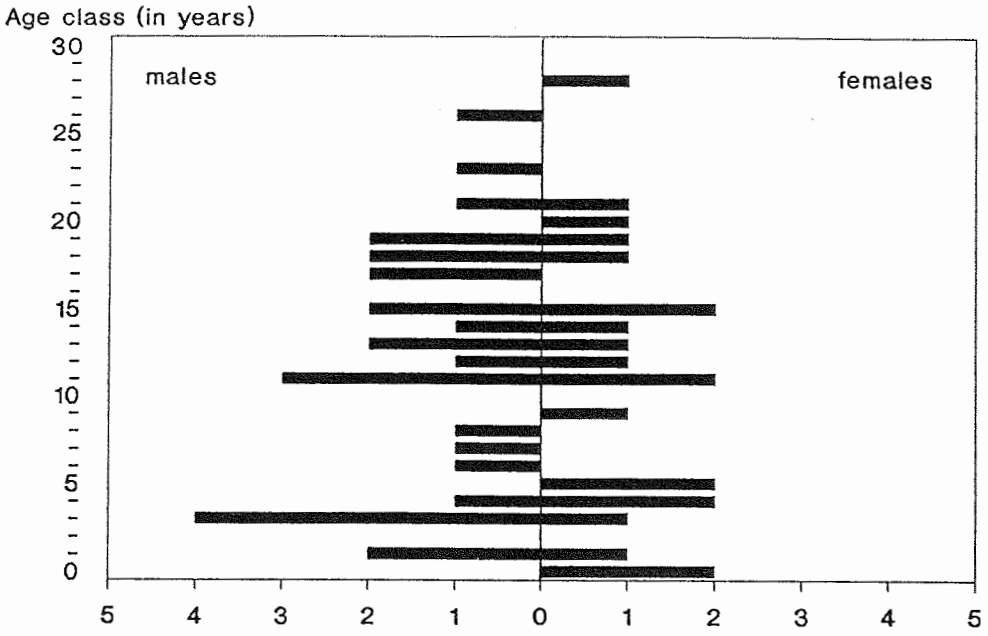


Table 2c: **Age distribution of orang utan hybrids and unknown subspecies in the EEP as on 31 December 1990**



Summary:

Orang utans are held in 54 zoological gardens in Continental Europe, of which 51 zoos are participants in EEP. These zoos can be classified into 7 regions:
region 1: France (5 zoos), Spain (1 zoo) Portugal (1 zoo)
region 2: Switzerland (3 zoos), Austria (1 zoo), Italy (1 zoo)
region 3: Germany (20 zoos)
region 4: The Netherlands (4 zoos), Belgium (1 zoo)
region 5: Denmark (1 zoo), Sweden (2 zoos)
region 6: Czechoslovakia (5 zoos), Poland (1 zoo), Hungary (1 zoo)
region 7: USSR including Baltic (4 zoos)

253 (108.145) orang utans were held in Continental Europe on 31 December 1990, of which only eight are not included in the EEP. More than 50% of these 245 EEP animals are held in region 3 (Germany) and altogether nearly 80% are in the regions 2, 3 and 4.

Eleven zoological gardens on the British Isles (regional studbook: Bristol Zoo) hold 54 orang utans (31 December 1990). Including these, there are 65 zoos in Europe holding 307 orang utans.

3. Recommendations for the next year(s)

In Continental Europe 100 Bornean orang utans and 104 Sumatran orang utans are held. For seven animals a determination of subspecies has not yet been made. The proportion of the hybrids (42 animals = 17 %) is very high, thus occupying to a great extent accommodation facilities that could be used for pure subspecies. The participants in EEP have to elaborate solutions as regards the way in which hybrids shall be treated in future.

For the exact identification of subspecies karyotyping has to be applied

to all animals of the wildborn population, at the latest to all animals of the F1 generation. If this genetic analysis is applied to later generations, it may lead to false results. Past experience has shown that the "eye ball method" used to determine the subspecies has failed in many cases and this may have serious consequences (hybrids).

It has to be considered if and in which way still living wildborn animals that do not yet breed can contribute to the founder population (participation in breeding).

Only the Bornean subspecies is represented by seven wildborn animals that are younger than 20 years, and in both subspecies wildborn animals will only be able to contribute to breeding for a few more years.

The "founder representation" will have to be determined regarding both subspecies as soon as the ZSM program will enable us to effect separate analyses for subspecies. The it will be possible to determine which founder animals are over-/underrepresented and what might be the consequence of such findings for long-range work.

It has to be considered if and in which way orang utans held in zoos on the British Isles might be included in the EEP with a view to enlarge the genetic/demographic basis. During the last years several animals could already be integrated into the EEP area based on recommendations of the JMSG and the Anthropoid Ape Advisory Panel.

4. Problems

In each case the EEP co-ordinator should be informed/asked in advance before animals are given away by a zoo. For most of the participants in the EEP this is a matter of routine, others, however, do not attach too much importance to this!

Such a consultation with the co-ordinator is especially important in those cases where it is intended to sell animals to institutions not participating in the EEP or even to dealers.

Only if the co-ordinator is aware of the "orang utan policy" of the different zoos and if he is informed in time about any intentions to give animals away, it will be possible to find solutions to give animals away, it will be possible to find solutions acceptable to all zoos involved and do a positive EEP work.

REPORT OF A
MEETING TO FORM AN EEP PRIMATE TAXON ADVISORY GROUP (TAG)
EEP CONFERENCE - EDINBURGH, U.K. - JULY 1992
WITH ADDITIONS FROM FURTHER MEETINGS AT
INTERNATIONAL PRIMATOLOGICAL CONGRESS - STRASBOURG - AUGUST 1992

Current EEP Primate TAG Leaders: *Miranda Stevenson (Edinburgh Zoo)*
Christian Schmidt (Zurich Zoo)

Miranda Stevenson introduced the concept by outlining the formation of the Primate TAG in the British Isles. This Group was co-chaired by Neil Bemment of Paignton Zoo and Jo Gipps of London Zoo.

Miranda stated that she was happy to help start up the TAG but hoped that someone else would co-chair it with Christian after one year as she felt she had too many other commitments. However, it may well be that the TAG would be subdivided into three or four TAGs has been the case in North America, e.g. Asian, African, and American Primates and Apes.

The important factor was to carry out as much preliminary work over the next 12 months and review the situation and progress in a year's time.

The first phase of the work was a comprehensive European Survey of primate species kept, where and their numbers.

Dr. Michael Schwebbe and Joachim Wilde had organized a census of primates in European collections which had been published in 1988 in The German Primate Center's "Primate Report". At a subsequent meeting in Strasbourg, Drs. Schwebbe and Wilde agreed to repeat the census for the TAG. An explanatory sheet would accompany the census form explaining the basis of the TAG and the need for the census and the use to which it would be put. M. Stevenson agreed to provide this sheet. The format of the previous census was considered adequate with the possible addition of a section on cage size and group composition.

The aim was to send out the questionnaire in October 1992 with a three month deadline for return. The German Primate Center were happy to handle the mailing but would need additional information on names and addresses to extend the survey to all zoos of interest.

Koen Brouwer of the Dutch Foundation for Research in Zoological gardens had carried out a Mangabey Survey in 1990 and this report is available.

There had been a survey of primates in Italian Zoos carried out and this report is also available.

Barcelona Zoo is to be asked if they would help out with Spanish institutions.

Budapest would be asked to assist with Hungarian collections.

Poznan would help with Poland.

A list of Czech collections is already available.

Klaus Pohle had a list of Soviet Zoos keeping primates. This list is somewhat out-of-date but is available. The new political situation of the old Soviet countries made checking more difficult. Moscow could be asked to check.

Pierre Gay of Doue la Fountane and Jean-Luc Berthier of Jardin des Plantes would work with Marc Boussekey of St Martin la Plaine to check the French Zoos and communicate directly with The German Primate Center.

In the long term, the quality of space must be considered along with the quantity.

The initial working group suggested to assist the chairs (Schwebbe and Wilde) was:

Werner Kaumanns	The German Primate Center
Neil Bemment	Paignton Zoo
Clemens Becker	Karlsruhe Zoo
Rosl Kirchshofer	Frankfurt Zoo
Bruno van Puijenbroeck	Antwerp Zoo
Stephen Standley	Cricket St Thomas
Pierre Gay	Doue la Fountane
Jean-Luc Berthier	Jardin des Plantes
Bengt Holst	Copenhagen Zoo

The EEP Executive Office would be in charge of all TAG surveys. Therefore, they must be kept informed of country collection lists and could also advise on questionnaire format.

A further meeting would be arranged once census returns had been received. Once the census was complete, a meeting would be held to further establish the workings of the EEP Primate TAG.

Miranda Stevenson
27 August 1992

PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 11

REGIONAL CAPTIVE CONSERVATION PROGRAMS/U.K. JMSG

AUG - 6 1992

THE WHITLEY WILDLIFE CONSERVATION TRUST
PAIGNTON ZOOLOGICAL & BOTANICAL GARDENS
Totnes Road Paignton Devon TQ4 7EU Telephone 0803 557479 Fax 0803 523457

29th July, 1992.

Mr Tom Foose
Executive Officer
CBSG
12101 Johnny Cake Ridge Road
Apple Valley
MN55124
U.S.A.

Dear Tom,

Enclosed are the proceedings of our most recent Primate Taxon Advisory Group meeting at which a more formal structure was agreed with subgroup leaders elected (coerced!) to take responsibility for maintaining overviews of the various primate groupings.

The reports refer closely to the CBSG Primate Captive Action Plan and hopefully regular communication between TAG chairmen in the different regions will ensure that duplication of our respective captive breeding efforts will be avoided as much as possible. I believe that if the 'smaller' regions like ourselves and Australasia are able to state what our carrying capacity is for the various primate taxa based on their accommodation requirements then it will give those collections in North America and continental Europe a clearer picture of what needs to be done in order to achieve population levels as recommended by the Mace/Lande criteria.

I hope you enjoyed the EEP meeting in Edinburgh.

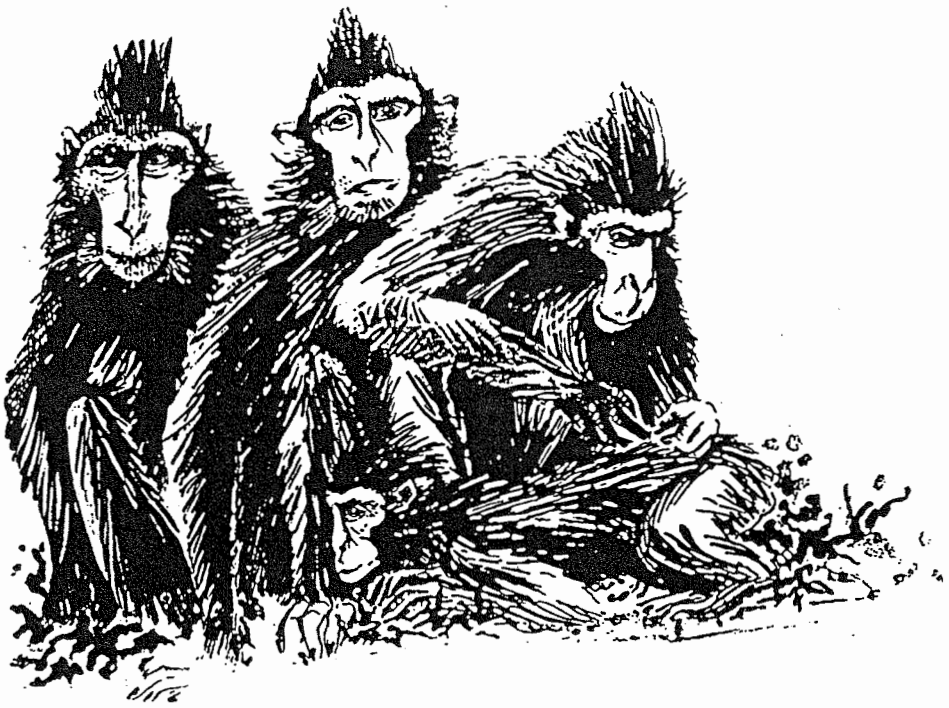
Yours sincerely,

Neil Bemment

Neil Bemment
Curator of Mammals
Co-chairman Primate TAG

PRIMATE TAXON ADVISORY GROUP

for the British Isles



Reports from the meeting held at Banham Zoo

on 26th & 27th March, 1992.

Joint Management of Species Committee

Compiled and edited

by

Neil Bemment

THE WHITLEY WILDLIFE CONSERVATION TRUST

PAIGNTON ZOOLOGICAL & BOTANICAL GARDENS

Totnes Road Paignton Devon TQ4 7EU Telephone 0803 557479 Fax 0803 523157

CONTENTS

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Front Cover Illustration by Sue Misselbrook

FEDERATION OF ZOOLOGICAL GARDENS OF GREAT BRITAIN AND IRELAND

PRIMATE TAG MEETING

held in Banham Zoo on 26th and 27th March 1992

Present:

Mr Chris Anscombe	Chessington Zoo
Mr David Armitage	Banham Zoo
Mr Philip Arnold	Penscynor Zoo
Mr Neil Bemment	Paignton Zoo
Ms Penny Boyd	Burstow Wldlife Sanctuary
Mr Mick Carmen	Regent's Park Zoo
Mr Bryan Carroll	Jersey WPT
Mr Graham Catlow	Edinburgh Zoo
Mr Rob Colley	Penscynor Zoo
Mr Mark Challis	Knowsley Safari Park
Ms Sarah Christie	Regent's Park Zoo
Mr Mike Clark	Regent's Park Zoo
Mr Nick Ellerton	Chester Zoo
Mr Colin Fountain	Cotswold's WLP
Dr Jo Gipps	Regent's Park Zoo
Mr Geoffrey Greed	Bristol Zoo
Mr Derek Grove	Dudley Zoo
Mr David Hughes	Glasgow Zoo
Mr Bill James	Regent's Zoo
Ms Hilary Keating	Bristol Zoo
Mr Sean McKeown	Fota WLP
Ms Julie Mansell	Belfast Zoo
Mr Stewert Muir	Shaldon Wildlife Trust
Dr Roy Powell	Paignton Zoo
Mr John Pullen	Regent's Park Zoo
Mr Stephen Standley	Cricket St. Thomas
Ms Arleen Reid	Glasgow Zoo
Dr Miranda Stevenson	Edinburgh Zoo
Mr John Stronge	Belfast Zoo
Mr Andrew Swales	Hamerton Wildlife Centre
Mr Ernie Thetford	Howlett's Zoo
Mr Simon Wakefield	Marwell Zoo
Mr Ian Williams	Chessington Zoo

M I N U T E S

Martin Goymour welcomed everyone to Banham Zoo, saying how happy they were to host this meeting, which would play an important part in the advancement of captive breeding programmes.

Reports of the previous meeting, held in Paignton Zoo in March 1991 had been circulated and were available at the meeting.

Miranda Stevenson provided an overview of the new structure of the Joint Management of Species Programmes in the U.K. All programmes now came under the auspices of the Federation of Zoos. A sub-committee of CAM had been formed. This was the Joint Management of Species Committee (JMSC), which was responsible for the running of the programmes. These were being re-organised under TAGs (Taxon Advisory Groups), and people were invited to petition for a TAG chair. TAG chairs would then be responsible for forming their advisory/working groups which would be composed of species co-ordinators and other experts. Future links between the JMSP and EEP programmes were described as were links between regional programmes and CBSG.

Documentation, explaining the new structure, and giving details of the terms of reference of JMS programmes, structure and organisation of TAGs, responsibilities of studbook keepers and co-ordinators were circulated.

Much would be resolved on the joint workings of U.K. and EEP TAGs before the Edinburgh EEP meeting in July 1992. This would be an important meeting as it would finally cement the links between the British Isles and Mainland Europe.

A discussion followed in order to resolve the operational structure of the Primate TAG.

The following was agreed:

The TAG would be co-chaired by Neil Bemment and Jo Gipps

The work would be divided in that Jo would take the major responsibility for Hominoidea and Neil for the remaining suborders.

It was agreed that the work of the TAG would be assisted by the formation of sub-groups. Sub-group leaders would be responsible for leading their groups in discussion which would follow the laid out working programmes of the TAG. They would also take minutes, and present reports on their group meetings to the TAG co-chairs. These subgroups would meet for discussions at each TAG with two or three meeting simultaneously. Reports would then be provided to the entire meeting so that comments and discussion could take place with the assembled session.

The following was agreed:

All Prosimians	Stephen Standley
Callitrichidae(+Callimico)	Bryan Carrroll
Cebidae	Roy Powell
African Cercopithecidae	Neil Bemment
Asian Cercopithecidae	Hilary Keating and Ernie Thetford
Hylobatidae	Sarah Christie
Pongidae	Jo Gipps

Sarah Christie agreed to take over the co-ordination of gibbons, Mollie Badham and Twycross Zoo would continue as studbook keepers with assistance from Sarah.

Neil Bemment and Roy Powell provided a recap of the results of their space survey conducted in 1991. This had been published in the Paignton proceedings. They had now received most of the updates for 1992 from this and were currently analysing these results.

One of the problems had been inconsistency in numbering/naming cages and collections were asked to be consistent in naming , identifying cages. There would be a decrease in space owing to the closure of Kilverstone and the reorganisation of primate space at London and Chester.

This was an evolving process and the method of analysis might need to be refined. It would be worth considering a method where those institutions that had facilities could enter data directly onto disc.

<u>The meeting was then organised into workshops as follows:</u>

A.Noon 27th.

Callitrichidae
Cebidae
African Cercopithecidae

Morning 28th.

Prosimians
Asian Cercopithecidae
Hylobatidae
Pongidae

Sub-group leaders provided reports to the assembled meeting at the end of each session. These reports are appended to the minutes.

It was agreed that sub-groups should consider the following aspects:

Overview the present species.
Conservation / husbandry research priorities.

Whether to increase or decrease current populations and the reasoning behind this. Problems hindering and solutions to aid in these aims.

Research needs as regards management programmes: taxonomic, behavioural, husbandry other management problems. Define and suggest future plans for action.

Future projection: species that should be brought into the region, individuals of species low in numbers that need to be brought into the region.

Liaison with other regions and their situation.

Areas in which more information is needed

Action recommended for next 12 months.

Summary reports from each sub-group are appended to these minutes.

INTRODUCTION

Each of the following subgroup leader reports has aimed to review the primate taxa currently maintained in British collections in conjunction with the CBSG Captive Primate Action Plan (September 1991). The Mace/Lande criteria for degree of threat in the wild and priorities for captive breeding are defined below and each taxa has been assigned a category.

CAPTIVE PRIORITY RECOMMENDATION			DEGREE OF THREAT IN WILD		
1	:	90% / 100 YEARS I	C	:	Critical
2	:	90% / 100 YEARS II	E	:	Endangered
3	:	NUCLEUS I	V	:	Vulnerable
4	:	NUCLEUS II	HA	:	High Anxiety
ELIM	:	Eliminate from captivity			

Definitions:

CRITICAL : 50% probability of extinction within 5 years or 2 generations (whichever is longer)

ENDANGERED : 20% probability of extinction within 20 years or 10 generations (whichever is longer)

VULNERABLE : 10% probability of extinction within 100 years

HIGH ANXIETY : Borderline vulnerability

1 : Population sufficient to preserve 90% of the average heterozygosity of the wild gene pool for 100 years to be developed within 1-5 years

2 : Population sufficient to preserve 90% of the avaerage heterozygosity of the wild gene pool for 100 years to be developed within 5-10 years

3 : A captive nucleus (50-100 individuals) to always represent 98% of the wild gene pool

4 : A well managed captive nucleus (25-100 individuals) for taxa not of conservation concern, but present in captivity or otherwise of interest

ELIM : Taxa not of conservation concern and which should be managed to extinction in captivity

PROSIMIANS

Stephen Standley

The prosimian species currently maintained in British collections were reviewed in conjunction with the CBSG Primate Action Plan.

Lorisids

Species presently maintained in the British Isles

V/3	Slender loris	Loris tardigradus
4	Slow loris	Nycticebus coucang
V/1	Pygmy slow loris	N. pygmaeus
	Thick-tailed bushbaby	Galago crassicaudatus
	Senegal bushbaby	G. senegalensis
4	Moholi's bushbaby	G. moholi

Currently there are three species of loris and bushbaby held in British collections and in view of the waning interest in nocturnal houses, it is recommended that efforts be concentrated on Nycticebus pygmaeus for which there is an ISB in preparation. G. moholi is not kept in sufficient numbers in this country to be viable. Jo Gipps confirmed that London would continue to maintain the regional lorisid studbook in view of the studbook keeper's absence abroad.

Lemurids

Species presently maintained in the British Isles

4	Fat-tailed dwarf lemur	Cheirogaleus medius
4	Lesser mouse lemur	Microcebus murinus
3	Coquerel's dwarf lemur	Mirza coquereli
E/2	Mongoose lemur	Lemur mongoz
V/2	Black lemur	L. macaco macaco
4	Brown lemur	L. fulvus fulvus
4	Red-fronted lemur	L. f. rufus
4	White-fronted lemur	L. f. albifrons
	Mayotte lemur	L. f. mayottensis
V/3	Sanford's lemur	L. f. sanfordi
V/3	Collared lemur	L. f. collaris
V/3	White-collared lemur	L. f. albocollaris
3	Ringtailed lemur	L. catta
C/1	Alaotra gentle lemur	Hapalemur griseus alaotrensis
E/2	Red & black ruffed lemur	Varecia variegata rubra
E/2	Black & white ruffed lemur	V. v. variegata
C/1	Aye-aye	Daubentonia madagascariensis

Mouse/dwarf lemurs

None of the three species of cheirogaleid listed above are of concern in terms of conservation status and are not recommended for intensive captive breeding programmes.

Mongoose lemur

Mike Clark (London) is due to publish the first ISB which is to include a paper on husbandry research carried out at Duke Primate Centre, where this species has been kept under a number of different regimens. Diets were also pinpointed as an area of concern for L. mongoz. Dudley, Jersey and Paignton have expressed an interest in maintaining a viable UK population.

Black lemur

A report on ongoing research on L. m. macaco in the wild by Josephine Andrews is eagerly awaited. London, Banham and Colchester have expressed an interest in this species.

Brown lemur spp.

In view of the suspected hybrid status of most of the UK population of L. f. albifrons and the dubious sub-specific status of L. f. mayottensis, a need for a review of karyotypic research on this species was highlighted.

Note: A paper from the International Journal of Primatology, Vol. 1, No 1, 1980 : 'Chromosomes of lemuriformes, V1 Comparative Karyology of Lemur fulvus: A G - Banded Karyotype of Lemur fulvus mayottensis' by A. E. Hamilton, I. Tatterall, R. Sussman & J. Beuttner-Janusch does not identify any karyotypic differences between L. f. fulvus, L. f. mayottensis, L. f. sanfordi, L. f. albifrons or L. f. rufus, but stated that there is distinct karyotypic heteromorphism between L. f. collaris and L. f. albocollaris. However, it was the opinion of the authors that suspecific status should be afforded to the above in view of their distribution and distinct pelage variation.

Ring-tailed lemur

Much of the preparatory work for a L. catta register was carried out by John Buchan prior to him going abroad and it is hoped that another keeper at London Zoo will complete the task.

Ruffed lemur

This species is coordinated through an EEP organised by Uta Reumpler-Hick at Cologne Zoo and it is recommended that all British collections participate in this programme. Mr Mallinson was to be asked if he would continue to act as the regional representative.

Other species

It was agreed that those non-threatened species currently maintained in small numbers should not be actively managed on a regional basis. However, should the aye-ayes and Alaotran gentle lemurs at JWPT prove to be prolific then other collections may be approached with a view to housing surplus individuals.

Below are some prosimian species listed in the CBSG Captive Priorities for African and Asian primates which are not maintained in British collections, but which could be considered in the future were suitable accommodation and sufficient founders to become available.

V/2	Zanzibar bushbaby	Galago zanzibaricus
V/3	Angwantibo	Arctocebus calabarensis
4	Potto	Perodicticus potto
E/2	Lesser spectral tarsier	Tarsius syrichta
E/2	Philippine tarsier	Tarsius pumilus

CALLITRICHIDS

Bryan Carroll

In this first meeting it was decided to:

1. Review the taxa currently managed under JMSC
2. Review the other callitrichid taxa held in the British Isles
3. Assess the other callitrichid species prioritised under the draft CBSG Captive Primate Action Plan

1. Species presently managed under JMSC or EEP programmes.

4	Pygmy marmosets	Cebuella pygmaea
4	Silvery marmoset	Callithrix argentata argentata
4		C. argentata melaneura
4	Geoffroy's marmoset	C. geoffroyi
E/1	Cotton-headed tamarin	Saguinus oedipus
4	Emperor tamarin	S. imperator subgriscescens
4		S. imperator imperator
	Lion tamarins:	
C/1	Golden	Leontopithecus rosalia
C/1	Golden-headed	L. chrysomelas
C/1	Golden-rumped	L. chrysopygus
E/1	Goeldi's monkey	Callimico goeldii

Pygmy marmoset

- Coordinator : Miranda Stevenson, Edinburgh

- John Stronge (Belfast) offered to act as studbook keeper once he has acquired SPARKS. Approved by coordinator.
- There is still the question of 2 sub-species, but the current EEP policy being to manage them separately for the time being.

Silvery marmoset

- Coordinator : Bryan Carroll, JWPT

- population has not been monitored thoroughly for about two years
- taxonomy confused and will remain so for some time
- C.a.m - only at Penscynor and some out on loan from Shaldon with some others in private hands
- C.a.a - approximately 40 in a few collections; very few founders
- significant genetic stock from Kilverstone sent to the US
- neither subspecies in trouble in the wild
- likely to remain a low priority for captive management in future although taxonomic revisions may alter this
- Shaldon Zoo volunteered to take over studbook.

Geoffroy's marmoset

- Coordinator : Bryan Carroll, JWPT

- UK pop = 27
- 10 valuable gene lines were lost to US from Kilverstone
- BC recommends continued British Isles management
- No one has done well with them (with possible exceptions of Philadelphia and Rio Primate Centre) mainly due to neonatal mortality.
- extensive private network in S America
- John Hop had some - unrelated to UK stock - Belfast acquired 2.2, but 0.2 died; BC to investigate origins of these animals and try to determine pedigree

Cotton-topped tamarin

- Coordinator : Rob Colley, Penscynor (also EEP coordinator)

- 370 in BI
- reduced no. of births
- SB data not yet complete for 1991
- contraceptive implantation recommended for some females to control population growth
- highly endangered species, probabaly more in captivity than in wild; serious need for continued management
- Australian and American populations also healthy and growing
- SB only lists zoo animals (not private)
- no problems with genetics - founder representatives etc; poss to identify rare geneline animals' many of these from Wellcome labs, probabaly not good breeding prospects
- need to identify which zoos/institutions will cooperate with JMSC with regards recommendations

Emperor Tamarins

- Coordinator : Rob Colley, Penscynor

- pop steady; no cage space problems
- RC to do a review of husbandry as stillbirths seem common

Lion Tamarins

- Coordinators :

<u>Leontopithecus rosalia</u>	Jo Gipps, London (also EEP coordinator)
<u>L. chrysomelas</u>	Jeremy Mallinson, JWPT (also ISB holder)
<u>L. chrysopygus</u>	Claudio Padua, Brazil (ISB holder)

- all three captive species are managed globally rather than regionally: GLT - Kleiman, Ballou, NZP,
  : GHLT - Mallinson Mace JErsey ZSL
  : BLT - Padua, Brazil

- general feeling that there was a need for faster response from the species coordinators, particularly with respect to placing surplus animals.

Goeldi's monkey

- Coordinator : Bryan Carroll, JWPT

- for the purpose of the Primate TAG the Goeldi's monkey is to be included in the Callitrichidae.
- regional pop 124 in 19 institutions, but updates from a few zoos still awaited;
- not all holders are part of the JMSC programme and some moves still take place without approval of BC
- Belfast have 5 surplus females; BC looking for space for these and others.

2. Species presently in BI collections, but not presently in JMSC or EEP programmes

4	Common marmoset	Callithrix jacchus
	Tassle-eared marmoset	C. humeralifer
4	Black tufted-eared marmoset	C. pencillata
4	Saddleback tamarin group)	Saguinus fuscicollis
4	)	S. weddelli
4	)	S. illigeri
4	Geoffroy's tamarin	S. geoffroyi
4	Red-bellied tamarin	S. labiatus
4	Red-handed tamarin	S. midas midas
	Black-handed tamarin	S. midas niger
E/2	Pied tamarin	S. bicolor bicolor
4	Moustached tamarin	S. mystax

Common Marmoset

- natural range is decreasing, but doing well in areas where introduced
- many in private hands and in labs, as well as in zoos
- do warrant management

Tassle-eared marmoset

- used to be held at Kilverstone - S Holmes Simth to be contacted as to whether or not all were sent to Lubee foundation
- chrysoleuca is only subspecies considered a conservation priority

Black tufted-eared marmoset

- common in wild > 100K
- do not do well in captivity; poor breeding record
- not a captive breeding priority

Saddle back tamarin group

- many similar subspecies (fuscicollis/weddelli/illigeri etc)
- no conservation problems for any of the subspecies as far as it is known
- not a captive breeding priority

Geoffroy's tamarin

- small founder base
- not endangered in wild
- no management plan

Red-bellied tamarin

- held in several laboratories plus some zoos; Hamerton have large group
- two subspecies, but not differentiated in UK zoos; probably all nominate subspecies
- not endangered in wild
- no action required

Red-handed/black-handed tamarins

- both subspp common in wild
- no management required at present

Moustached tamarins

- a few specimens had been kept at Kilvertsone; believed to have left the country

Pied Tamarin

- Saguinus b.bicolor endangered in wild (E/2); found only within 40km of Manaus
- 3.3 at Jersey (only ones in British Isles), only other captive colonies at Blefeld, CPRJ
- in need of close management; more individuals required
- in need of coordination plus investigation of further imports

3. Species listed in the CBSG Primate Action Plan as endangered or threatened which should ultimately be considered for captive breeding if animals become available.

E/2	Buffy tufted-eared mamoset	Callithrix aurita aurita
C/1	Buffy-headed marmoset	C. flaviceps
4	Kuhl's tufted-eared marmoset	C. kuhli
V/4	Tassle-eared marmoset	C. humeralifer chrysoleuca
E/2	White-footed tamarin	Saguinus leucopus
C/1	Black-faced lion tamarin	Leontopithecus caissara

Recommendations

1. All callitrichids in managed programmes to be tattooed and/or implanted with UKID microchips.

2. Where species/subspecies are identified for further action it is important that one individual be delegated by the Subgroup e.g. investigating possible imports, initiate husbandry surveys; TAG chairman to be kept informed of development e.g. proposed studbooks, nominated species coordinators etc.

CEBIDS

Roy Powell

The cebid species presently held in British collections were reviewed in conjunction with the CBSG Primate Action Plan using the Mace/Lande criteria for degree of threat in the wild and priority for captive breeding programmes.

I - Identification is unconfirmed
* - Insufficient numbers in this region
H - Hybridisation present in some individuals
ELIM - Eliminate from captivity eventually

The cebid species currently managed in British collections:

4	- - -	Douroucouli *Aotus trivirgatus*
4	- - -	Pale headed Saki *Pithecia pithecia*
	- - -	White-fronted capuchin *Cebus albifrons*
ELIM	- - -	White throated capuchin *Cebus capucinus*
E/2	I * H	Nicaraguan spider monkey *Ateles geoffroyi geoffroyi*
	I * -	Hooded spider monkey *Ateles geoffroyi griscescens*
	I * -	Yucatan spider monkey *Ateles geoffroyi yucatanensis*
V/3	I * -	Ornate spider monkey *Ateles geoffroyi ornatus*
V/3	- * H	White bellied spider monkey *Ateles belzebuth belzebuth*
E/2	- * -	Marimonda *Ateles belzebuth hybridus*
E/2	- - H	Colombian Black spider monkey *Ateles fusciceps robustus*
V/4	- - -	Red-faced Black spider monkey *Ateles paniscus paniscus*
V/4	- - H	Black-faced black spider monkey *Ateles paniscus chamek*

Cebids held in British collections but not regionally coordinated at present:

	- - H	Squirrel monkey *Saimiri sciureus*
4	- - -	Black-capped squirrel monkey *Saimiri sciureus boliviensis*
4	- * -	Red uakari *Cacajao calvus rubicundus*

4	- - -	Black howler monkey Alouatta caraya
4	- * -	Red howler monkey Alouatta seniculus sara
ELIM	- - -	Brown capuchin Cebus apella
	I - -	Weeper capuchin Cebus nigrivittatus
V/3	- - -	Woolly monkey Lagothrix lagothrica

Douroucouli

John Pullen at London Zoo now holds the studbook and Jo Gipps is the coordinator. There are two karyotypes among the 17.8.1 animals in the region: 4.2 are K2 and 9.5.1 are K5. A further 4.1 have not been karyotyped. The majority in mainland Europe are K2. It was found that 2.2.1 K5 animals at Ravensden had been bought from a Federation Zoo. The working party recommends that no animals should be sold until the species coordinator has been consulted first. If not already sold, Ravensden's K5 animals should go to Penscynor whose 3.1 K2s should go to Europe (Emmen). Penny Boyd has most of the Douroucouli accommodation in the region. The holding capacity needs to be assessed and the K5 population should be managed in this region.

Action: John Pullen/Jo Gipps to find out what has happened to the animals at Ravensden, to arrange for an exchange of K2 for K5 animals and assess the holding capacity within the UK.

Small Cebids

Dusky Titis and Black Sakis have left the region. Sarah Christie holds the studbook for Pale-headed Saki and has produced a coordinator's report. To summarise: all moves are arranged and nothing is competing for cage space. There is a problem with low fecundity and survivorship in offspring of captive-bred parents.

Squirrel monkeys require someone to keep a register, but subspecific hybridisation is a problem. The group felt that they still had educational value as an exhibit. This is possibly another candidate for a karyotyping project, especially as Saimiri sciureus sciureus and Saimiri sciureus boliviensis are both recommended by CBSG as Nucleus II.

Large Cebids

Two of the species held are recommended for elimination from captive breeding by CBSG. These are the Brown Capuchin and the White throated capuchin which should be managed to extinction in captivity. David Hughes keeps a register for the latter (see coordinator's report).

Species in need of coordinators are Weeper capuchins and Woolly monkeys. The former are now held in 4 collections and are in a good position for a managed Programme. However, subspecies identification is under review. Woolly monkeys also need subspecific identification. Four subspecies have Mace/Lande threat categories and are recommended for captive breeding.

Spider monkeys: Roy Powell has produced a coordinator's report. To summarise, the most numerous spider monkeys in the region are blacks and particularly Colombian Blacks. Many of these have now been karyotyped and are chromosomally distinct from the other blacks with which they are often confused. In the long term, this region is in a better position to manage black spider monkeys and the two subspecies of A. belzebuth.

There are insufficient Ateles geoffroyi in the region for captive programs now and although only a small number have been examined, they are proving the most difficult to identify even from karyotypes. Some A. geoffroyi/A. belzebuth hybrids exist. More karyotyping is needed, however, so that differences can be found. Collections are strongly urged to send in blood samples whenever possible. Whilst Roy Powell's research group are concentrating on blacks, more work on the karyotypes of Ateles geoffroyi is going on in North America (by Anne Baker and Robert Lacy at Chicago Zoo) where they are the predominant species of spider monkey in captivity.

General comments

All primates should be microtagged to help trace those being traded.

It was felt by the group that private collections wishing to join should be open to inspection (by the coordinator?). Penny Boyd agreed to liaise between the private keepers of primates and the zoo Federation.

Action: Penny Boyd

Species to consider for captive Programmes:

M/L	ON ISIS	
4	21	Douroucouli Aotus vociferans
4	34	Reed Titi Callicebus donacophilus donacophilus
4	6	Red Uakari Cacajao calvus rubicundus
1	20	Black Saki Chiropotes satanus satanus
C/1	?	Buffy-headed capuchin Cebus apella xanthosternos
1	2	Tufted capuchin Cebus apella robustus

The Buffy-Headed capuchin Cebus apella xanthosternos is managed by Mulhouse as part of an EEP, and Chester zoo has expressed an interest in supporting this programme.

AFRICAN CERCOPITHECIDS

Neil Bemment

The African cercopithecids presently held in British collections (see below) were reviewed in conjunction with the CBSG Captive Primate Action Plan.

HA/1	Allen's swamp monkey	Allenopithecus nigroviridus
4	Black mangabey	Cercocebus aterrimus
4	Sooty mangabey	C. atys atys
4	Grass monkey	Cercopithecus aethiops
4	Schmidt's monkey	C. ascanius schmidti
4	Redtail monkey	C. a. whitesidei
V/1	Diana monkey	C. diana diana
V/2	Hamlyn's owl-faced monkey	C. hamlyni
V/2	L'Hoest's monkey	C. lhoesti
4	Syke's monkey	C. mitis albogularis
4	Diademed monkey	C. m. monoides
4	De Brazza's monkey	C. neglectus
V/3	Black & white colobus monkey	Colobus p. polykomos
V/1	Guereza colobus monkeys	C. guereza caudatus
3		C. g. dodingae
4		C. g. kikuyuensis
3		C. g. occidentalis
4	Patas monkey	Erythrocebus patas
V/1	Barbary macaque	Macaca sylvanus
V/1	Mandrill	Mandrillus sphinx
4	Talapoin monkey	Miopithecus talapoin
4	Hamadryas baboon	Papio hamadryas
4	Olive baboon	Papio cynocephalus

Guenons

At the moment none of the four threatened species of forest guenon held in British collections have viable populations and there are problems with their breeding to second generation. Cercopithecus neglectus is the only one for which there are large enough numbers to enable trial changes in husbandry protocol and as such it was recommended that this species continue to be maintained with this in mind.

Similarly, it was agreed that although the subspecies of talapoin presently kept is not threatened, its taxonomic uniqueness warrents that it be maintained unless it can be replaced by the more endangered form. Chester Zoo were to be approached with regards to co-ordinating this species.

It was to be recommended that EEP's be formed for C. hamlyni, C. lhoesti and A. nigroviridus and that regional studbooks be set up for each. In view of the numbers involved it should be possible for them to be managed by one studbook keeper/species co-ordinator; potential candidates were to be approached.

It was agreed that all other non-endangered guenons be phased out in the long term.

Colobus Monkeys

Of the African colobines only Colobus guereza caudatus is listed as in urgent need of captive breeding, but unless sufficient numbers are located and managed as one population in captivity, or additional wild caught animals are acquired, it would appear that Colobus guereza kikuyuensis is the only sub-species held in viable numbers in the British Isles. C. g. dodingae and C.g. occidentalis are neither listed as endangered or represented in large enough numbers, and therefore should be phased out eventually.

Mangabeys

It was agreed that the black mangabey be phased out and although the torquatus group generally is listed as endangered, the sooty mangabey Cercocebus atys atys is not in imminent danger. It was recommended that the latter be maintained at present levels for the time being and as Penscynor is the only collection holding this species, Phil Arnold agreed to monitor the situation.

Baboons

The mandrill is the only threatened baboon held in British collections and the hamadryas and savannah baboons are in numbers above that recommended for Nucleus II level. It was noted that space currently used by the latter two species could be reallocated to either a Mandrillus sp. (or Macaca nigra - see Asian Cercopithecid report) in the future.

Macaques

The only 'African' macaque is Macaca sylvanus (Barbary macaque) and as there are secure groups being maintained outside of Gibraltar it was agreed that this species be managed at Nucleus II levels in British collection s for the foreseeable future.

Research Needs

It was recommended that a standardised observational check sheet for recording social interactions be devised which would be required for any proposed behavioural studies on guenons. This could have broader applications within the Primate TAG and therefore could be an appropriate task for the Scientific Committee.

Below is a list of some threatened species of African cercopithecid not maintained in British collections which could be considered for captive breeding programmes in the future should sufficient numbers of founders be available worldwide.

C/1	Sclater's guenon	Cercopithecus sclateri
C/1	White-throated guenon	C. erythrogaster
C/2	Sun-tailed guenon	C. solatus
E/2	Roloway monkey	C. diana roloway
V/2	Red-capped managabey	Cercocebus torquatus
E/1	Drill	Mandrillus leucophaeus
V/3	Temmink's red colobus	Procolobus badius temminekii
HA/1	Gelada	Theropithecus gelada

ASIAN CERCOPITHECIDS

Hilary Keating/Ernie Thetford

The Asian cercopithecids fall into two main groups namely the macaques (subfamily: cercopithecinae) and the langurs (subfamily: colobinae). Some discrepencies in taxonomic nomenclature were noted between the CBSG species list and that of the British Federation of Zoos and where appropriate the former has been adopted.

The species presently held in British collections were reviewed in conjunction with the CBSG listings of Threatened Asian Primates and their respective Captive Priority ratings according to the Mace/Lande criteria.

Macaques

	Stump-tailed	Macaca arctoides
	Crab-eating	M. fascicularis
	Pig-tailed	M. nemestrina
E/1	Sulawesi crested	M. nigra
E/1	Lion-tailed	M. silenus
	Toque	M. sinica
C/1	Mentawai Island	M. pagensis (one individual)

Of the seven species of Asian macaque listed above three are listed as in the CBSG "Captive Priorities for Asian Primates".

In view of the captive status worldwide of lion-tailed macaques it would appear that there is no immediate need for further space to be made available. Those animals presently held in British collections are soon to be integrated into a EEP.

It was agreed that as there is limited captive space devoted to macaques in British zoos, as and when suitable accommodation becomes available, it should be used for the maintenance of M. nigra, and preferably in large groups. There is no EEP for this species and further data is required on its global captive status before an appropriate 'ceiling' for the population can be set in order to ensure "90% / 100 years I".

It was agreed that all species presently held in the U.K. and Ireland other than M. nigra and M. silenus should be gradually phased out and that no new species should be considered for the time being. The Moor macaque M. maura is listed as "90% / 100 years II" and as such, ensuring its security in captivity is of less immediate concern. Should those safari parks presently holding troops of unendangered Papio or Macaca spp. decide to exhibit a more threatened species, a significant boost would be given towards the captive effort of that species.

Langurs

	Entellus	Semnopithecus entellus thersites
	Silvered	Trachypithecus cristatus
V/4	Black	T. auratus auratus
	Spectacled	T. obscurus
	Phayre's	T. phayrei
	Banded	Presbytis melalophos
(V/1)	Maroon	P. rubicunda
V/1	Douc	Pygathrix nemaeus

Of the eight species of langur listed above only Pygathrix nemaeus and a subspecies of Presbytis rubicunda (P.r.carimatae) are listed by CBSG as in need of captive breeding programmes; both a held by Howletts, the latter being a single male of unknown subspecies.

The Javan brown langurs held at Howletts are a localised colour morph of one of the three subspecies of black langur and as such their true origin is known. The animals held at Bristol, Colchester and Twycross zoos are of the black form.

It was agreed that only the entellus and black langurs could possibly be considered viable in the British Isles and although neither are endangered it was felt that both should be regarded as good 'learning practice' in preparation for more threatened species should there be a surplus in other regions or they be brought into captivity in the future. Even the maintenance of batchelor groups of a non-endangered species was considered to be worthwhile experience for a collection unfamiliar with langurs.

Two 'studbooks' were to be initiated embracing the demography of the existing populations of S. entellus and T. a. auratus. Mick Carman (London) agreed to research the former, Ernie Thetford (Howletts) that of the 'Javan brown' and Hilary Keating/Geoffrey Greed (Bristol) that of the black langurs held at Bristol, Colchester and Twycross zoos. It was recommended that karyotyping analyses be carried out to ascertain whether or not individuals from one or more of these groups could be mixed in future without producing subspecific hybrids. Blood samples would be required as part of the latter's investigations, but neither Mr Thetford or Mr Greed saw this as a problem with animals at their respective collections. Mr Thetford also agreed to look into the availability of T. a. auratus in other regions, particularly continental Europe where it is known to be held in four collections.

It was agreed that 'space' presently holding other non-endangered species of Asian colobine should gradually be re-allocated to one of these two species when required, and in the longer term to one of the more threatened species providing it is part of a co-ordinated breeding programme.

Below are some threatened species of Asian cercopithecid not maintained in British collections which could be considered for captive breeding programmes in the future should sufficient numbers of founders be available worldwide.

C/1	Entellus langur	)	Semnopithecus entellus aeneas
		)	S. e. iulus
		)	S. e. dusumerei
		)	S. e. elissa
C/1	Javan langur	)	Presbytis comata spp.
		)	Presbytis femoralis spp.
C/1	Francoise's langur		Trachypithecus francoisi spp.
C/1	Snub-nosed langur		Rhinopithecus spp.
3	Proboscis monkey		Nasalis larvatus

ANTHROPOIDS

Jo Gipps & Sarah Christie

Unlike the other sub-groups at the meeting, individual species management concerns were not discussed since the studbook keepers and coordinators for gorillas, chimpanzees and gibbons were absent. Geoffrey Greed presented the orang utan studbook to the assembled meeting but made no management recommendations at this time.

The meeting concentrated on the protocol for future management of anthropoid apes in the UK. As with the other species discussed by other sub-groups, it was generally agreed that the UK management arrangements should be subsumed into the corresponding EEPs. That said, it was also agreed that there was a requirement for management within the UK population. Last year as a result of discussion at the meeting of the Anthropoid Ape Advisory Panel it was decided to institute a protocol for electing species management committees from amongst the holders of each of the ape species. Jo Gipps was given the task of initiating this and got as far as inviting nominees from all collections holding apes. This process was then put on hold as the result of the initiative to create the Primate TAG and to incorporate all joint management initiatives under the JMSC of the Federation.

There was general agreement at the meeting, with some dissent, that the anthropoid apes presented a particular problem of management and that whereas many other primates could be successfully managed by a single coordinator and studbook keeper, in the case of the apes this has not proved to be particularly successful in the past.

The situation of each of the four apes is slightly different.

a) Gibbons Sarah Christie was invited to undertake the sub-group coordination for gibbons and she and Linda DaVolls, who was instrumental in helping with the studbook previously, have since the meeting visited Molly at Twycross to discuss studbook preparation and coordination matters. It is intended to hold species management committee elections for the gibbons.

b) Chimpanzees Molly Badham is coordinator and studbook keeper and will receive help from Sarah Christie at London with the latter. **[Jo to contact Molly to discuss options.]**

c) Orang utans Geoffrey Greed is the species coordinator and Hilary Keating has prepared the studbook. Geoffrey indicated at the Banham meeting that whilst he did not at this time want to elect a management committee he would be very happy to receive help and advice with the management task; he mentioned the names of Jo Gipps and Neil Bemment. **[Jo to call Geoffrey and discuss further.]**

d) Gorillas Jeremy Mallinson is the coordinator and the studbook is also looked after at Jersey. **[Jo to contact Jeremy to seek his views and discuss options.]**

Notes arising from a meeting of the Anthropoid Ape Advisory Panel Scientific Committee, held on 17.1.92, are attached for the consultation of members of the Primate TAG. It was agreed at the meeting that this Scientific Committee should now expand its remit to include all primates.

General Recommendations

1. It was agreed that the regional populations of those species with captive priority ratings of 1 and 2 should ideally be increased while those in 3 and 4 should be gradually reduced to numbers reflecting Nucleus I and II levels respectively as and when appropriate captive space is required by the more endangered species. The exceptions to this were threefold :

   (i) Those taxa from which valuable lessons could be learned as to unresolved husbandry problems associated with more threatened conspecifics.

   (ii) Those 'Critical' and 'Endangered' taxa for which the probability of acquiring further specimens (with a view to setting up viable captive populations) is remote and therefore resources could be better utilised for other species.

   (iii) Those taxa in categories 1 or 2 for which there are already secure captive populations and therefore no immediate need for additional captive space to be made available.

2. No new species is to be brought into the U.K. or Ireland unless it fulfills the following criteria:

   (i) It has been recommended for captive breeding by CBSG.

   (ii) It has been confirmed that there is a sufficient number of individuals held in collections worldwide (but preferably within the region) for it to form a viable captive population.

3. No primate should be sent out the British Isles by collections participating in the TAG without having ascertained whether or not it is required within the region. This particularly applies to those species which are presently part of coordinated breeding programmes, the exceptions being those transfers recommended by an EEP coordinator.

4. All confirmed hybrids (which would not otherwise occur in the wild) should be placed in non-breeding situations or sterilised if the former is not practical.

5. It was agreed that all studbook species should be permanently marked either by means of tattooing or microchip transponders especially where there is a danger of confusion between individuals or if an animal is being exported from the region.

Some of the above recommendations reiterate the findings of the 1991 Co-ordinated Breeding of Captive Primates meeting held at Paignton Zoological & Botanical Gardens. They are still valid and need to be acted upon as part of an ongoing process.

ANTHROPOID APE ADVISORY PANEL SCIENTIFIC COMMITTEE

A meeting was held on 17 January 1992 at the Zoological Society of the Scientific Committee of the AAAP and this report attempts to summarize what was discussed. These are not minutes of the meeting.

The following were present: Jo Gipps (Chair), Richard Johnstone-Scott, James Kirkwood, Georgina Mace, Helen Stanley, David Whitehouse.

1. The future of AAAP and the role of the Scientific Committee.

It was acknowledged that AAAP will in future become part of the Federation Joint Management of Species initiative as generally agreed at the last full meeting of AAAP. During the course of the meeting Jo Gipps phoned Roger Wheater in Edinburgh and the committee agreed that should, as seems likely, AAAP continue as an Ape Taxon Advisory Group (TAG), then there was consequently a useful role to be played by an Ape Scientific Advisory Committee in the future. It was generally agreed that it was sufficient for such a committee to meet no more than once a year, perhaps a month or two in advance of the Ape TAG meeting. It was noted that a Primate TAG meeting was scheduled for Banham in March but it was generally felt that it was necessary to have a separate Ape TAG meeting. It is probably too late to schedule a second day of meeting at Banham but in future it was felt that a two day meeting, one of the Primate TAG followed by one of the Ape TAG, would be efficient since it would attract many of the same people. The committee also felt that it was clearly too late to hold the traditional full AAAP meeting this February and that this should therefore be rescheduled as a meeting of the Ape TAG in perhaps April or May. This report of the Scientific Committee meeting is therefore intended for circulation at that rescheduled Ape TAG meeting in the Spring.

There was also discussion of the role of Species Management Committees for each of the ape species - see discussion of studbooks below.

2. Genetic fingerprinting

Helen Stanley presented a report to the committee summarizing the previous year which included one request to resolve a paternity question in the Chimpanzees at Belfast. This is currently being analysed using multilocus DNA fingerprinting (which detects minisatellites) and other hypervariable probes. Helen described the use of microsatellites which are polymorphic loci, found in most species and which can be readily analysed by PCR, allowing non-invasive sampling techniques to be used. It is also likely that primers currently used for human studies will be of use in the anthropoid apes. Although the Conservation Genetics Group is not a service lab as such, we should continue to be able to deal with a limited number of requests for both paternity issues and karyotyping.

3. Karyotyping

Pim Rebholz (who is now undertaking a PhD) successfully karyotyped an Orang from Jersey. The question of karyotyping Chimpanzee subspecies was discussed and it was noted that a student of David Woodruff at UCL San Diego was working on this from both the karyotyping and variable DNA points of view from wild-caught specimens from different regions. Helen Stanley will get in touch with David Woodruff and John Lewis to discuss the possibility of collaboration with Jim Cronin who has a large number of wild-caught animals with obviously different morphologies.

4. Artificial insemination in Gorillas

a) Helen Shaw has been accumulating samples from G'Anne at Jersey and semen is being collected from various males. Richard Johnstone-Scott agreed to speak with Helen Shaw and Harry Moore to determine the latest position on this project.

b) Several other females are candidates for A.I. including Sidonie at Howletts, Naomi at Edinburgh, and Julia at Jersey.

5. Pregnancy diagnosis in Orangs

The product Icon 2 has now been successfully used at Jersey to determine pregnancy in two Orangs and it would be useful to test this product elsewhere. (Pregnosticon is still the most successful test to use for Gorillas and Chimps). Icon 2 is available from Hybritech Europe SA, UK Branch, Minerva House, Spaniel Row, Nottingham, NG1 6EP (Tel: 0602 473300; Fax: 0602 473274). The question was raised as to whether anyone had used a test successfully on gibbons. Helen Stanley thought that Icon 2 or Pregnosticon would probably work but should be tested.

6. All male Gorilla groups

Rafiki from Jersey has now gone to St Louis where five males are being kept together in the age range 6-13. Richard Johnstone-Scott reported on the apparent initial success of this experiment but emphasised that he thought that the large paddock area was very important to enable the animals to get away from each other when necessary. The new facilities at Port Lympne is not now being used for an all male group.

7. Great ape diseases

James Kirkwood reported that a spuma virus had been isolated from the male Orang Dodo at London. All the other Orangs in the group had tested sero positive. This virus had not been reported before and there is no evidence that it can be transmitted to man. However, James concluded that, as is always the case, keepers should be most careful when handling all primates and he had recently circulated a

protocol to all London staff looking after apes and monkeys. It was agreed that the Scientific Committee should circulate this protocol with the notes from the meeting (Appendix 1 attached) so that individual collections could draw their keepers' attention to the potential risks and how best to avoid them.

8. James Kirkwood also reported on recent EC instructions and documentation concerning animal transport and the setting up of zoos with special status between which relatively easy movement of animals would be allowed. However, he also drew attention to the likely requirement for disease testing of a proportion of the animals being moved, including such tests as TB tests. Gerry Benbow, the Federation's consultant veterinary advisor, was dealing with this matter and liaising with the EC, but James felt that AAAP members should be aware of the EC initiative.

9. Studbooks and species management committees

a) Studbooks

It is a general truth that for a studbook to be useful it must be accurate, complete and up-to-date, otherwise useful genetic and demographic analysis is not possible and proper management decisions cannot therefore be made. The committee felt that, in some cases at least, regional ape studbooks in the UK did not yet meet the necessary standard. Even those with full information did not yet contain sufficient analysis, particularly genetic. The Scientific Committee therefore made the following recommendations:

i) That all regional studbooks for apes in the UK should be in SPARKS format and must include a complete historical listing and a full genetic and demographic analysis. It was recommended that all studbook keepers adhere to the guidelines produced for international studbook keepers by Peter Olney, Director of the Federation of Zoos and International Studbook Coordinator.

ii) That Species Management Groups should be established for all apes (see below).

iii) That in particular, the Chimpanzee studbook quickly be brought up to date because the situation in Chimpanzees in the UK is particularly worrying. Breeding success is questionable and the number of breeding males may be low but this information cannot be ascertained fully without a proper studbook being available.

iv) That a review be carried out also of the Gibbon situation. Management of the different species is not adequate and it is not possible to do sufficient analysis on a studbook in its present form.

v) That, if necessary, new studbook keepers should be found for any of the ape species for which the recommendations listed above cannot be met by the end of this year, ie. 1992 studbook.

The Scientific Committee agreed to look at this year's studbooks with a view to recommending improvements where necessary. Georgina Mace will coordinate this activity.

b) Species Management Committees

At last year's full meeting of the Anthropoid Ape Advisory Panel it was agreed that species management committees would be set up for the apes and Jo Gipps undertook to organise this. He had got as far as receiving nominations from all collections holding apes in the UK for representatives from those collections for each of the Species Management Committees, and was on the point of sending out ballot forms to elect the species management committees, when the initiative to incorporate AAAP and other Joint Management of Species Groups into the Federation was taken; it was thought likely that such a Species Management Committee structure would be set up for all jointly managed species along the lines of the EEP and SSP in the US. Rather, therefore, than set up a separate structure which might differ in important aspects from the wider structure set up by the Federation, it was decided to put a hold on the formation of Ape Species Management Committees.

The Scientific Committee of AAAP feels that unless significant progress in the formation of Species Management Committees generally is made in the very near future, the AAAP, now reformed as an Ape TAG, should set the Ape Species Management Committees along the lines previously agreed. The unanimous feeling of the committee was that it was better to get on with the management now than wait for the perfect structure to be agreed. It was agreed that this topic should be raised at the Primate TAG meeting at Banham in March with a view to getting the participants to agree to the formation of the Ape Species Management Committees; perhaps these could be used as a model for further primate SMCs and then on for further SMCs for other species in Joint Management. When Jo Gipps phoned Roger Wheater from the meeting this approach was broadly agreed but requires approval from the CAM of the Federation. Peter Olney has subsequently agreed to raise this at the next meeting of CAM.

Having taken over the studbooks for these species at the JMSG Primate Meeting last year, recent months have found me struggling to convert them to SPARKS format. Unfortunately, I have still not completed working on the White-fronted Lemur data and can only reiterate my recommendation for zero growth in this population of subspecific hybrids. The two animals of known purity are now at Blackpool Zoo and we hope they have success with this pair.

Mongoose Lemur Lemur mongoz

It is envisaged that the regional studbook for this species will be superceded by the International Studbook being compiled by Mike Clark at London Zoo. He has already made a number of recommendations that would establish a nucleus of this species in the U.K. Cricket St. Thomas, have recently imported a pair from France (a wild caught male and female bred at Bristol Zoo) under his direction and two pairs are to be imported from Duke Primate Centre by Banham this year. The pair imported from Duke by Cricket St. Thomas last year gave birth whilst in quarantine but the male infant did not survive.

Black Lemur Lemur m. macaco

1991 was quite an active year for this species with two pairs imported from France by Belfast Zoo in February and then both pairs produced surviving offspring (1.1). These, together with the first successful birth of a female at Cricket St. Thomas, could indicat that the population is set to expand despite the losses of two aged animals and a younger male (euthanased as diabetic) during the year. Belfast are importing a further 2.8 animals this year from various zoos in the U.S.A. for the benefit of the U.K. population.

Once these animals are through quarantine a number of moves are planned that will provide mates for males at Newquay and Fota and will establish groups at Hamerton Wildlife Park and Exmoor Bird Gardens. A further group, male UK19 (Newquay) and a mother and daughter from St. Catherine, U.S.A. will be available if anyone else is interested or alternatively will make up a third group at Belfast. The transfer of a pair (UK25 & UK34) from Cricket St. Thomas to Dudley is also recommended .

Red-fronted Lemur Lemur fulvus rufus

There were several moves last year resulting in the establishment of two pairs at Burstow Wildlife Sanctuary and the transfer of all six (2.4) animals from Bristol to Basilden Zoo. Cricket St. Thomas imported an apparently unrelated male from Saarbrucken Zoo and recorded the only three births but only one female infant survived. Innovative as ever, a group (1.3) was liberated in a small copse at Cricket St. Thomas last September and they are thriving, the proven female currently rearing twins. They are to be joined by another pair later this year.

Mayotte Lemur Lemur fulvus mayottensis

Fortunately, further interest has been shown in this subspecies with Colchester and, the newly resurrected, Kilverstone now holding groups. Unfortunately, Jersey have recently exported their remaining group to Italy and London have decided to keep only one group.

There were three successful births (out of six) but one of these has now gone to Italy and another was sired by the now over-represented founder, male 9, at London. Breeding i especially required at Cricket St. Thomas, Dudley, Fota and from female 62 at Burstow in order to broaden the genetic base for these lemurs. Additionally, two private keepers currently have sibling pairs and Wigan has a closely related pair. The following moves are recommended to improve their potential:-

Male 91 from Chris Hope to Wigan
Male 112 from Sean Lord to Chris Hope
Male 130 from Wigan to Sean Lord

Aloatra Gentle Lemur Hapalemur griseus alaotrensis

A new data base has been established for the group of this species that was imported to Jersey in December 1990. The only change in 1991 was the death of a female. It is anticipated that Jersey will establish an International Studbook for the species if they prove to be fecund.

Stephen Standley

MONGOOSE LEMUR *Lemur mongoz*

The Mongoose Lemur (*Lemur mongoz*) is listed as an endangered species (E) and sufficient numbers exist in captivity to warrant the existence of an International Studbook. There are currently 52.38. living animals in 24 collections listed in the studbook. A further 1.3 lemurs were present in the Census of Rare Animals 1989\90 (International Zoo Year-book 30) held at Seoul in South Korea. The same census shows that 1.1 animals are held at Gdansk and that 1.0 is held at Poznan although my records show 2.1 at Poznan and none at Gdansk. I suspect that a transfer of animals has taken place between these two Polish zoos and I am seeking to confirm this. Also in Eastern Europe, a young female is currently held at Odessa Zoo in the Republic of the Ukraine. My efforts to secure this animal for Poznan have so far been in vain but it remains my aim to place genetically important animals into potential breeding situations.

The population of breeding animals revolves around the collections at Duke Primate Center and the Philadelphia Zoo where consistently successful births and rearings are recorded. Assuming the role of species co-ordinator, it has been one of my principal aims to establish a discreet sub-population of *L. mongoz* consisting mainly of new founders unrelated to the Duke\Philadelphia stock. Several UK zoos have shown an interest in aquiring the species but organising the movement of the animals has proved difficult. Nevertheless, I am optimistic that some of these genetically valuable lemurs will in the future be represented in the breeding population.

Recently, a new pair of mongoose lemurs was transferred from Strasbourg University to Cricket St. Thomas Wildlife Park where a pair of animals from Duke Primate Center are already maintained. Two further pairs from Duke are due to arrive at Banham Zoo in the near future. With tacit agreements from Dudley, Jersey and Paignton Zoos to take animals and other institutions taking an interest, I am confident that the mongoose lemur will become a feature of British collections.

Mike Clark

International Studbook Keeper

Species Coordinator's Report to Primate TAG, March 1992

COTTON-TOPPED TAMARIN (Saguinus o. oedipus)

This Regional population summary is based on studbook returns for the period 01.01.91-24.03.92. At the time of writing, several end-of-year reports are awaited; a more reliable data set will be available in the next regional studbook- May?

TOTAL POPULATION
to date, the regional studbook records 837 animals;

at 24.03.92: 201.175.55 = 431 LIVE ANIMALS
(of these, 34. 26. 1 = 61 outside UK or "lost")
TOTAL BRITISH POP: 167.149.54 = 370

BIRTHS

	01.01.91-31.12.91	'90	'89	'88	'87	'86
instances:	36	40	50	40	65	47
# born:	71	83	94	74	133	95
# surviving >12months:	49	52	47	64	50	

- with the status of c.20% of the end-of-'90 population still to be reported, there is likely to be no significant fall in birth-recruitment; however, there are signs that some of the "active" pairs are newly constituted to include under-represented animals. 26 pairs are reported to have bred; survival to 12 months has increased to 69% (from 59% in'90).

DEATHS (adult)
deaths of animals >12months of age:

01.01.91-24.03.92 (15.12.1)= 28	'90	'88	'87	'86
	18	18	21	11

INSTITUTIONS holding Cotton-tops: data current to March 1992, except where indicated otherwise

	m.f.?	total	change since 12/90	note
B&D Zoological	3.4	7		('89
Banham	2.2	4		('90
Basildon	4.3	7	+7	(1
Belfast	2.3.3	8	0	
Borth	0.3	3	+1	
Bristol	2.4	6	-2	
Burstow	3.2	5	0	(mid 90

Carrie	0.3	3	+3	
Chard	4.1	5	-3	
Chessington	1.0	1	-1	
Chester	6.7	13	+11	
Colchester	14.10.3	27	+21	(i
Colwyn Bay	2.1	3	+1	
Cotswold WPk	2.2	4	+1	
Drusillas	3.3.2	8	0	
Dublin	4.3.4	11	+1	
Dudley	1.0.1	2	2	
Dunfermline	8.5	13	+10	
Fovargue	3.0	3		('89
Fota	6.7.3	16	+13	(i & vi
Glasgow	0.1	1	-1	
Guilsb'ro	5.4	9		(ii
Haigh Pk	3.1	4		('90
Jersey	4.3.4	11	-3	
Kiernan	1.1	2		('89
Kilverstone	8.9.2	19		(vi
Langford	5.4	9		(iii
Little Amazon TWG	4.2.2	8	+8	
Loch Lomond	3.3	6		('88
Lockwood	1.1	2		('90
London RP	2.2.8	12	0	
Marwell	9.5.1	15	+5	
Maley	0.1	1	+1	(ii
Mawby	2.3	5		(ii
Moire	0.1	1	+1	
Mole Hall	1.1	2		('90
Penscynor	9.5.9	23	-2	
Poole	2.4	6	+6	
Ravensden		0	-7	
Reading	12.9	21		(iv
Richards	1.1	2		('89
I of Wight	1.1.4	6	+2	
Scott	2.0	2		('89
Shaldon	1.2	3	-3	
Southport	0.1	1		('89
Stirling		0	-73	
Stratton	0.1	1		('89
Swales	2.2.1	5		('89
Swanson	1.1	2		('90
Sweetman	1.0	1		('89
Tenby	1.2	3	-2	
Twycross	4.3.5	12	-2	
Twyford	1.1	2	+2	
Watchet	2.0	2		('90
unknown	5.3	8		(v
Webster	0.3	3		('90
Whipsnade	0.1	1		('90
Wheeler	1.1	2		('90
Widcombe	1.1	2	0	

i movements reported ex-Stirling; recipients yet to confirm status
ii owners and animals currently untraceable
iii only Langford animals with offspring in the "zoo" population are listed.
iv Reading no longer keeps cotton-tops; transfer details are still awaited for those individuals still recorded "at Reading"- as at end of 1990!
v includes two private keepers, details with E'burgh/Stirling.
vi data rec'd 25/03/92- not yet processed:
K'stone: exported 5.3 (USA), 1.1 (UK, pvt), 0.2 (Rushden)
births 3.1.0 (1.1 DNS); other deaths 1.0
Fota: 1992 transfer from Stirling

SUMMARY

i Peter Bennett, Federation Conservation Coordinator, analysed the end-of-1990 data, allowing specific reccomendations to be circulated mid-1991. Under-represented animals were identified to their holders, with a request to encourage reproduction; contraceptive implants were offered for all others, in agreement with the previous decision to slow/stop population growth. Jersey, Chard, ZSL, Twycross, Fota, Belfast, Colwyn Bay and Penscynor implanted animals (or, in two cases, undertook to ensure that expelled-from-family animals did not enter the breeding population).

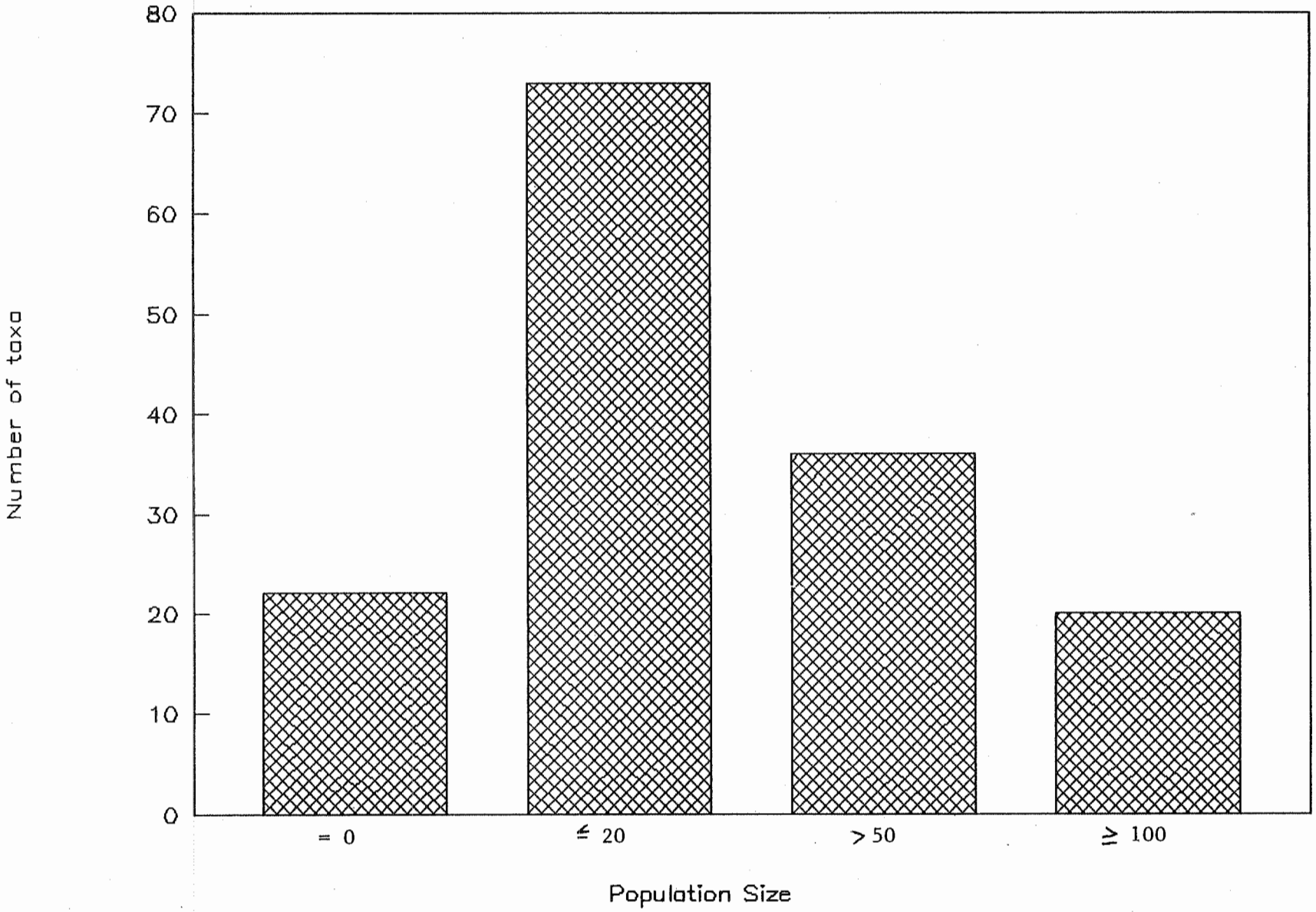
ii Stirling University has entirely disbanded its research colony; 4.3 have gone overseas, the rest have been absorbed by the UK. Two of the Stirling families have gone to Chester and Fota; five other families have gone to institutions which have no history (or an unfortunate history) of data-reporting and management cooperation. Investigation is under way into the reproductive status of these transferees; I suspect that Stirling will have implanted some, or all, females.

iii The increasing frequency in the studbook listing of private individuals and zoos unused to the routine of reporting, with all the extra difficulties that result, will doubtless lead to more animals being difficult to track or "lost". It is important that zoos trading-out to private keepers ensure a permanent identifier- two, possibly three, animals came from "nowhere" in 89/90/91.

iv The 1990 decision, to aim for zero-growth in this species' population, continues to stimulate much change in the data set. The disbanding of the Wellcome, Reading and Stirling colonies, and the introduction of implants, is now largely complete and a clearer picture of the situation, and its potential, should become available in the next few weeks (as the remaining 1991 data-returns are collated). An update of this report will accompany the next regional studbook (May '92?).

Rob Colley, March 1992

MEDIAN FUTURE CAPACITY



PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 10

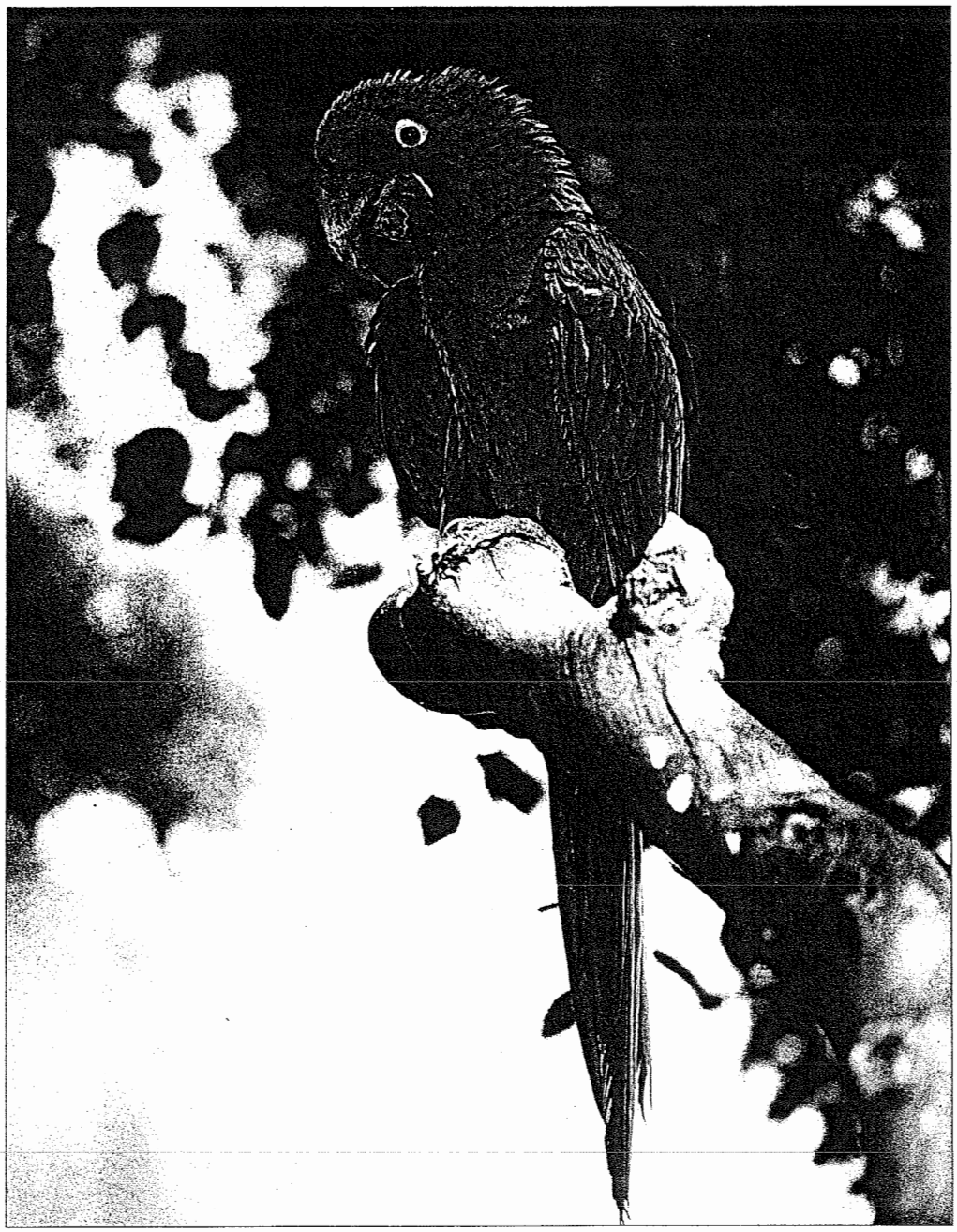
REGIONAL CAPTIVE CONSERVATION PROGRAMS/EUROPE EEP

EEP Yearbook 1990

with
Summaries of Contributions and Discussions
of the

8th EEP Conference, Budapest

12-15 May 1991



EEP

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Ruffed lemur (*Varecia v. variegata* and *V. v. rubra*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Uta Ruempler
Zoologischer Garten Köln
Riehler straße 173
5000 Cologne
Germany

Studbook keeper: Ingrid Porton, St. Louis Zoo (International)

Species committee:
Molly Badham, Twycross Zoo
Pierre Gay, Doué la Fontaine Zoo
Angela Glatston, Rotterdam Zoo
Bengt Holst, Copenhagen Zoo
Sean McKeown, Carrigtwohill, Fota Park
Arnd Kuijnenburg, Tierpark Berlin
J.M. Lernould, Mulhouse Zoo
Jeremy Mallinson, Jersey Zoo
Bruno van Puijenbroeck, Antwerp Zoo
Beatrix Rau, Munich Zoo
Götz Ruempler, Münster Zoo
Christian R. Schmidt, Zürich Zoo

Committee meetings: No meetings were held in 1990

Studbook: International Studbook: 1989

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Tables 1a, 1b and 1c

Age and sex distribution of the EEP population: see Tables 2a and 2b

3/4. Recommendations/Problems: not yet formulated/identified

Table 1a: Status and development of the *Varecia v. variegata* EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
* Aalborg/DK	-	-	1.1	-	-	-	-	1.1
Amsterdam/NL++	-	-	-	-	-	-	-	-
Apeldoorn/NL	0.1	-	-	-	1.1	-	-	1.2
Asson/F	8.4	1.2	-	-	-	-	-	9.6
Banham/GB	1.4	0.2	-	0.1	-	-	-	1.5
Basel/CH	1.1	-	-	-	-	-	-	1.1
Belfast/GB	1.5	-	1.0	-	-	-	-	2.5
Bekesbourne/GB	5.7	3.0	-	-	-	-	-	8.7
Berlin (Tierpark)/G	2.3	-	-	-	-	-	-	2.3
Berlin (Zoo)/G++	-	-	-	-	-	-	-	-
Bristol/GB	2.2	-	-	1.1	-	-	-	1.1
Budapest/H++	-	-	-	-	-	-	-	-
Burford/GB	3.2	2.2 (2.1)	0.1	-	-	1.0	0.1	2.3
Carrigtwohill/IRL	2.1	-	-	-	-	-	-	2.1
Cheshire/GB	2.2	-	-	-	-	-	-	2.2
Colchester/GB	1.1	0.1	-	-	-	-	-	1.2
Cologne/G	12.6	2.1	2.0	-	-	-	-	16.7
Copenhagen/DK	1.1	-	-	-	-	-	-	1.1
Cricket St.Thomas/GB	1.2	1.1+1.2 (0.1)	-	-	-	-	-	3.4
Doué la Fontaine/F	3.5	0.2.2 (0.0.2)	-	1.1	-	-	-	2.6
Dresden/G	1.1	-	-	1.0	-	-	0.1	-
Dvur Kralove/CS++	1.1	-	-	1.0	-	-	-	0.1
Frankfurt/G++	3.1	-	-	-	-	-	-	3.1
Fréjus/F++	0.1	-	-	-	-	-	-	0.1
Jersey/GB	7.4	0.0.2	-	0.0.1	-	-	-	7.4.1
* Les Mathes/F	-	-	0.1	-	-	-	-	0.1
Montpellier/F	1.1	0.0.3	-	-	-	-	1.0	0.1.3
Munich/G	3.2	0.1	-	-	0.1	-	1.0	2.4
Münster/G	3.2	0.1	-	-	-	-	-	3.3
Mulhouse/F	2.2	-	-	-	-	-	-	2.2
* Olomouc/CS	-	-	0.1	-	-	-	-	0.1
Ozoir la Ferrière++	-	-	-	-	-	-	-	-
Paris/F	0.1	-	-	-	-	-	-	0.1
Romanèche/F	1.1	(0.1)	-	-	-	-	0.1	1.0
Rotterdam/NL	1.2	-	1.0	-	-	-	-	2.2
Saarbrücken/G	2.3.1	0.0.6 (0.0.2)#	-	1.0	-	-	-	1.3.5
Stockholm/S++	2.1	(0.0.1)	-	-	-	-	-	2.1
Stuttgart/G++	-	-	-	-	-	-	-	-
Tel Aviv/ISR	-	-	1.0	-	-	-	-	1.0
Twycross/GB	4.7	3.0	-	1.0	-	-	-	6.7
* Wroclaw/PL	-	-	-	-	-	-	-	-
Totals 46 participants	76.77.3	12.12.16 (2.3.6)	6.4	6.3.1	1.2	1.0	2.3	85.84.13

* New EEP participants ++ Hybrids # = 0.0.3 (1) + 0.0.3 (1)

Table 1b: Status and development of the *Varecia v. rubra* EEP population in 1990

	Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
				in	out	in	out		
	Amsterdam/NL	0.1	-	1.0	-	-	-	-	1.1
	Antwerp/B	1.1	-	-	-	-	-	-	1.1
*	Apeldoorn/NL	0.0	-	0.1	-	-	-	-	0.1
*	Asson/F	0.0	-	0.1	-	-	-	-	0.1
	Berlin (Tierpark)/G	6.5	0.2	-	4.4	-	-	-	2.3
	Berlin (Zoo)/G	1.1	-	-	-	-	-	-	1.1
	Cologne/G	5.4	(0.0.1)[1]	-	0.1	-	-	-	5.3
	Doué la Fontaine/F	3.2	-	-	-	-	-	1.0	2.2
	Jersey/GB	4.4.6	-	-	1.0	-	-	-	3.4.6
	London/GB	1.1	-	-	-	-	-	-	1.1
	Munich/G	1.1	-	1.1	-	-	-	-	2.2
	Mulhouse/F	4.5	2.1 (1.0)	-	0.1	-	-	-	5.5
	Wuppertal/G	1.2	-	-	-	-	-	-	1.2
	Zürich/CH	1.1	1.1.1 (0.0.1)[1]	-	-	-	-	-	2.2
	Totals 15 participants	28.28.6	3.4.2 (1.0.2)	2.2	6.5	-	-	1.0	24.27.6

* New EEP Participant
[1] (0.0.1) is still birth

Table 2a: Age distribution of the Black and white ruffed lemur (*Varieca v. variegata*) in the EEP as on 31 December 1990

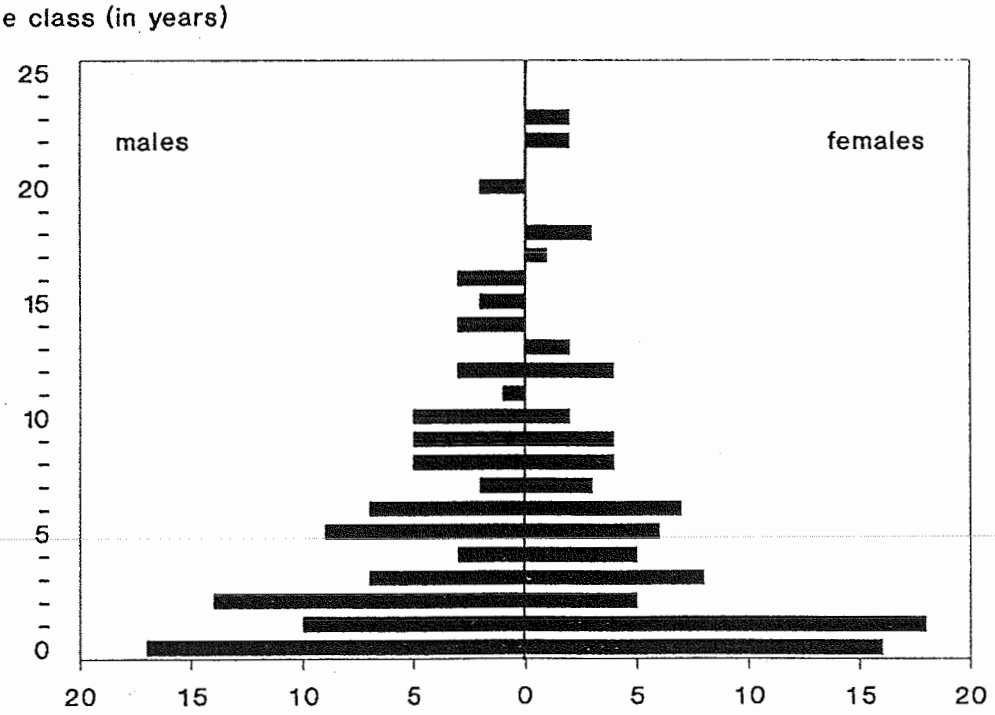
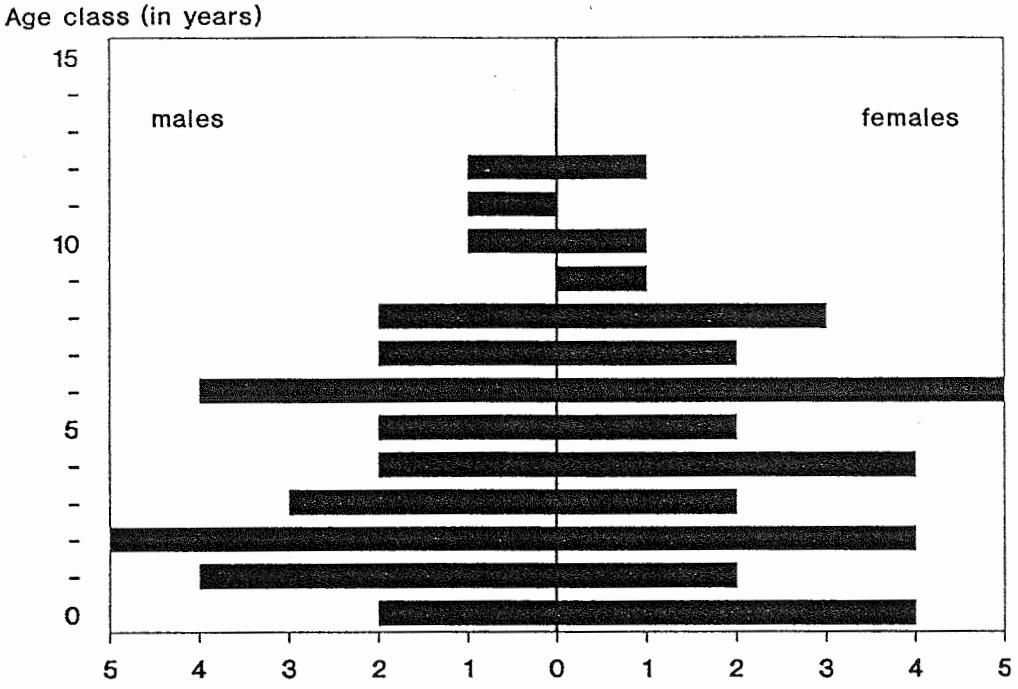


Table 2b: Age distribution of the Red ruffed lemur (*Varieca v. rubra*) in the EEP as on 31 December 1990



Woolly monkey (*Lagothrix lagotricha*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Wim B. Mager
Apenheul Zoo
J.C. Wilslaan 21-31
7313 HK Apeldoorn
The Netherlands

Studbook keeper: Wim B. Mager

Species committee: Consists of representatives of all participants

Committee meetings: No meetings were held in 1990

Studbook: A preliminary report compiled by K. Albers and W. Mager was published in June 1990

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: see Table 2

A total of 11 institutions responded to our questionnaire, 8 of which currently keep woolly monkeys. Two institutions did not respond; however, these both keep only one specimen. The current European population consists of 29.40 woolly monkeys.

Summary:

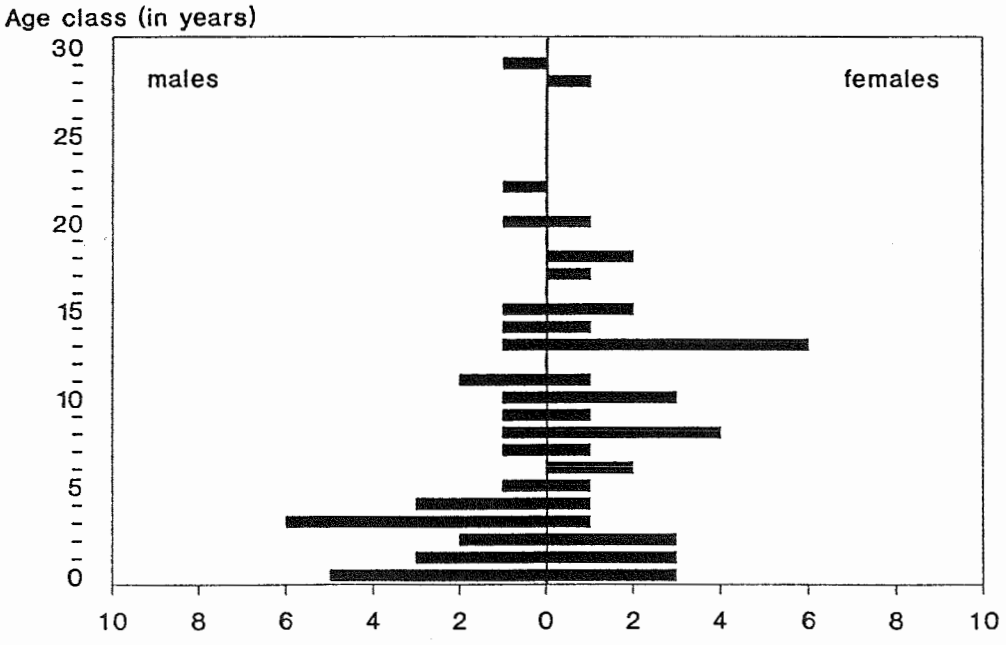
Of the current population, 24.34 animals are captive born and 5.6 animals are wild-born. The age distribution on 1 January 1990 is shown in table 2. No exact data on population growth are available since we only asked for data on the current population and their ancestors, but at best the population is self sustaining at this moment. Only three institutions have good breeding groups of *Lagothrix lagotricha* and 73% of the animals are currently held at two locations. This makes the population very vulnerable to contagious diseases and other calamities. An increase in the number of animals as well as the number of breeding groups on different locations is urgently needed. The latter measure should be accompanied by sharing of knowledge on husbandry

Table 1: Status and development of the Woolly monkey (*Lagothrix lagotricha*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Antwerp/B	1.1	-	-	-	-	-	1.0	0.1
Apeldoorn/NL	10.20	4.3 (1.1)	-	-	-	-	1.1	12.21
Asson/F	2.1	-	-	-	-	-	1.0	1.1
Basel/CH	4.5	1.0	-	-	-	-	1.0	4.5
Bergeyk PPE/NL	2.0	-	-	-	-	-	1.0	1.0
* Doué de Fontaine/F	0.0	-	-	-	-	-	-	0.0
Looe/GB	9.11	-	-	-	-	-	-	9.11
Tenerife/ES	1.0	-	-	-	-	-	-	1.0
Twycross/GB	1.1	-	-	-	-	-	-	1.1
Totals 9 participants	30.39	5.3 (1.1)	-	-	-	-	5.1	29.40

* New EEP participant, will receive woolly monkeys in 1991

Table 2: Age distribution of the Woolly monkey (*Lagothrix lagotricha*) in the EEP as on 31 December 1990



and management of woolly monkeys in captivity.

3. Recommendations for the next year(s)

The current population was founded by at least 36 animals. As in most populations the founders are not equally represented in the current population, which is mainly due to differences in reproductive success of the different founders and their offspring. Five potential founders are still alive and

have not reproduced yet, namely #0035, #0036, #0037, #0038 and #0016. Inbreeding has occurred in at least 10 cases, which could have been avoided if animals were exchanged more often.

4. Problems

Subspecies

The division of the population by subspecies is shown below.

subspecies	males	females
cana	3	6
poeppigii	5	5
lagotricha	1	1
lugens	1	0
hybrids:		
cana / lagotricha	7	10
cana / poeppigii	4	6
cana / lugens	5	4
rest	2	6
unknown	2	1

Only 10.12 animals are considered to be non-hybrid animals, most of which are *L. l. cana* or *L. l. poeppigii*. It may be possible to separate *L. l. cana* and *L. l. poeppigii* as sub-populations, but their numbers are very low, too low for a good breeding programme. If any subspecies is to be separated it will clearly be necessary to seek cooperation with zoos outside of Europe and to start a breeding programme on a global scale.

It is clear though that with a species as difficult to maintain in captivity as the woolly monkey we cannot afford to mainly focus on subspecies populations. As long as so few institutions manage to successfully breed woolly monkeys we will need all specimens available, if long term propagation of *Lagothrix lagotricha* in captivity is our goal. Keeping this in mind and with rough knowledge of the situation in North America separation of a subspecies is probably only possible for *L. l. poeppigii*.

International Cooperation

As the number of woolly monkey holding institutions in Europe is low, it will be important to seek cooperation with institutions that keep this species outside of Europe. In North America a regional studbook for the woolly monkey already exists, and is kept by Mary Jo Stearns of the Fossil Rim Wildlife Center, Forth Worth. An SSP may be initiated in the near future. We have already started to determine the current status of woolly monkeys in captivity outside of Europe and North America, and we have asked woolly monkey holding institutions if they are interested in participating in an international breeding programme. We already received a positive response from a number of institutions.

Pygmy marmoset (*Cebuella pygmaea*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Wim Mager
Apenheul
J.C. Wilslaan 21-31
7313 HK Apeldoorn
The Netherlands

Studbook keeper: Wim Mager (international); Joost van Linge (registrar)

Species committee: Not yet formed

Committee meetings: Committee not yet formed

Studbook: The second edition of the International studbook was published in 1990.

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: not available

Age and sex distribution of the EEP population: not available

The following institutions have indicated their interest in participating in the Pygmy marmoset EEP:

Amsterdam Zoo/NL
Cologne Zoo/G
Gelsenkirschen Zoo/G
Les Mathes Zoo/F
Magdeburg Zoo/G
Moscow Zoo/USSR
Mulhouse Zoo/F
Odense Zoo/CH
Rotterdam Zoo/NL
Szeged Zoo/H
Zürich Zoo/CH

3. Recommendations for the next year(s): not yet formulated

4. Problems

- Genetical/biochemical methods for subspecific identification are urgently required.

Goeldi's monkey (*Callimico goeldii*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: J. Bryan Carroll
Jersey Wildlife Preservation Trust
Les Augres Manor
Trinity
Jersey Island

Studbook keeper: Mark Warneke, Brookfield (International)

Species committee: Not yet elected

Committee meetings: None

Studbook: UK studbook current to January 1990. Awaiting database from International studbook keeper before compiling EEP studbook.

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

Summary:
Table 1 lists the institutions in continental Europe that have indicated their willingness to participate in the EEP. The list includes two university colonies and one private collection. The stock list gives the stock held at the time that willingness to participate in the EEP was indicated.

In addition to these animals there are some 100 registered under the JMSG programme, most of which will come under EEP auspices.

It must be stressed that there are undoubtably more *Callimico* in Europe than these 81 specimens. This preliminary list was based on the 1988 International Studbook and I suspect that the information was already out of data when published. I would like to hear from anyone who knows of other institutions in Europe that hold the species.

My preliminary impression is that there are a good number of founders in

Table 1: European institutions that have expressed their willingness to participate in the Goeldi's monkey (*Callimico goeldii*) EEP programme

Institution	Stock held
Amsterdam/NL	2.4
Apenheul, Apeldoorn/NL	3.4.1
Frankfurt/G	2.1
Kassel University/G	11.6.2
Cologne/G	8.9.2
Skansen/S	3.3
Stuttgart/G	5.5
Les Mathes/F	2.3
Station Eichberg, private/CH	2.3
Zürich/CH	1.1
Zürich University/CH	not yet available
Total stock	39.39.3

the population and that no husbandry problems are being encountered.

3. Recommendations for the next year(s)

1. The studbook should be updated and corrected.
2. When the list of institutions holding the species is reasonably complete, an election of the Species Committee will take place.
3. A genetic and demographic analysis will be undertaken.

4. Problems

I suspect that there will be a shortage of space for this species in the future. It will then become necessary to control breeding through the use of contraceptive implants in the way that the golden lion tamarin programme is controlled.

Douc langur (*Pygathrix n. nemaeus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Uta Ruempler
Cologne Zoo
Riehler Strasse 173
D-5000 Köln 60
Germany

Studbook keeper: Prof. Lois Lippold, San Diego (International)

Species committee: Uta Ruempler, Cologne Zoo
Dieter Ruedi, Basel Zoo
Lois Lippold, San Diego

Committee meetings: No meetings were held in 1990

Studbook: Not yet compiled

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

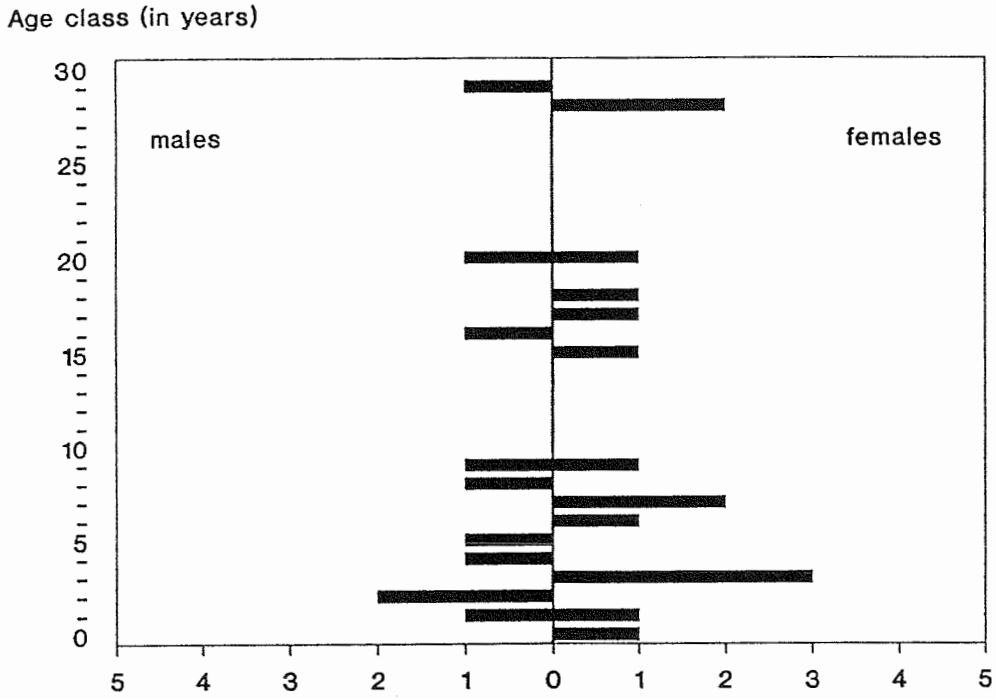
Age and sex distribution of the EEP population: see Table 2

3/4. Recommendations/Problems: not specified

Table 1: Status and development of the Douc langur (*Pygathrix n. nemaeus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Basel/CH	2.4	-	-	-	-	-	0.1	2.3
Cologne/G	6.10	0.1	1.1	-	1.0	1.0	-	7.12
Stuttgart/G	1.1	-	-	1.1	-	-	-	0.0
Totals 3 participants	9.15	0.1	1.1	1.1	1.0	1.0	0.1	9.15

Table 2: Age distribution of the Douc langur (*Pygathrix n. nemaeus*) in the EEP as on 31 December 1990



Drill (*Mandrillus (= Papio) leucophaeus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Dr. Michael Böer
Zoologischer Garten Hannover
Adenauerallee 3
3000 Hannover 1
Germany

Studbook keeper: Dr. Michael Böer (International)

Species committee: Not yet formed

Committee meetings: Not yet held

Studbook: Last edition of International Studbook published in 1987.

Husbandry guidelines: Not yet available

Research: Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

3/4. Recommendations/Problems: not specified

Table 1: Status and development of the Drill (*Mandrillus (= Papio) leucophaeus*) world population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP/SSP zoos		Transfers with non-EEP/SSP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
EEP								
Arnhem/NL	1.0	-	-	-	-	1.0	-	-
Barcelona/ES	1.1	0.1	-	-	-	-	-	1.2
Romaneche-Thorin/F	0.2	-	-	-	-	-	-	0.2
Hannover/G	3.6	2.1 (0.1)	-	1.2	-	1.0	-	3.4
Madrid/ES	-	-	-	-	-	-	-	-
Saarbrücken/G	1.2	-	0.1	-	-	-	-	1.3
Stuttgart/G	2.2	-	-	-	-	-	1.0	1.2
Wuppertal/G	2.2	-	1.1	-	-	-	-	3.3
SSP								
Atlanta	2.1	-	1.0	1.0	-	-	-	2.1
San Diego WAP + Zoo	1.3	-	-	-	1.2	-	1.0	1.5
Knoxville	1.2	-	-	-	1.0	-	-	2.2
Los Angeles	3.5	-	1.0	1.0	-	-	1.1	2.4
Philadelphia	1.2	-	-	-	-	-	-	1.2
OTHERS								
Bangkok Zoo	0.1	-	-	-	-	-	-	0.1
US Embassy Malabo, Equat. Guinea	1.0	-	-	-	-	-	-	1.0
Mrs. L. Gadsby, Calabar/Nigeria	0.1	-	-	-	2.0	-	-	2.1
Colombo Zoo, Sri Lanka	1.0	-	no reply	-	-	-	-	1.0?
Jap. Monkey Center	2.3?	-	no reply	-	-	-	-	2.3?
Hamamatsu Zoo	1.0	-	-	-	-	-	-	1.0
Osaka Tennoji Zoo	1.1	-	-	-	-	-	1.0	0.1
Carmen Hall	2.0	-	-	-	-	-	1.0	1.0
Totals								
EEP	10.15	2.2 (0.1)	1.2	1.2	-	2.0	1.0	9.16
SSP	8.13	-	2.0	2.0	2.2	-	2.1	8.14
OTHERS	8.6	-	-	-	2.0	-	2.0	8.6 +?
WORLD Participants	26.34	2.2 (0.1)	3.2	3.2	4.2	2.0	5.1	25.36 +?

Gelada baboon (*Theropithecus gelada*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Achim Johann
Tierpark Rheine
D-W-4440 Rheine
Germany

Studbook keeper:
Achim Johann (International)

Species committee:
F. Hanak, Brno Zoo
F. Ostenrath, Duisburg Zoo
A. Johann, Tierpark Rheine
R. Revers, Salzburger Tiergarten Hellbrunn
P.C. Baisle, Parque Zoologique Le Pal
M. Holtkötter, Wilhelma, Stuttgart
C.R. Schmidt, Zürich Zoo

Committee meetings:
No meetings were held in the report year

Studbook:
The members of IUDZG endorsed the establishment of an International Studbook for the Gelada Baboon in 1990. The EEP species coordinator was appointed as International Studbook Keeper. Meanwhile most of the Geladakeeping facilities have returned the first questionnaire, so there will be a survey on the current stock. It is already obvious that genetic analyses will be very difficult: most of the zoos do not know the relationship in their groups.

Husbandry guidelines:
The experiences in maintenance and management of geladas collected in Rheine Zoo are summarized in a report, which will be offered for publication to the Int. Zoo Yb. A brief summary of the article will be sent to all EEP-participants.

Research:
Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

Summary: see next page

Table 1: Status and development of the Gelada baboon (*Theropithecus gelada*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
* Brno/CS	0.3	-	1.0	-	-	-	-	1.3
Duisburg/G	1.5	1.2 (0.1)	-	-	-	-	0.1	2.5
Rheine/G	8.8	2.3 (0.1)	1.0	-	-	-	-	11.10
Salzburg/A	-	-	-	-	-	-	-	-
St. Pourcain/F	1.3	-	-	-	-	-	0.1	1.2
Stuttgart/G	5.10	1.1.2 (0.1.2)	-	-	-	-	-	6.10
Wuppertal/G	1.1	-	-	0.1	-	1.0	-	-
Zürich/CH	6.7	1.3 (1.1)	0.1	2.0	-	-	0.1	4.9
Totals 8 participants	22.34	5.9.2 (1.4.2)	2.1	2.1	-	1.0	0.3	25.39

* New EEP participant

Nine (4.5) geladas were born and raised in 1990, adding a very valuable contribution to the population. Three females have been added because of the participation of Brno Zoo (CS), but it is unlikely that these animals will reproduce because of their old-age and condition. Two of the three females that died in 1990 were certainly not or no more capable of reproduction. The numbers of not-raised young also include a stillbirth and two abortions (presumably caused by social troubles in the group). A three year old male from Zürich Zoo has been integrated in the Rheine group. The animal is on breeding-loan from Zürich (as also is the male from Brno).

3/4. Recommendations/Problems: not specified

Miscellaneous

- The EEP-coordinator visited two gelada-keeping facilities in the USA in 1990. One of these has two (1.1) young geladas surplus. Tierpark Rheine will endeavour to importing these animals. A decision on their final European destiny will be made after confirmation of a possible transfer.
- Currently no other European zoo but Salzburg has indicated interest in establishing a group of geladas. On the other hand there are currently no animals surplus. However, this situation can change quickly when the large number of younger males will get older.
- Stabilizing of existing groups is an ongoing task. Unrelated animals have to be integrated in certain groups in near future (immature animals to avoid social trouble). In the case of geladas the establishment of heterogenous groups offers the most careful possibility of long-term reduction and avoidance of inbreeding.

Lion-tailed macaque (*Macaca silenus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Dr. Werner Kaumanns
German Primate Center
Kellnerweg 4
D-3400 Göttingen
Germany

Studbook keeper: There is no regional studbook keeper; the International Studbook keeper is: Laurence G. Gledhill, Woodland Zoological Gardens, 5500 Phinney Avenue North/Seattle, Washington 98103-5897, USA

Species committee: The species committee is constituted by representatives of every zoo which participates in the EEP.

Committee meetings: There was no meeting of the species committee in 1990, but a meeting was held on 2 March 1991.

Studbook: A new version of the International Studbook will be edited in a few months. Last updating of the existing version has been done in 1990.

Husbandry guidelines: There are no specific printed husbandry guidelines available at the moment, but several publications which refer to this aspect (one of them written by the coordinator). Efforts to define guidelines are ongoing.

Research: A comparative study on social structure and behavioural profiles in five different colonies is ongoing. The study intends to work out whether there are hints for species specific problems in adapting to captive conditions. It refers to the observation that lion-tailed macaques are more likely to develop behavioural disturbance than other macaques. Linked to this study, an elaborated ethogram was produced, literature searches were performed and provided to the participants of the EEP.

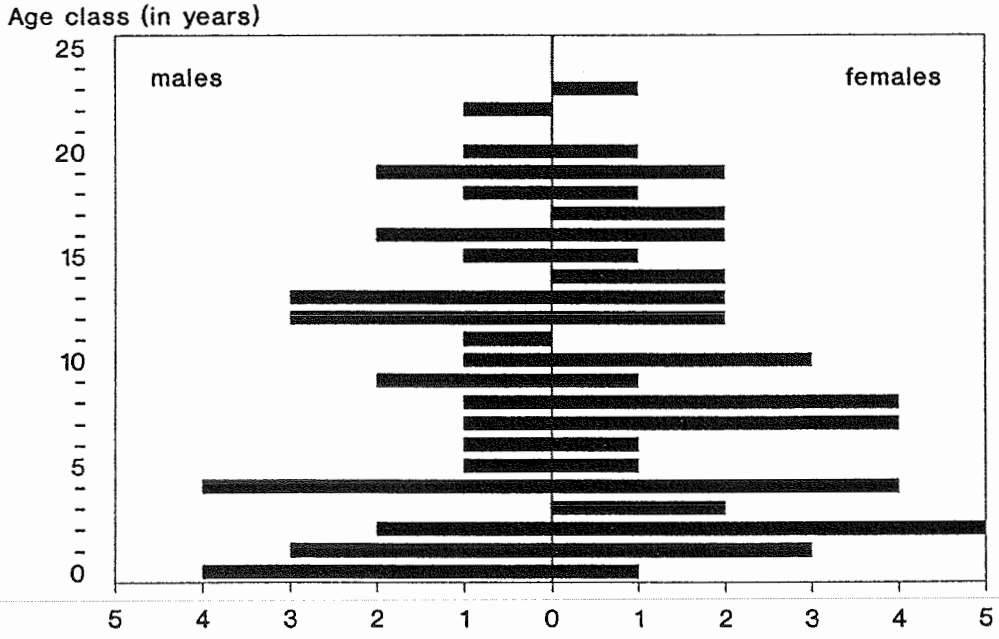
A proposal for another study on the nature of the social system of the species with specific regard to the dominance system is currently being developed and will be started in May 1991. In order to assess the genetic situation of the lion-tailed macaque population in Europe, an opportunity to get genetic finger-printing analysis performed was arranged. The EEP-participants were invited to take blood samples from their colonies whenever they have an opportunity.

Table 1: Status and development of the Lion-tailed macaque (*Macaca silenus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Berlin (Zoo)/G	4.6	-	-	-	-	-	-	4.6
* Doué-la-Fontaine/F	2.1	0.0.2	-	-	-	-	-	2.1.2
Dresden/G	1.3	-	-	-	-	-	-	1.3
Duisburg/G	5.5	2.0 (1.0)	-	-	-	-	-	6.5
Erfurt/G	1.3	-	-	-	-	-	-	1.3
Göttingen/G	7.11	1.1 (1.0)	-	-	-	-	0.2	7.10
Leipzig/G	5.3	0.1	-	-	-	1.1	-	4.3
Magdeburg/G	2.3	-	1.1	-	-	-	-	3.4
Pilsen/CS	1.0	-	-	-	0.1	-	-	1.1
Rheine/G	1.5	1.2 (0.2)	-	-	-	-	-	2.5
Rostock/G	1.3	-	-	1.1	-	-	-	0.2
Stuttgart/G	2.3	1.0	-	-	-	-	-	3.3
Wuppertal/G	4.3	1.0	-	-	-	-	-	5.3
Totals 12 participants	36.49	6.4.2 (2.2.0)	1.1	1.1	0.1	1.1	0.2	39.49.2

* potential EEP participant

Table 2: Age distribution of Lion-tailed macaque (*Macaca silenus*) in the EEP as on 31 December 1990



2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: see Table 2

Summary:

The analysis of the development of the population in 1990 shows that it is in a more vulnerable status than originally was expected. Besides a small population size, a low birth rate, high infant mortality and a tendency towards an unfavourable age structure within many colonies, there is a strong possibility of losing genetic variability because several genetically important individuals do no breed. Behavioural disturbances can be found in many colonies (e.g. hair-pulling), but there seems to be no simple correlation between breeding success in a colony and the occurrence of abnormal behaviours.

3. Recommendations for the next year(s)

There is evidence that the problems the lion-tailed macaque population are suffering from are a consequence of slightly disturbed individuals producing slightly disturbed offspring - thus perpetuating unfavourable breeding conditions. This vicious circle is supported in some cases by suboptimal physical environments and small enclosure sizes, respectively. Efforts to increase the individuals behavioural and especially social competence are needed. Since the problems differ between the colonies specific schedules have to be worked out. Drastic changes in the composition of existing groups are not required and even would be counterproductive. The establishment of new groups which are allowed to develop towards large (more than ten members) units is encouraged.

4. Problems

One of the main problems the lion-tailed macaque EEP is confronted with is that a high proportion of the enclosures available are rather small and do not allow the establishment of larger groups and a diversified environment. Fortunately some zoos are planning to enlarge or replace their enclosures.

Diana monkey (*Cercopithecus d. diana*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Miranda F. Stevenson
Royal Zoological Society of Scotland
Murrayfield
Edinburgh EH12 6TS
Great Britain

Studbook keeper:
Miranda F. Stevenson (International)

Species committee:
Miranda F. Stevenson, Edinburgh Zoo
Bruno Van Puijenbroeck, Antwerp Zoo
Richard Faust, Frankfurt Zoo
Stanislav Rudek, Ostrava Zoo
Jo Gipps, London RP
John Strong, Belfast Zoo

Committee meetings:
The first meeting of the Species committee will be held in May 1991 in Budapest.
One of the subjects on the agenda at this meeting will be research projects that are needed. One obvious possibility is a study of post mortem results, and subsequent analysis of causes of death. Another possibility is methods which result in the formation of successful breeding groups of captive bred animals.

Studbook:
European Studbook: number one with data up to March 1991 is currently available.
International Studbook: number one, with data up to 31 May 1990 will be available very shortly.

Husbandry guidelines:
Husbandry guidelines will be published in the International Studbook.

Research:
Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

Summary: see next page

Table 1: Status and development of the Diana monkey (*Cercopithecus diana diana*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
* Aalborg/DK	0.0	-	1.0	-	-	-	-	1.0
Antwerp/B	1.1	-	-	-	-	-	1.0	0.1
Belfast/GB	4.5	(0.1)	0.1	2.1	-	-	0.4	2.1
Champrepus/F	1.1	-	-	-	-	-	-	1.1
Chessington/GB	1.2.2	(1.0)	-	-	-	-	-	1.2.2
Colchester/GB	1.1	-	-	-	-	-	-	1.1
* Duisburg/G	1.3.2	0.0.1	-	0.1	-	-	-	1.2.3
Edinburgh/GB	3.3	0.1.1	1.0	1.0	-	-	0.1	3.3.1
* Fota/IRE	0.0	-	1.1	-	-	-	-	1.1
* Frankfurt/G	1.2	-	0.1	-	-	-	-	1.3
Les Mathes/F	1.2	1.0	-	-	-	-	-	2.2
London RP/GB	2.3	-	-	1.1	-	-	-	1.2
Newquay/GB	1.1	-	-	-	-	-	-	1.1
* Ostrava/CS	2.3	0.0.2	-	-	-	1.0	-	1.3.2
Paignton/GB	1.2.1	0.0.1	-	0.1	-	-	-	1.1.2
Punte Verde/I	1.0	-	-	-	-	-	-	1.0
* Shaldon/GB	0.0	-	1.1	-	-	-	-	1.1
Twycross/GB	2.3	-	-	-	-	-	-	2.3
Totals 18 participants	23.32.5	2.2.5 (1.1)	4.4	4.4	-	1.0	2.6	21.29.10

* New EEP participants

The current status of the EEP population is shown in Table I. The population, as it stands, is the same as at the beginning of 1990. The total number of collections now participating in the EEP is 18, of these seven currently breed the species. Two new pairs were set up in Fota and Shaldon and a young trio in Edinburgh.

There are 27 institutions currently holding Diana monkeys in Europe. Most of the institutions that have not actually signed the EEP participation agreement do co-operate in the programme. Table II therefore shows the total population of Diana monkeys in Europe as of April 1991. The only query is Lesna Zoo which may no longer have the species. Information on this would be appreciated. Of the 27 institutions ten currently breed the species.

Because there is co-operation between the European holders I prefer to look at the whole population, as listed in the European Studbook, rather than just the EEP animals. Table III summarises the situation.

The age structure of the population is fine, the critical factor being to establish more young captive bred animals as breeding pairs and groups. At present there is a shortage of females, and three institutions are at present looking for potential breeding females. Unfortunately six of the eight deaths in EEP institutions were of females.

3. Recommendations for the next year(s)

1. Swap males between Banham and Colchester (0678) and (0803).
2. Male at Newquay to go to Battersea (0760) to pair with female (0453) and male (0841) to go to Newquay.
3. Male (0861) at Battersea to be paired with female (0848) at Twycross and go to another collection, possibly Punta Verde.
4. Male at Punta Verde to go to Antwerp to be paired with female (0556).
5. Three collections need females: Aalborg, Champrepus and Warsaw.

Once the genetic and demographic analysis of the International population has been completed this will be applied to the formulation of future plans for the European population. There is little inbreeding and a sufficient number of founders. Additional females may need to be imported from North America.

4. Problems

The main problem at present is the difficulty of setting up a captive group that subsequently breed. The moves listed above are intended to try and create more potential breeding pairs of captive bred animals.

Concolor gibbon (*Hylobates concolor* sspp.) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator: Dr. J.-M. Lernould
Zoo de Mulhouse
51 rue du Jardin
68100 Mulhouse
France

Studbook keeper: Dr. J.-M. Lernould (International)

Species committee: Not yet formed

Committee meetings: Committee not yet formed

Studbook: EEP population included in International Studbook

Husbandry guidelines: Not yet available

Research: Potential projects are listed under "Recommendations for the next year(s)".

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: not available

3. Recommendations for the next year(s)

- To observe behaviour of newly formed pairs of adults and to analyse results, keeping in mind that gibbons may take time to "decide" to reproduce.
- To split pairs of individuals living together since years without reproducing.
- To stop the production of subspecific hybrids. The reproduction of hybrids should only occur if this is necessary for scientific research, and should be controlled.
- New young pairs will have to be established in the near future. Space will be needed. It is easy to find zoos to take gibbons but some are of lower standard. I suggest that zoos actually keeping only one family of concolor gibbons try to increase their capacity even behind the scene. It would be nice also that zoos breeding other gibbon hybrids stop this practice and start working with most endangered gibbon species like H. concolor.

Table 1: Status and development of the Concolor gibbon (*Hylobates concolor* sspp.) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Amsterdam/NL								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
Asson/F								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
Beekse Bergen/NL								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
H. c. gabriellae	0.1	-	-	0.1	-	-	-	0.0
Budapest/H								
H. c. leucogenys	1.0	-	-	-	-	-	-	1.0
H. c. gabriellae	1.0	-	-	-	-	-	-	1.0
Cleres/F								
H. c. leucogenys	4.3.2	-	-	-	-	-	-	4.3.2
H. c. gabriellae	1.0	-	1.1	-	-	-	-	2.1
Duisburg/G								
H. c. leucogenys	2.2	2.0	-	-	-	-	-	4.2
Doue la Fontaine/F								
H. c. leucogenys	2.2	0.0.1	-	-	-	-	-	2.2.1
Eberswalde/G								
H. c. leucogenys	0.1	-	-	-	-	-	-	0.1
H. c. gabriellae	1.1	-	-	-	-	-	-	1.1
Hannover/G								
H. c. leucogenys	3.2	-	-	-	-	-	-	3.2
Hong-Kong/HK								
H. c. gabriellae	2.4.2	-	-	-	-	-	-	2.4.2
Jihlava/CS								
H. c. gabriellae	1.1	0.0.1	-	-	-	-	-	1.1.1
Leipzig/G								
H. c. gabriellae	1.1	-	-	-	-	-	-	1.1
Les Mathes/F								
hybrids	1.2	(0.0.1)	-	-	-	-	-	1.2
Liberec/CS								
H. c. leucogenys	2.1	-	-	-	-	-	-	2.1
Melbourne/AUS.								
H. c. leucogenys	3.1	0.0.1	-	-	-	-	-	3.1.1
Mulhouse/F								
H. c. leucogenys	2.1	1.0	-	-	-	-	1.0	2.1
H. c. gabriellae	3.2	1.0	-	1.0	-	-	-	3.2
Munich/G								
H. c. siki	3.2	-	-	-	-	-	1.0	2.2
Olomouc/CS								
H. c. gabriellae	1.1	-	-	-	-	-	-	1.1
Ozoir/F								
H. c. leucogenys	1.1	0.0.1	-	-	-	-	-	1.1.1
Paris-Ménagerie/F**	-	-	-	-	-	-	-	-
Paris-Vincennes/F								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
hybrids	1.1	-	-	-	-	-	-	1.1
Planckendael/B								
H. c. leucogenys	1.1	-	-	-	-	-	-	1.1
* Pretoria/RSA	-	-	-	-	-	-	-	-
Saint-Augustin/F								
H. c. leucogenys	1.0	-	-	-	-	-	-	1.0

continued on next page

Table 1: continued

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Twycross/GB								
H. c. leucogenys	1.2	-	-	-	-	-	-	1.2
H. c. hainanus	1.0	-	-	-	-	-	-	1.0
hybrids	0.1.1	0.0.1	-	-	-	0.0.2	-	0.1
Usti nad-Labem/CS								
H. c. leucogenys	1.2	-	-	-	-	-	-	1.2
H. c. gabriellae	6.1	-	-	-	-	3.0	-	3.1
H. c. siki	1.0	-	-	-	-	-	-	1.0
Totals	52.41.5	4.0.6 (0.0.1)	1.1	1.1	-	3.0.2	2.0	51.41.8
H. c. leucogenys	28.23.2	3.0.3	-	-	-	-	1.0	30.23.5
H. c. gabriellae	17.12.2	1.0.1	1.1	1.1	-	3.0	-	15.12.3
H. c. siki	4.2	-	-	-	-	-	1.0	3.2
H. c. hainanus	1.0	-	-	-	-	-	-	1.0
hybrids	2.4.1	0.0.2 (0.0.1)	-	-	-	0.0.2	-	2.4

26 participants

* New EEP participant
** gibbons out on loan

- Cooperation will be developped with the Gibbon Advisory Group of AAZPA.
- It is important to establish a cooperation with Vietnam, and if possible Laos, in order to set up programs directed towards conservation of Concolor gibbon in-situ.
- Behavioural studies of concolor gibbons families are needed.
- A compilation of the pathology of gibbons should be undertaken as well as a comparative nutrition study.

4. Problems: not specified

Western lowland gorilla (*Gorilla g. gorilla*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:

Priv. Doz. Dr. Rosl Kirchshofer
Zoologischer Garten der Stadt Frankfurt am Main
Alfred-Brehm-Platz 16
6000 Frankfurt am Main 1
Germany.

Studbook keeper:

The EEP species co-ordinator is also International studbook keeper, in which the different breeding regions are separately represented.

Species committee:

Kuno Bleijenberg, Rotterdam Zoo
Anton Brotzler, Wilhelma, Stuttgart
Richard Faust, Frankfurt am Main Zoo
Bengt Holst, Copenhagen Zoo
Heinz-Georg Klös, Berlin Zoo
Wim B. Mager, Apenheul, Apeldoorn
Gunther Nogge, Cologne Zoo
D. Rüedi, Basle Zoo
Christian Schmidt, Zürich Zoo
Paul Vogt, Krefeld Zoo

additionally elected:
K. Tomásová, Dvur Kralove
Jaume Xampeny i Baró, Barcelona Zoo

Committee meetings:

Two meetings were held in 1990: Cologne, 13 June 1990 (1/2 day) and Frankfurt am Main, 28/29 September 1990 (1 1/2 day).

Studbook:

The most current version available in print is the 1989 International Gorilla Studbook; the 1990-version is in preparation (i.e. all information is available), the 1990 version of the EEP-region is available in typescript fotostatic copies.

Husbandry guidelines:

These are being developed (sections on accommodation; grouping; introducing of adult females into a group/to a single male; medical problems in connection with transfers and on hand-rearing are available as second drafts; sections on feeding, introducing infants in a group are in preparation).

Research:

Meder, A. (1990): Sex differences in the behaviour of

Table 1: Status and development of the Western lowland gorilla (*Gorilla g. gorilla*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Aalborg/DK	0.0	-	-	-	-	-	-	0.0[1]
Amsterdam/NL	1.1	-	1.1	-	1.1	-	-	3.3
Antwerp/B	0.0	-	-	-	-	-	-	0.0[1]
Apeldoorn/NL	7.13	1.0	-	1.0	-	-	-	7.13
Arnhem/NL	1.5	-	-	-	-	-	-	1.5
Barcelona/ES	3.6	-	-	-	-	-	-	3.6
Basle/CH	2.5	1.0	-	-	-	-	-	3.5
* Berlin (Tierpark)/G	1.1	-	-	-	-	-	-	1.1
Berlin (Zoo)/G	2.4	-	1.0	-	-	-	1.0	2.4
Budapest/H	1.1	-	-	-	-	-	-	1.1
Cologne/G	3.3	1.1	-	-	-	-	-	4.4
Copenhagen/DK	1.2	-	-	-	-	-	-	1.2
Dresden/G	1.1	-	-	-	-	-	-	1.1
Duisburg/G	2.2	-	-	-	-	-	0.1	2.1
Dvur Kralove/CS	2.2	-	0.2	1.0	-	-	-	1.4
Frankfurt/G	3.5	-	0.1	1.1	-	-	-	2.5
Hannover/G	1.3	-	-	-	-	-	-	1.3
Heidelberg/G	2.2	-	-	-	-	-	-	2.2
Ibadan/Nigeria	1.1	-	-	-	-	-	-	1.1
Johannesburg/RSA	1.0	-	-	-	-	-	-	1.0
Kiev/USSR	1.1	-	-	-	-	-	-	1.1
Kolmarden/S	1.1	-	-	-	-	-	-	1.1
Krefeld/G	3.5	-	-	0.1	-	-	-	3.4
Leipzig/G	2.3	-	-	-	-	-	-	2.3
Les Mathes/F	6.4	1.1 (0.1)	-	-	-	-	1.1	6.3
Madrid/ES	2.4	(0.1)[2]	-	-	-	-	1.0	1.4
Moscow/USSR	1.1	-	-	-	-	-	1.0	0.1
Munich/G	3.4	-	-	-	-	-	-	3.4
Munster/G	3.2	-	-	-	-	-	-	3.2
Nuremberg/G	2.2	-	-	-	-	-	-	2.2

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immature captive lowland gorillas. Primates, 31(1): 51-63, January 1990.

Meder, A. (1990): Integration of handreared gorillas into breeding groups. Zoo Biology 9: 157-164.

Meder, A. (in press): Introduction and socialization techniques - primates. In: Lumpkin, S. and Kleiman, D. (eds.): Wild mammals in captivity.

Meder, A.: Studies on the effects of the behaviour of visitors on Western lowland gorillas in Zoological Gardens. (in preparation)

Kopff, H.O.: Studies on the social behaviour and the social relationships of adult female gorillas (*Gorilla g. gorilla*, Savage and Wyman 1847) before and after a transfer from one group into another under zoo conditions as well as on the changes in the social group structures caused by it. Doctoral thesis (in preparation, Univers. Heidelberg. Supervisor: Priv. Doz. Dr. Rosl Kirchshofer).

Table 1: continued

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Prague/CS	1.3	-	1.0	0.2	-	-	1.0	1.1
Plaisance-du-Touch/F	1.1	-	-	-	-	-	-	1.1
Pretoria/RSA	2.2	(1.0)	-	-	-	-	-	2.2
Romaneche-Thorins/F	1.1	-	-	-	-	-	-	1.1
Rome/I	1.1	-	-	-	-	-	-	1.1
Rostock/G	1.1	-	-	-	-	-	-	1.1
Rostov-on-Don/USSR	1.1	-	-	-	-	-	1.0	0.1
Rotterdam/NL	2.5	-	-	0.1	-	-	-	2.4
Saarbrucken/G	0.0	-	-	-	-	-	-	0.0[1]
St. Martin-la-Plaine/F	2.4	-	-	-	-	-	-	2.4
Stuttgart/G	4.9	-	2.1	1.2	-	-	-	5.8
Tel Aviv/Israel	1.1	-	0.1	-	-	-	-	1.2
Wuppertal/G	3.2	-	-	-	-	-	-	3.2
Zürich/CH	2.4	0.1	0.1	1.0	-	-	-	1.6
Totals	80.118 (+1.1*)	5.4 (1.2)	5.7	5.7	1.1	-	6.2	80.120
44 Participants	198	9 (3)	12	12	2	-	8	200

* New EEP Participants

1) animals on loan to other collections
2) delayed notification for 1988

Non participants

Institutions	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Abu Dhabi/UAE	1.1	-	-	-	-	-	-	1.1
(Berlin (Tierpark)/G	1.1	-	-	-	-	-	-	-)[3]
Franceville/Gabon	4.6	-	-	-	-	-	-	4.6
Lisbon/P	2.0	-	-	-	-	-	-	2.0
Totals	8.8	-	-	-	-	-	-	7.7
EEP-region 48 localities	88.126	-	-	-	-	-	-	87.127
Total	214	-	-	-	-	-	-	214

3) 1.1 now included in EEP listing

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

Age and sex distribution of the EEP population: see Tables 2a and 2b

Table 2a: Age distribution of the Western lowland gorilla (*Gorilla gorilla gorilla*) in the EEP as on 31 December 1990

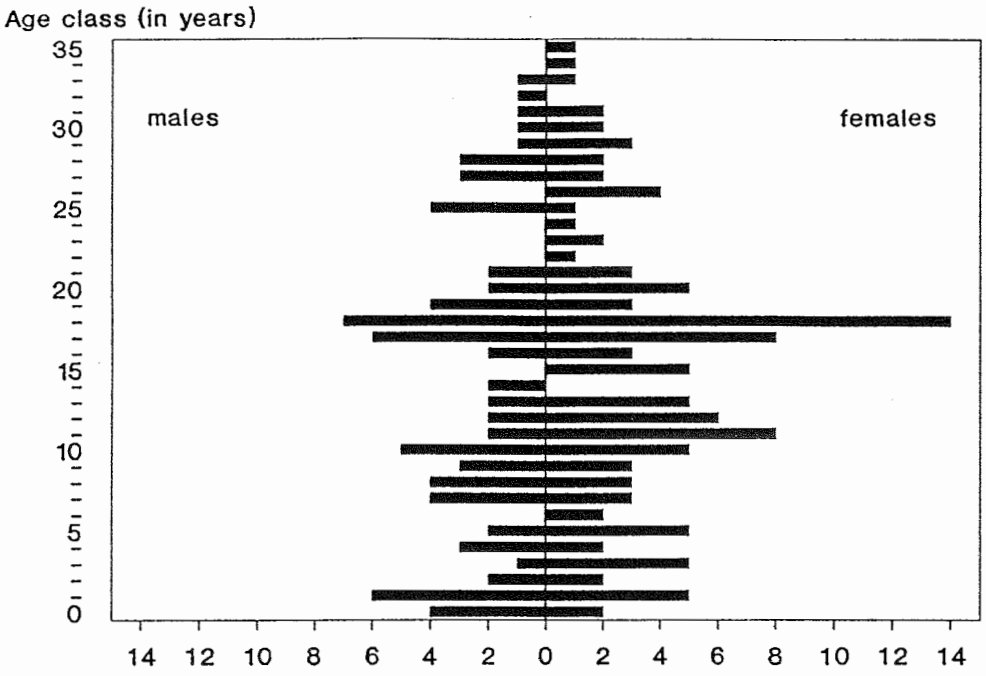
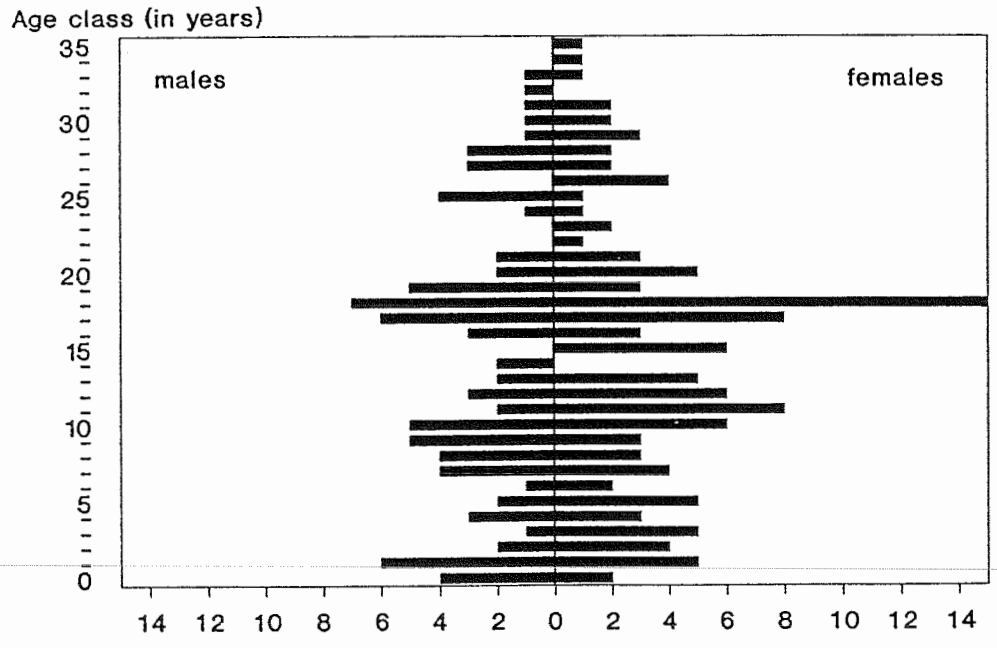


Table 2b: Age distribution of the Western lowland gorilla (*Gorilla gorilla gorilla*) in the entire European population as on 31 December 1990



Summary:

44 out of 46 zoos with gorillas and one research institute within the EEP-region participated in the gorilla-EEP at the end of 1990. This is one zoo more than in 1989. The participating zoos are situated in three geographic regions: Europe, Near East, Africa and they are located in 16 countries.

Contrary to 1989, in which year the EEP-population increased by 21 gorillas (12 surviving babies, two new registered wild born animals, nine gorillas from three zoos joining the EEP), an increase of two gorillas only took place in 1990 (see also Table 1):

31 December 1989: 198* (80.118 ; 111wb : 87cb)
31 December 1990: 200 (80.120 ; 107wb : 93cb)

+2 (+2f : -4wb : +6cb)

* In the EEP-report of 1988, erroneously 199 gorillas are mentioned (one captive-bred female too many).

This very small increase is *on one hand due* to the fact that six (4.2) surviving babies, two (1.1) juveniles on loan returning from Dublin to Amsterdam and two (1.1) adults added by a joining zoo (Berlin Tierpark) were counter-balanced by the death of 11 (7.4) gorillas (including two not surviving babies and one fetus removed by cesarean on behalf of a placenta previa). *On the other hand* it also has to do with the fact that mother-rearing increased over the last years (1986 4 out of 7; 1987 3 out of 6; 1988 2 out of 4; 1989 6 out of 12; in 1990 even all of the 6 surviving babies were mother-reared!). An increase in mother-rearing also lengthens the birth-intervals of the nursing mothers from 1 or 2 years (if the baby would have been hand-reared) to 3 or until even 5 years. This has to cause greater fluctuations in the number of births over the years as will be the case in species with shorter nursing periods. But nevertheless a greater increase in births will still be needed to secure a steady growth of the population. Even if there are still more wild-born gorillas in the population than captive bred ones, the difference is becoming smaller by the year: in the male population the turning point has already been reached.

As there are still some zoos with very small and/or non-breeding groups in the EEP, the committee and the coordinator recommended several changes by way of transfers (loans/exchanges) in 1989, of which some were already realized in the same year. Others took place in 1990:

- by transferring 1.1 infants and 1.1 juveniles to the Amsterdam Zoo an age-graded group of 3.3 could be established;
- by transferring an adult female from Frankfurt to Tel Aviv, a trio 1.2 could be formed;
- by bringing a young adult captive-bred female from Krefeld to Frankfurt, the "loss" of two captive-bred daughters on loan was partly compensated;
- the transfer of a young adult captive-bred Frankfurt male to Berlin Zoo allowed the socialization with a captive-bred female who could so be removed from the natal group where very probably her first child was sired by her own father (as the latter is also about 27 years old, the new male

is thought to become his successor too);
- some other transfers were from or to the nursery of the Stuttgart Zoo, meaning that babies were brought to be reared with conspecifics and late infants or juveniles left to be integrated in groups (f.i. Zurich, Amsterdam). The Stuttgart Zoo has opened its nursery to all EEP-zoos. This has been a tremendous help, as the skill of the staff in hand-rearing gorillas is outstanding. There were no losses during quite a number of years.

3. Recommendations for the next year(s)

Some of the transfer-recommendations have still to be honoured in 1991, f.i.:

- One young-adult male will be transferred from Stuttgart to Barcelona in early 1991 and another one from Barcelona to Kolmarden. Through these transfers 1.1 gorillas of the Barcelona breeding line will be provided with unrelated partners and the group in the Wuppertal Zoo will become more stabilized with only one adult male remaining.
- The female of the Rostock Zoo will be transferred to Hannover to give her a last breeding chance.
- It will be necessary to use the two females in the Soviet Union, whose males died in 1990 to establish a broader breeding basis in one or the other of the small 1.1 groups, foremost of all to finally find (after some unsuccessful tries) a solution to the very unsatisfying father-daughter-situation in the Rome Zoo.

The discussion of a new set of recommendations will take place at the next committee-meeting in May 1991.

In addition to table 2 a which shows the population-structure in the EEP, table 2 b shows the population-structure in the EEP-region. There are still three institutions which have not joined the EEP so far (see also table 1, bottom). They keep 7.7 gorillas, including two captive bred ones. Of special interest is the Primate Research Institute in Franceville in Gabon, which maintains a colony of 4.6 gorillas and has already established a breeding line. Further attempts will be made to get this centre to join the EEP.

The International Gorilla Studbook (which is kept by the EEP-coordinator) will be computerized at last in 1991 and therefore also the EEP-data, so that genetic analyses of the population can be carried out. The latter were not a pressing problem till now, but with the steady increase of the captive-bred population over the last years it slowly has become a necessity.

4. Problems

One main problem in this EEP lies in the individuality of the gorillas. They are not "cats and dogs", so to speak, but are animals with which no zoo parts easily, be it on account of the superintendance of zoos, on behalf of the visitors or with regard to the special relationship that exists between the gorillas and the zoo personnel. Another problem seems to be the difficulties related to paperwork and different veterinary laws when regarding shipment from one country to another. Some zoos are quite used to the exchange of

apes, but others are not and those are very shy of the possible risks involved. So it takes some time to arrange a transfer and very often a lot of more time to get it realized.

Bonobo (*Pan paniscus*) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Bruno Van Puijenbroeck
Royal Zoological Society of Antwerp
Koningin Astridplein 26
2018 Antwerpen
Belgium

Studbook keeper:
Bruno Van Puijenbroeck (International)

Species committee:
B. Van Puijenbroeck, Antwerp Zoo
P. Rahn, Berlin Zoo
R. Faust, Frankfurt Zoo
U. Ruempler, Cologne Zoo
I. Halle, Leipzig Zoo
M. Holtkötter, Wilhelma, Stuttgart
U. Schürer, Wuppertal Zoo

Committee meetings:
Meeting in Wuppertal, 27th November 1990

Studbook:
Most current version available in print: 31 December 1989. In preparation: 31 December 1990.

Also available:
- summary SSP/EEP masterplan workshop bonobo, Antwerp, December 1-2, 1989.
- report EEP workshop bonobo, Wuppertal, November 27, 1990.

Husbandry guidelines:
Official EEP-SSP husbandry protocols in preparation (follow-up masterplan).

Research:
- ethology: social structure, mother-infant behaviour, environmental enrichment
- demographics and population genetics

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1

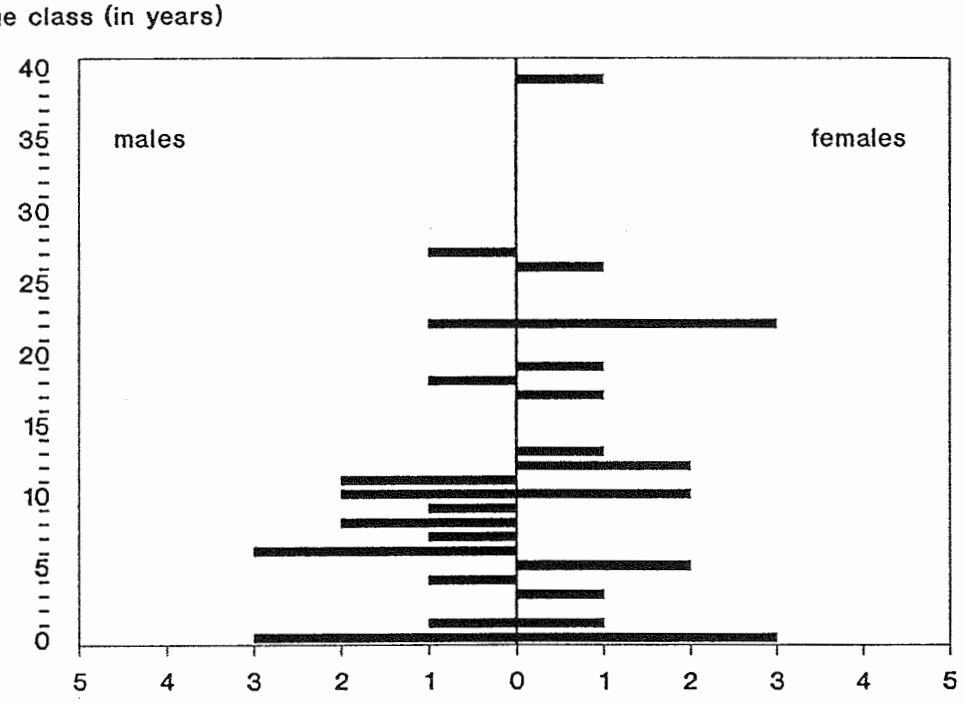
Age and sex distribution of the EEP population: see Table 2

Summary: see next page.

Table 1: Status and development of the Bonobo (*Pan paniscus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Antwerp/B	4.3	2.0	-	-	-	-	-	6.3
Berlin (Zoo)/G	1.1	-	-	-	-	-	-	1.1
Cologne/G	3.1	0.1	-	-	-	-	-	3.2
Frankfurt/G	3.5	0.2	-	-	-	-	-	3.7
Leipzig/G	3.0	-	-	-	-	-	-	3.0
Stuttgart/G	1.5	-	-	-	-	-	-	1.5
Wuppertal/G	3.2	1.0	-	-	-	-	-	4.2
Totals 7 participants	18.17	3.3	-	-	-	-	-	21.20

Table 2: Age distribution of the Bonobo (*Pan paniscus*) in the EEP as on 31 December 1990



In 1990, 3 male and 3 female bonobos were born within the EEP. All six survived their first months of life. Both Antwerp newborns are the first offspring of wild-born females, which raises the number of founders of the EEP population to 16. No deaths or transfers occurred in 1990. Twelve EEP bonobos are wildborn, all captive born animals are first or second generation zoo-born.

3. Recommendations for the next year(s)

* **Transfers:**

SSP-EEP exchanges:
- male Maiko (# 128, seven years old) and male Congo (#137, five years old) from Frankfurt to SSP.
- female Kuni (# 131, at the moment six years old) from Stuttgart to

SSP at the age of 7-8 years (1992-1993).
- a female from SSP to EEP (Connie-Lenore or another female, this will be discussed within the SSP).

Within EEP:
- female Dzeeta (# 67, 20 years old) from Antwerp to Leipzig, to provide male Kakowet (# 93, 11 years old and imported from the SSP) female company.

* **Enlarge/adapt holding facilities** to be able to bring every EEP male in a breeding situation (see Problems)

* Develop official **management and husbandry guidelines**

* Develop **EEP initiatives for the bonobo in Zaire**, including setting up a bonobo fund.

* **recruit bonobos in captivity outside in Zaire** to enlarge founder basis.

More details on above recommendations can be found in the "Report EEP workshop bonobo, Wuppertal 1990" and in "Summary SSP/EEP masterplan workshop bonobo, Antwerp 1989".

4. Problems

Main problem = avoiding "surplus" males
Most zoos prefer to keep a group consisting of one male and several females. However, equal numbers of males and females are born, and males are genetically as important as females. Long-time isolation of a male will lead to abnormal breeding behaviour. In the wild, bonobos live in small parties (on average six animals) within larger groups. There is frequent interaction between groups and between parties, and there are no surplus males! Zoos should adopt management plans that simulate this natural group composition as closely as possible and should allow frequent interaction between sub-groups. This way, it will be possible to use every male for breeding. This will require larger and flexible holding facilities, and more experience and knowledge on holding adult males together, on optimal group sizes and interactions between groups.

Orang utan (*Pongo pygmaeus* sspp.) EEP Annual Report 1990

1. Information on organization, structure and activities of the programme

Species coordinator:
Dr. Clemens Becker
Zoo Karlsruhe
Ettlinger Straße 6
D-7500 Karlsruhe 1
Germany

Studbook keeper:
Dr. Clemens Becker (European)
Lorraine Perkins, Atlanta (International)

Species committee:
M.C.K. Bleijenberg, Rotterdam Zoo
D. Dekker, Amsterdam Zoo
M.C. Demontoy-Bomsel, Paris Zoo
R. Faust, Frankfurt Zoo
M. Holtkötter, Wilhelma, Stuttgart
T. de Jongh, Arnhem Zoo
J. Lilleör, Aalborg Zoo
W. Ludwig, Dresden Zoo
Ms. V. Meshik, Moskau Zoo
F. Ostenrath, Duisburg Zoo
B. Rau, Munich Zoo
D. Rüedi, Basel Zoo
Ch. R. Schmidt, Zürich Zoo
K. Tomasova, Dvur Kralove Zoo

Committee meetings:
First meeting to be held in Budapest May 1991

Studbook:
The European members of IUDZG approved an EEP for orang utans at the annual IUDZG conference held in San Antonio (TX, USA), 18 September 1989. The co-ordinator has kept a regional studbook for countries in Middle Europe since 1982. This was extended to Continental Europe in 1988 (last regional studbook: VIII/1989).

Husbandry guidelines:
Not yet available

Research:
Not specified

2. Information on status and developments in the programme population in 1990

Status and development of the EEP population: see Table 1a, 1b and 1c

Age and sex distribution of the EEP population: see Table 2a, 2b and 2c

Table 1a: Status and development of the Bornean orang utan (*Pongo p. pygmaeus*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Aalborg/DK	2.2	-	-	-	-	-	-	2.2
Amsterdam/NL	4.3	-	-	-	-	-	-	4.3
Antwerpen/B	1.2	-	-	-	-	-	-	1.2
Arnhem/NL	2.7	(1.0)	-	0.1	-	-	1.0	1.6
Barcelona/ES	0.1	-	-	-	1.0	-	-	1.1
Berlin (Zoo)/G	2.3	-	-	-	-	-	-	2.3
* Boras/S	-	-	0.1	-	1.0	-	-	1.1
Cologne/G	4.7	-	-	-	-	-	-	4.7
Duisburg/G	2.6	0.1	-	-	-	-	-	2.7
Dvur Kralove/CS	0.1	-	-	-	-	-	-	0.1
Frankfurt/G	1.2	-	-	-	-	-	-	1.2
Hannover/G	1.1	-	-	-	-	-	-	1.1
Krefeld/G	2.4	-	-	-	-	-	-	2.4
Les Mathes/F	0.1	-	-	-	-	-	-	0.1
(Madrid/ES	0.1	-	-	-	-	-	-	0.1)
Moskau/USSR	0.2	-	0.1	-	-	-	-	0.3
Münster/G	2.1	-	-	-	-	-	-	2.1
Neunkirchen/G	1.1	-	-	-	-	-	-	1.1
Osnabrück/G	0.1	-	-	-	-	-	-	0.1
Paris/F	1.2	-	-	-	-	0.1	-	1.1
Rhenen/NL	4.2	-	0.1	-	-	-	1.0	3.3
Rostock/G	0.1	-	-	-	-	-	-	0.1
Rotterdam/NL	5.3	-	-	-	-	-	1.0	4.3
Studen/CH	3.2	-	-	-	-	-	-	3.2
Tallin/USSR	0.1	-	-	0.1	-	-	-	-
Usti nad Labim/CS	1.1	-	-	-	-	-	-	1.1
Vienna/A	1.1	-	-	-	-	-	-	1.1
Wuppertal/G	1.1	-	-	-	-	-	-	1.1
Zürich/CH	0.1	-	-	0.1	-	-	-	-
Totals 26 participants	40.61	1.1 (1.0)	0.3	0.3	2.0	0.1	3.0	39.61

* New EEP participants
() No EEP participant

Bornean orang utan (*Pongo pygmaeus pygmaeus*)

Altogether 27 zoos in Continental Europe hold 100 Bornean orang utans (39.61). Only one zoo (Madrid) does not yet participate in the EEP, however it has shown interest in joining the EEP.

The age of 41 wildborn Bornean animals (17.24) varies between 3 and 41; only seven of these are less than 20 years old.
The 59 zooborn Bornean animals (22.37) are up to 21 years old; more than half of these are older than 8 years.

Table 1b: Status and development of the Sumatran orang utan (*Pongo pygmaeus abeli*) EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Basel/CH	1.2	1.0	-	-	-	-	-	2.2
Berlin (Tierpark)/G	2.4	-	-	-	-	-	1.0	1.4
Berlin (Zoo)/G	2.3	0.2	-	0.2	-	-	-	2.3
Budapest/H	1.1	(1.0)	-	-	-	-	-	1.1
Dortmund/G	2.1	-	-	-	-	-	-	2.1
Dresden/G	2.6	1.0	-	-	-	-	-	3.6
Duisburg/G	2.0	-	-	-	-	-	-	2.0
Dvur Kralove/CS	1.0	-	-	-	-	-	1.0	-
Frankfurt/G	2.1	-	-	-	-	-	-	2.1
Gävle/S	1.1	-	-	-	-	-	-	1.1
Hamburg/G	1.4	-	-	-	-	-	-	1.4
Hannover/G	0.1	-	-	-	-	-	-	0.1
Heidelberg/G	4.4	-	-	-	-	-	-	4.4
Kaliningrad/USSR	1.1	-	-	-	-	-	-	1.1
Le L. Bottereau/F	1.0	-	-	-	-	-	-	1.0
Leipzig/G	0.2	-	-	-	-	-	-	0.2
Moscow/USSR	1.1	-	0.1	-	-	-	-	1.2
Munich/G	2.5	0.1	-	-	-	-	-	2.6
Münster/G	1.1	-	-	-	-	-	-	1.1
Nuremberg/G	3.3	-	-	1.0	-	-	-	2.3
Ostrava/CS	1.0	-	-	-	-	-	-	1.0
Peaugres/F	1.1	-	-	-	-	-	-	1.1
Poznan/PL	1.1	-	-	-	-	-	-	1.1
Prague/CS	1.0	-	-	-	-	-	-	1.0
Rome/I	1.0	-		-	-	-	1.0	-
Rostock/G	-	-	0.2	-	-	-	-	0.2
Rotterdam/NL	0.1	-	-	-	-	-	-	0.1
Stuttgart/G	2.6	1.0	1.0	-	-	-	-	4.6
Tallin/SU	1.1	-	-	0.1	-	-	-	1.0
(Wroclaw/PL	1.0	-	-	-	-	-	-	1.0)
Zürich/CH	2.9	-	-	-	-	-	-	2.9
Totals 28 participants	41.60	4.3 (1.0)	1.3	1.3	-	-	3.0	41.63

* New EEP Participants
() no EEP Participant

Sumatran orang utan (*P. p. abeli*)

Altogether 29 zoos in Continental Europe hold 104 Sumatran orang utans (41.63). Only one zoo (Wroclaw) does not participate in the EEP.

The age of 20 wildborn Sumatran animals (8.12) varies between 23 and 50, i.e. for the first time there are no wildborn animals under the age of 20. Seventy-five percent of these animals are older than 30 years.The zooborn Sumatran animals (33.51) are up to 24 years old; 51 of these are older than 8 years.

Table 1c: Status and development of the Orang utan hybrids and unknown subspecies in the EEP population in 1990

Participants	Status 1 Jan.	Births (DNS)	Transfers between EEP zoos		Transfers with non-EEP zoos		Deaths	Status 31 Dec.
			in	out	in	out		
Barcelona/ES	1.1	-	-	-	-	-	-	1.1
Basel/CH	0.1	-	-	-	-	-	-	0.1
Berlin (Zoo)/G	1.1	-	-	-	-	-	-	1.1
Budapest/H	1.0	-	-	-	-	-	-	1.0
Dvur Kralove/CS	1.1	-	-	-	-	-	0.1	1.0
Hamburg/G	2.0	-	-	-	-	-	-	2.0
Hannover/G	2.2	-	-	-	-	-	-	2.2
Le L. Bottereau/F	0.1	0.1	-	-	-	-	-	0.2
(Leningrad/USSR	1.1	-	-	-	-	-	-	1.1)
Les Mathes/F	3.1	-	-	-	-	-	-	3.1
Lisbon/P	1.0	-	-	-	-	-	-	1.0
Moscow/USSR	2.0	-	1.0	-	-	-	-	3.0
Münster/G	1.0	-	-	-	-	-	-	1.0
Osnabrück/G	1.0	-	-	-	-	-	-	1.0
Prague/CS	1.0	-	-	-	-	-	-	1.0
Rome/I	1.2	-	-	-	-	-	-	1.2
Romaneche/F	1.2	(0.1)	-	-	-	-	0.1	1.1
Rostock/G	2.1	0.1	-	-	-	-	-	2.2
Rostow-on-Don/USSR	1.1	-	-	-	-	-	-	1.1
Tallin/USSR	1.0	-	-	1.0	-	-	-	-
Vienna/A	1.0	-	-	-	-	-	1.0	-
(Wingst/G	1.2	-	-	-	-	-	-	1.2)
(Wroclaw/PL	2.1	-	-	-	-	-	-	2.1)
Wuppertal/G	1.3	-	-	-	-	-	-	1.3
Totals 19 participants	29.21	0.3 (0.1)	1.0	1.0	-	-	1.2	28.21

() No EEP participant

Hybrids and unknown subspecies

Altogether 22 zoos still hold 49 hybrid orang utans or animals of unknown subspecies. Nineteen of these holders are participants in the EEP. Animals of unknown subspecies are held by four zoos participating in the EEP (1.0 in Budapest, 1.0 in Dvur Kralove, 1.0 in Moscow and 1.1 in Rostov-on-Don) and by one zoo not participating in the EEP (1.1 Leningrad). Thus 23.19 hybrids remain in Continental Europe.
The remaining 42 zooborn hybrids (23.19) are up to 29 years old; 29 of these animals are older than 8 years.

Table 2a: Age distribution of Bornean orang utan (*Pongo p. pygmaeus*) in the EEP as on 31 December 1990

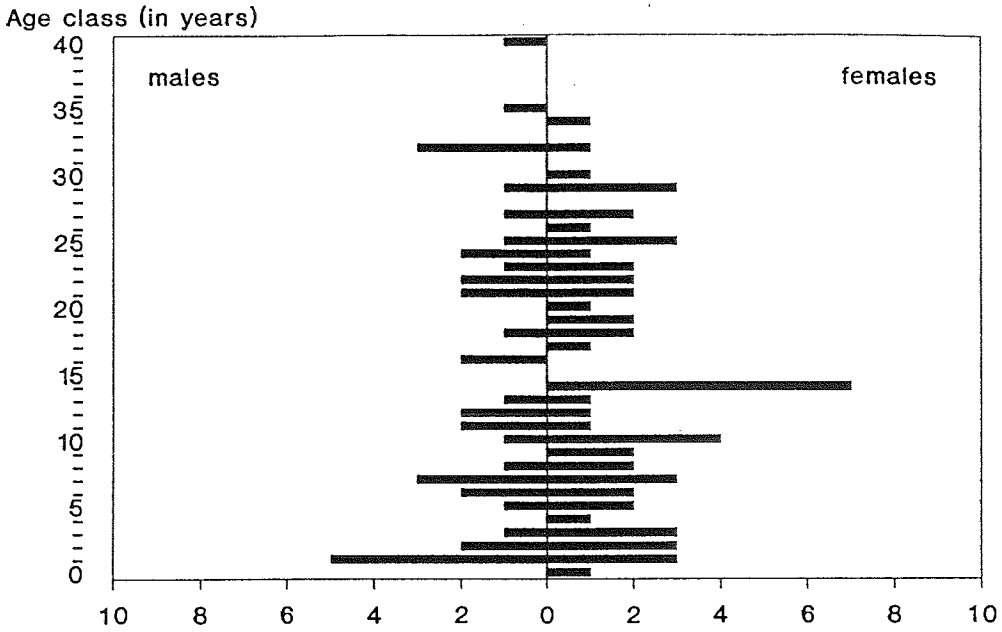


Table 2b: Age distribution of Sumatran orang utan (*Pongo pygmaeus abeli*) in the EEP as on 31 December 1990

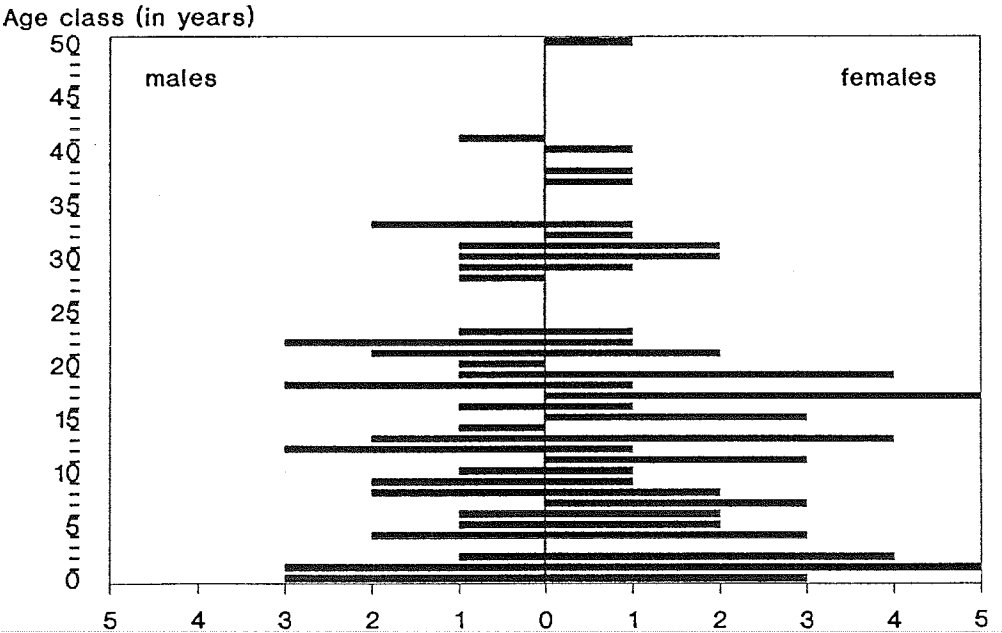
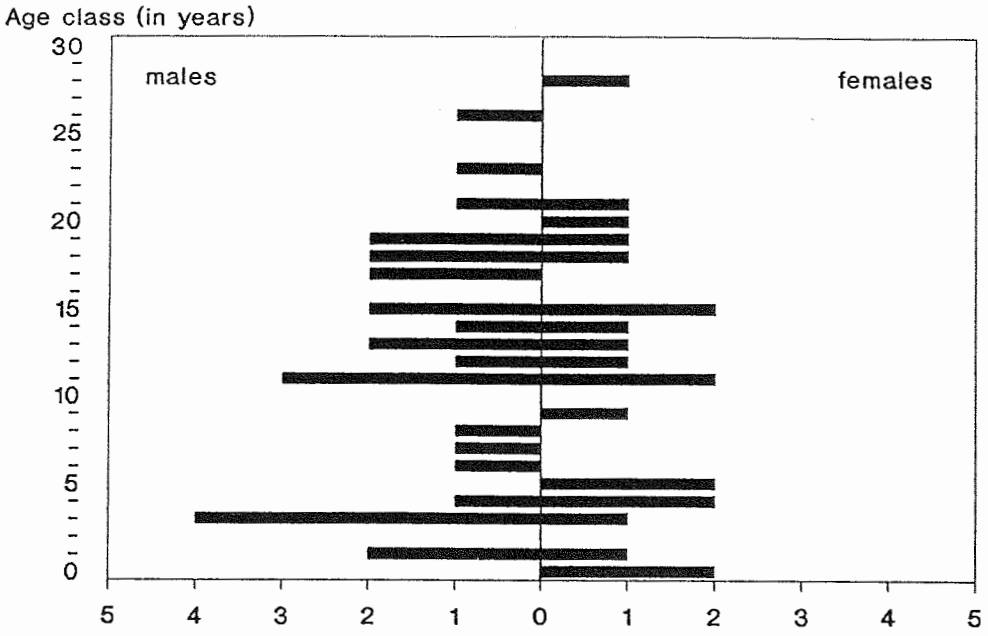


Table 2c: **Age distribution of orang utan hybrids and unknown subspecies in the EEP as on 31 December 1990**



Summary:

Orang utans are held in 54 zoological gardens in Continental Europe, of which 51 zoos are participants in EEP. These zoos can be classified into 7 regions:
region 1: France (5 zoos), Spain (1 zoo) Portugal (1 zoo)
region 2: Switzerland (3 zoos), Austria (1 zoo), Italy (1 zoo)
region 3: Germany (20 zoos)
region 4: The Netherlands (4 zoos), Belgium (1 zoo)
region 5: Denmark (1 zoo), Sweden (2 zoos)
region 6: Czechoslovakia (5 zoos), Poland (1 zoo), Hungary (1 zoo)
region 7: USSR including Baltic (4 zoos)

253 (108.145) orang utans were held in Continental Europe on 31 December 1990, of which only eight are not included in the EEP. More than 50% of these 245 EEP animals are held in region 3 (Germany) and altogether nearly 80% are in the regions 2, 3 and 4.

Eleven zoological gardens on the British Isles (regional studbook: Bristol Zoo) hold 54 orang utans (31 December 1990). Including these, there are 65 zoos in Europe holding 307 orang utans.

3. Recommendations for the next year(s)

In Continental Europe 100 Bornean orang utans and 104 Sumatran orang utans are held. For seven animals a determination of subspecies has not yet been made. The proportion of the hybrids (42 animals = 17 %) is very high, thus occupying to a great extent accommodation facilities that could be used for pure subspecies. The participants in EEP have to elaborate solutions as regards the way in which hybrids shall be treated in future.

For the exact identification of subspecies karyotyping has to be applied

to all animals of the wildborn population, at the latest to all animals of the F1 generation. If this genetic analysis is applied to later generations, it may lead to false results. Past experience has shown that the "eye ball method" used to determine the subspecies has failed in many cases and this may have serious consequences (hybrids).

It has to be considered if and in which way still living wildborn animals that do not yet breed can contribute to the founder population (participation in breeding).

Only the Bornean subspecies is represented by seven wildborn animals that are younger than 20 years, and in both subspecies wildborn animals will only be able to contribute to breeding for a few more years.

The "founder representation" will have to be determined regarding both subspecies as soon as the ZSM program will enable us to effect separate analyses for subspecies. The it will be possible to determine which founder animals are over-/underrepresented and what might be the consequence of such findings for long-range work.

It has to be considered if and in which way orang utans held in zoos on the British Isles might be included in the EEP with a view to enlarge the genetic/demographic basis. During the last years several animals could already be integrated into the EEP area based on recommendations of the JMSG and the Anthropoid Ape Advisory Panel.

4. Problems

In each case the EEP co-ordinator should be informed/asked in advance before animals are given away by a zoo. For most of the participants in the EEP this is a matter of routine, others, however, do not attach too much importance to this!

Such a consultation with the co-ordinator is especially important in those cases where it is intended to sell animals to institutions not participating in the EEP or even to dealers.

Only if the co-ordinator is aware of the "orang utan policy" of the different zoos and if he is informed in time about any intentions to give animals away, it will be possible to find solutions to give animals away, it will be possible to find solutions acceptable to all zoos involved and do a positive EEP work.

REPORT OF A
MEETING TO FORM AN EEP PRIMATE TAXON ADVISORY GROUP (TAG)
EEP CONFERENCE - EDINBURGH, U.K. - JULY 1992
WITH ADDITIONS FROM FURTHER MEETINGS AT
INTERNATIONAL PRIMATOLOGICAL CONGRESS - STRASBOURG - AUGUST 1992

Current EEP Primate TAG Leaders: *Miranda Stevenson (Edinburgh Zoo)*
Christian Schmidt (Zurich Zoo)

Miranda Stevenson introduced the concept by outlining the formation of the Primate TAG in the British Isles. This Group was co-chaired by Neil Bemment of Paignton Zoo and Jo Gipps of London Zoo.

Miranda stated that she was happy to help start up the TAG but hoped that someone else would co-chair it with Christian after one year as she felt she had too many other commitments. However, it may well be that the TAG would be subdivided into three or four TAGs has been the case in North America, e.g. Asian, African, and American Primates and Apes.

The important factor was to carry out as much preliminary work over the next 12 months and review the situation and progress in a year's time.

The first phase of the work was a comprehensive European Survey of primate species kept, where and their numbers.

Dr. Michael Schwebbe and Joachim Wilde had organized a census of primates in European collections which had been published in 1988 in The German Primate Center's "Primate Report". At a subsequent meeting in Strasbourg, Drs. Schwebbe and Wilde agreed to repeat the census for the TAG. An explanatory sheet would accompany the census form explaining the basis of the TAG and the need for the census and the use to which it would be put. M. Stevenson agreed to provide this sheet. The format of the previous census was considered adequate with the possible addition of a section on cage size and group composition.

The aim was to send out the questionnaire in October 1992 with a three month deadline for return. The German Primate Center were happy to handle the mailing but would need additional information on names and addresses to extend the survey to all zoos of interest.

Koen Brouwer of the Dutch Foundation for Research in Zoological gardens had carried out a Mangabey Survey in 1990 and this report is available.

There had been a survey of primates in Italian Zoos carried out and this report is also available.

Barcelona Zoo is to be asked if they would help out with Spanish institutions.

Budapest would be asked to assist with Hungarian collections.

Poznan would help with Poland.

A list of Czech collections is already available.

Klaus Pohle had a list of Soviet Zoos keeping primates. This list is somewhat out-of-date but is available. The new political situation of the old Soviet countries made checking more difficult. Moscow could be asked to check.

Pierre Gay of Doue la Fountane and Jean-Luc Berthier of Jardin des Plantes would work with Marc Boussekey of St Martin la Plaine to check the French Zoos and communicate directly with The German Primate Center.

In the long term, the quality of space must be considered along with the quantity.

The initial working group suggested to assist the chairs (Schwebbe and Wilde) was:

Werner Kaumanns	The German Primate Center
Neil Bemment	Paignton Zoo
Clemens Becker	Karlsruhe Zoo
Rosl Kirchshofer	Frankfurt Zoo
Bruno van Puijenbroeck	Antwerp Zoo
Stephen Standley	Cricket St Thomas
Pierre Gay	Doue la Fountane
Jean-Luc Berthier	Jardin des Plantes
Bengt Holst	Copenhagen Zoo

The EEP Executive Office would be in charge of all TAG surveys. Therefore, they must be kept informed of country collection lists and could also advise on questionnaire format.

A further meeting would be arranged once census returns had been received. Once the census was complete, a meeting would be held to further establish the workings of the EEP Primate TAG.

Miranda Stevenson
27 August 1992

PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 11

REGIONAL CAPTIVE CONSERVATION PROGRAMS/U.K. JMSG

AUG - 6 1992

THE WHITLEY WILDLIFE CONSERVATION TRUST
PAIGNTON ZOOLOGICAL & BOTANICAL GARDENS
Totnes Road Paignton Devon TQ4 7EU Telephone 0803 557479 Fax 0803 523457

29th July, 1992.

Mr Tom Foose
Executive Officer
CBSG
12101 Johnny Cake Ridge Road
Apple Valley
MN55124
U.S.A.

Dear Tom,

Enclosed are the proceedings of our most recent Primate Taxon Advisory Group meeting at which a more formal structure was agreed with subgroup leaders elected (coerced!) to take responsibility for maintaining overviews of the various primate groupings.

The reports refer closely to the CBSG Primate Captive Action Plan and hopefully regular communication between TAG chairmen in the different regions will ensure that duplication of our respective captive breeding efforts will be avoided as much as possible. I believe that if the 'smaller' regions like ourselves and Australasia are able to state what our carrying capacity is for the various primate taxa based on their accommodation requirements then it will give those collections in North America and continental Europe a clearer picture of what needs to be done in order to achieve population levels as recommended by the Mace/Lande criteria.

I hope you enjoyed the EEP meeting in Edinburgh.

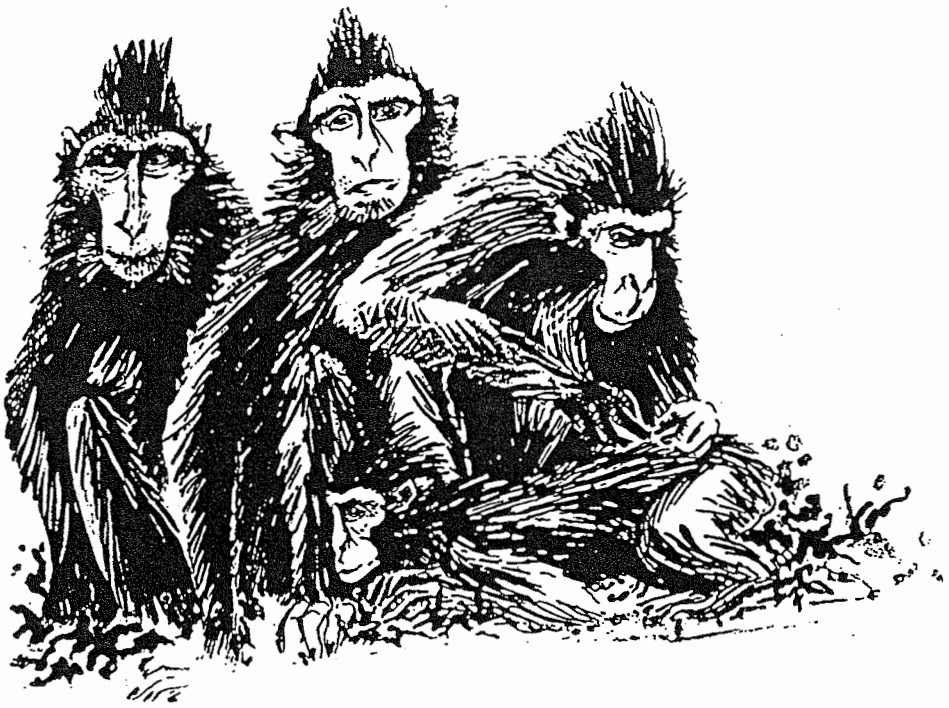
Yours sincerely,

Neil Bemment

Neil Bemment
Curator of Mammals
Co-chairman Primate TAG

PRIMATE TAXON ADVISORY GROUP

for the British Isles



Reports from the meeting held at Banham Zoo

on 26th & 27th March, 1992.

Joint Management of Species Committee

Compiled and edited

by

Neil Bemment

THE WHITLEY WILDLIFE CONSERVATION TRUST

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Front Cover Illustration by Sue Misselbrook

FEDERATION OF ZOOLOGICAL GARDENS OF GREAT BRITAIN AND IRELAND

PRIMATE TAG MEETING

held in Banham Zoo on 26th and 27th March 1992

Present:

Mr Chris Anscombe	Chessington Zoo
Mr David Armitage	Banham Zoo
Mr Philip Arnold	Penscynor Zoo
Mr Neil Bemment	Paignton Zoo
Ms Penny Boyd	Burstow Wldlife Sanctuary
Mr Mick Carmen	Regent's Park Zoo
Mr Bryan Carroll	Jersey WPT
Mr Graham Catlow	Edinburgh Zoo
Mr Rob Colley	Penscynor Zoo
Mr Mark Challis	Knowsley Safari Park
Ms Sarah Christie	Regent's Park Zoo
Mr Mike Clark	Regent's Park Zoo
Mr Nick Ellerton	Chester Zoo
Mr Colin Fountain	Cotswold's WLP
Dr Jo Gipps	Regent's Park Zoo
Mr Geoffrey Greed	Bristol Zoo
Mr Derek Grove	Dudley Zoo
Mr David Hughes	Glasgow Zoo
Mr Bill James	Regent's Zoo
Ms Hilary Keating	Bristol Zoo
Mr Sean McKeown	Fota WLP
Ms Julie Mansell	Belfast Zoo
Mr Stewert Muir	Shaldon Wildlife Trust
Dr Roy Powell	Paignton Zoo
Mr John Pullen	Regent's Park Zoo
Mr Stephen Standley	Cricket St. Thomas
Ms Arleen Reid	Glasgow Zoo
Dr Miranda Stevenson	Edinburgh Zoo
Mr John Stronge	Belfast Zoo
Mr Andrew Swales	Hamerton Wildlife Centre
Mr Ernie Thetford	Howlett's Zoo
Mr Simon Wakefield	Marwell Zoo
Mr Ian Williams	Chessington Zoo

M I N U T E S

Martin Goymour welcomed everyone to Banham Zoo, saying how happy they were to host this meeting, which would play an important part in the advancement of captive breeding programmes.

Reports of the previous meeting, held in Paignton Zoo in March 1991 had been circulated and were available at the meeting.

Miranda Stevenson provided an overview of the new structure of the Joint Management of Species Programmes in the U.K. All programmes now came under the auspices of the Federation of Zoos. A sub-committee of CAM had been formed. This was the Joint Management of Species Committee (JMSC), which was responsible for the running of the programmes. These were being re-organised under TAGs (Taxon Advisory Groups), and people were invited to petition for a TAG chair. TAG chairs would then be responsible for forming their advisory/working groups which would be composed of species co-ordinators and other experts. Future links between the JMSP and EEP programmes were described as were links between regional programmes and CBSG.

Documentation, explaining the new structure, and giving details of the terms of reference of JMS programmes, structure and organisation of TAGs, responsibilities of studbook keepers and co-ordinators were circulated.

Much would be resolved on the joint workings of U.K. and EEP TAGs before the Edinburgh EEP meeting in July 1992. This would be an important meeting as it would finally cement the links between the British Isles and Mainland Europe.

A discussion followed in order to resolve the operational structure of the Primate TAG.

The following was agreed:

The TAG would be co-chaired by Neil Bemment and Jo Gipps

The work would be divided in that Jo would take the major responsibility for Hominoidea and Neil for the remaining suborders.

It was agreed that the work of the TAG would be assisted by the formation of sub-groups. Sub-group leaders would be responsible for leading their groups in discussion which would follow the laid out working programmes of the TAG. They would also take minutes, and present reports on their group meetings to the TAG co-chairs. These subgroups would meet for discussions at each TAG with two or three meeting simultaneously. Reports would then be provided to the entire meeting so that comments and discussion could take place with the assembled session.

The following was agreed:

All Prosimians	Stephen Standley
Callitrichidae(+Callimico)	Bryan Carrroll
Cebidae	Roy Powell
African Cercopithecidae	Neil Bemment
Asian Cercopithecidae	Hilary Keating and Ernie Thetford
Hylobatidae	Sarah Christie
Pongidae	Jo Gipps

Sarah Christie agreed to take over the co-ordination of gibbons, Mollie Badham and Twycross Zoo would continue as studbook keepers with assistance from Sarah.

Neil Bemment and Roy Powell provided a recap of the results of their space survey conducted in 1991. This had been published in the Paignton proceedings. They had now received most of the updates for 1992 from this and were currently analysing these results.

One of the problems had been inconsistency in numbering/naming cages and collections were asked to be consistent in naming , identifying cages. There would be a decrease in space owing to the closure of Kilverstone and the reorganisation of primate space at London and Chester.

This was an evolving process and the method of analysis might need to be refined. It would be worth considering a method where those institutions that had facilities could enter data directly onto disc.

<u>The meeting was then organised into workshops as follows:</u>

A.Noon 27th.

Callitrichidae
Cebidae
African Cercopithecidae

Morning 28th.

Prosimians
Asian Cercopithecidae
Hylobatidae
Pongidae

Sub-group leaders provided reports to the assembled meeting at the end of each session. These reports are appended to the minutes.

It was agreed that sub-groups should consider the following aspects:

Overview the present species.
Conservation / husbandry research priorities.

Whether to increase or decrease current populations and the reasoning behind this. Problems hindering and solutions to aid in these aims.

Research needs as regards management programmes: taxonomic, behavioural, husbandry other management problems. Define and suggest future plans for action.

Future projection: species that should be brought into the region, individuals of species low in numbers that need to be brought into the region.

Liaison with other regions and their situation.

Areas in which more information is needed

Action recommended for next 12 months.

Summary reports from each sub-group are appended to these minutes.

INTRODUCTION

Each of the following subgroup leader reports has aimed to review the primate taxa currently maintained in British collections in conjunction with the CBSG Captive Primate Action Plan (September 1991). The Mace/Lande criteria for degree of threat in the wild and priorities for captive breeding are defined below and each taxa has been assigned a category.

CAPTIVE PRIORITY RECOMMENDATION			DEGREE OF THREAT IN WILD		
1	:	90% / 100 YEARS I	C	:	Critical
2	:	90% / 100 YEARS II	E	:	Endangered
3	:	NUCLEUS I	V	:	Vulnerable
4	:	NUCLEUS II	HA	:	High Anxiety
ELIM	:	Eliminate from captivity			

Definitions:

CRITICAL : 50% probability of extinction within 5 years or 2 generations (whichever is longer)

ENDANGERED : 20% probability of extinction within 20 years or 10 generations (whichever is longer)

VULNERABLE : 10% probability of extinction within 100 years

HIGH ANXIETY : Borderline vulnerability

1 : Population sufficient to preserve 90% of the average heterozygosity of the wild gene pool for 100 years to be developed within 1-5 years

2 : Population sufficient to preserve 90% of the avaerage heterozygosity of the wild gene pool for 100 years to be developed within 5-10 years

3 : A captive nucleus (50-100 individuals) to always represent 98% of the wild gene pool

4 : A well managed captive nucleus (25-100 individuals) for taxa not of conservation concern, but present in captivity or otherwise of interest

ELIM : Taxa not of conservation concern and which should be managed to extinction in captivity

PROSIMIANS

Stephen Standley

The prosimian species currently maintained in British collections were reviewed in conjunction with the CBSG Primate Action Plan.

Lorisids

Species presently maintained in the British Isles

V/3	Slender loris	Loris tardigradus
4	Slow loris	Nycticebus coucang
V/1	Pygmy slow loris	N. pygmaeus
	Thick-tailed bushbaby	Galago crassicaudatus
	Senegal bushbaby	G. senegalensis
4	Moholi's bushbaby	G. moholi

Currently there are three species of loris and bushbaby held in British collections and in view of the waning interest in nocturnal houses, it is recommended that efforts be concentrated on Nycticebus pygmaeus for which there is an ISB in preparation. G. moholi is not kept in sufficient numbers in this country to be viable. Jo Gipps confirmed that London would continue to maintain the regional lorisid studbook in view of the studbook keeper's absence abroad.

Lemurids

Species presently maintained in the British Isles

4	Fat-tailed dwarf lemur	Cheirogaleus medius
4	Lesser mouse lemur	Microcebus murinus
3	Coquerel's dwarf lemur	Mirza coquereli
E/2	Mongoose lemur	Lemur mongoz
V/2	Black lemur	L. macaco macaco
4	Brown lemur	L. fulvus fulvus
4	Red-fronted lemur	L. f. rufus
4	White-fronted lemur	L. f. albifrons
	Mayotte lemur	L. f. mayottensis
V/3	Sanford's lemur	L. f. sanfordi
V/3	Collared lemur	L. f. collaris
V/3	White-collared lemur	L. f. albocollaris
3	Ringtailed lemur	L. catta
C/1	Alaotra gentle lemur	Hapalemur griseus alaotrensis
E/2	Red & black ruffed lemur	Varecia variegata rubra
E/2	Black & white ruffed lemur	V. v. variegata
C/1	Aye-aye	Daubentonia madagascariensis

Mouse/dwarf lemurs

None of the three species of cheirogaleid listed above are of concern in terms of conservation status and are not recommended for intensive captive breeding programmes.

Mongoose lemur

Mike Clark (London) is due to publish the first ISB which is to include a paper on husbandry research carried out at Duke Primate Centre, where this species has been kept under a number of different regimens. Diets were also pinpointed as an area of concern for L. mongoz. Dudley, Jersey and Paignton have expressed an interest in maintaining a viable UK population.

Black lemur

A report on ongoing research on L. m. macaco in the wild by Josephine Andrews is eagerly awaited. London, Banham and Colchester have expressed an interest in this species.

Brown lemur spp.

In view of the suspected hybrid status of most of the UK population of L. f. albifrons and the dubious sub-specific status of L. f. mayottensis, a need for a review of karyotypic research on this species was highlighted.

Note: A paper from the International Journal of Primatology, Vol. 1, No 1, 1980 : 'Chromosomes of lemuriformes, V1 Comparative Karyology of Lemur fulvus: A G - Banded Karyotype of Lemur fulvus mayottensis' by A. E. Hamilton, I. Tatterall, R. Sussman & J. Beuttner-Janusch does not identify any karyotypic differences between L. f. fulvus, L. f. mayottensis, L. f. sanfordi, L. f. albifrons or L. f. rufus, but stated that there is distinct karyotypic heteromorphism between L. f. collaris and L. f. albocollaris. However, it was the opinion of the authors that suspecific status should be afforded to the above in view of their distribution and distinct pelage variation.

Ring-tailed lemur

Much of the preparatory work for a L. catta register was carried out by John Buchan prior to him going abroad and it is hoped that another keeper at London Zoo will complete the task.

Ruffed lemur

This species is coordinated through an EEP organised by Uta Reumpler-Hick at Cologne Zoo and it is recommended that all British collections participate in this programme. Mr Mallinson was to be asked if he would continue to act as the regional representative.

Other species

It was agreed that those non-threatened species currently maintained in small numbers should not be actively managed on a regional basis. However, should the aye-ayes and Alaotran gentle lemurs at JWPT prove to be prolific then other collections may be approached with a view to housing surplus individuals.

Below are some prosimian species listed in the CBSG Captive Priorities for African and Asian primates which are not maintained in British collections, but which could be considered in the future were suitable accommodation and sufficient founders to become available.

V/2	Zanzibar bushbaby	Galago zanzibaricus
V/3	Angwantibo	Arctocebus calabarensis
4	Potto	Perodicticus potto
E/2	Lesser spectral tarsier	Tarsius syrichta
E/2	Philippine tarsier	Tarsius pumilus

CALLITRICHIDS

Bryan Carroll

In this first meeting it was decided to:

1. Review the taxa currently managed under JMSC
2. Review the other callitrichid taxa held in the British Isles
3. Assess the other callitrichid species prioritised under the draft CBSG Captive Primate Action Plan

1. Species presently managed under JMSC or EEP programmes.

4	Pygmy marmosets	Cebuella pygmaea
4	Silvery marmoset	Callithrix argentata argentata
4		C. argentata melaneura
4	Geoffroy's marmoset	C. geoffroyi
E/1	Cotton-headed tamarin	Saguinus oedipus
4	Emperor tamarin	S. imperator subgriscescens
4		S. imperator imperator
	Lion tamarins:	
C/1	Golden	Leontopithecus rosalia
C/1	Golden-headed	L. chrysomelas
C/1	Golden-rumped	L. chrysopygus
E/1	Goeldi's monkey	Callimico goeldii

Pygmy marmoset

- Coordinator : Miranda Stevenson, Edinburgh

- John Stronge (Belfast) offered to act as studbook keeper once he has acquired SPARKS. Approved by coordinator.
- There is still the question of 2 sub-species, but the current EEP policy being to manage them separately for the time being.

Silvery marmoset

- Coordinator : Bryan Carroll, JWPT

- population has not been monitored thoroughly for about two years
- taxonomy confused and will remain so for some time
- C.a.m - only at Penscynor and some out on loan from Shaldon with some others in private hands
- C.a.a - approximately 40 in a few collections; very few founders
- significant genetic stock from Kilverstone sent to the US
- neither subspecies in trouble in the wild
- likely to remain a low priority for captive management in future although taxonomic revisions may alter this
- Shaldon Zoo volunteered to take over studbook.

Geoffroy's marmoset

- Coordinator : Bryan Carroll, JWPT

- UK pop = 27
- 10 valuable gene lines were lost to US from Kilverstone
- BC recommends continued British Isles management
- No one has done well with them (with possible exceptions of Philadelphia and Rio Primate Centre) mainly due to neonatal mortality.
- extensive private network in S America
- John Hop had some - unrelated to UK stock - Belfast acquired 2.2, but 0.2 died; BC to investigate origins of these animals and try to determine pedigree

Cotton-topped tamarin

- Coordinator : Rob Colley, Penscynor (also EEP coordinator)

- 370 in BI
- reduced no. of births
- SB data not yet complete for 1991
- contraceptive implantation recommended for some females to control population growth
- highly endangered species, probabaly more in captivity than in wild; serious need for continued management
- Australian and American populations also healthy and growing
- SB only lists zoo animals (not private)
- no problems with genetics - founder representatives etc; poss to identify rare geneline animals' many of these from Wellcome labs, probabaly not good breeding prospects
- need to identify which zoos/institutions will cooperate with JMSC with regards recommendations

Emperor Tamarins

- Coordinator : Rob Colley, Penscynor

- pop steady; no cage space problems
- RC to do a review of husbandry as stillbirths seem common

Lion Tamarins

- Coordinators :

<u>Leontopithecus rosalia</u>	Jo Gipps, London (also EEP coordinator)
<u>L. chrysomelas</u>	Jeremy Mallinson, JWPT (also ISB holder)
<u>L. chrysopygus</u>	Claudio Padua, Brazil (ISB holder)

- all three captive species are managed globally rather than regionally: GLT - Kleiman, Ballou, NZP,
  : GHLT - Mallinson Mace JErsey ZSL
  : BLT - Padua, Brazil

- general feeling that there was a need for faster response from the species coordinators, particularly with respect to placing surplus animals.

Goeldi's monkey

- Coordinator : Bryan Carroll, JWPT

- for the purpose of the Primate TAG the Goeldi's monkey is to be included in the Callitrichidae.
- regional pop 124 in 19 institutions, but updates from a few zoos still awaited;
- not all holders are part of the JMSC programme and some moves still take place without approval of BC
- Belfast have 5 surplus females; BC looking for space for these and others.

2. Species presently in BI collections, but not presently in JMSC or EEP programmes

4	Common marmoset	Callithrix jacchus
	Tassle-eared marmoset	C. humeralifer
4	Black tufted-eared marmoset	C. pencillata
4	Saddleback tamarin group)	Saguinus fuscicollis
4	)	S. weddelli
4	)	S. illigeri
4	Geoffroy's tamarin	S. geoffroyi
4	Red-bellied tamarin	S. labiatus
4	Red-handed tamarin	S. midas midas
	Black-handed tamarin	S. midas niger
E/2	Pied tamarin	S. bicolor bicolor
4	Moustached tamarin	S. mystax

Common Marmoset

- natural range is decreasing, but doing well in areas where introduced
- many in private hands and in labs, as well as in zoos
- do warrant management

Tassle-eared marmoset

- used to be held at Kilverstone - S Holmes Simth to be contacted as to whether or not all were sent to Lubee foundation
- chrysoleuca is only subspecies considered a conservation priority

Black tufted-eared marmoset

- common in wild > 100K
- do not do well in captivity; poor breeding record
- not a captive breeding priority

Saddle back tamarin group

- many similar subspecies (fuscicollis/weddelli/illigeri etc)
- no conservation problems for any of the subspecies as far as it is known
- not a captive breeding priority

Geoffroy's tamarin

- small founder base
- not endangered in wild
- no management plan

Red-bellied tamarin

- held in several laboratories plus some zoos; Hamerton have large group
- two subspecies, but not differentiated in UK zoos; probably all nominate subspecies
- not endangered in wild
- no action required

Red-handed/black-handed tamarins

- both subspp common in wild
- no management required at present

Moustached tamarins

- a few specimens had been kept at Kilvertsone; believed to have left the country

Pied Tamarin

- Saguinus b.bicolor endangered in wild (E/2); found only within 40km of Manaus
- 3.3 at Jersey (only ones in British Isles), only other captive colonies at Blefeld, CPRJ
- in need of close management; more individuals required
- in need of coordination plus investigation of further imports

3. Species listed in the CBSG Primate Action Plan as endangered or threatened which should ultimately be considered for captive breeding if animals become available.

E/2	Buffy tufted-eared mamoset	Callithrix aurita aurita
C/1	Buffy-headed marmoset	C. flaviceps
4	Kuhl's tufted-eared marmoset	C. kuhli
V/4	Tassle-eared marmoset	C. humeralifer chrysoleuca
E/2	White-footed tamarin	Saguinus leucopus
C/1	Black-faced lion tamarin	Leontopithecus caissara

Recommendations

1. All callitrichids in managed programmes to be tattooed and/or implanted with UKID microchips.

2. Where species/subspecies are identified for further action it is important that one individual be delegated by the Subgroup e.g. investigating possible imports, initiate husbandry surveys; TAG chairman to be kept informed of development e.g. proposed studbooks, nominated species coordinators etc.

CEBIDS

Roy Powell

The cebid species presently held in British collections were reviewed in conjunction with the CBSG Primate Action Plan using the Mace/Lande criteria for degree of threat in the wild and priority for captive breeding programmes.

I - Identification is unconfirmed
* - Insufficient numbers in this region
H - Hybridisation present in some individuals
ELIM - Eliminate from captivity eventually

The cebid species currently managed in British collections:

4	- - -	Douroucouli *Aotus trivirgatus*
4	- - -	Pale headed Saki *Pithecia pithecia*
	- - -	White-fronted capuchin *Cebus albifrons*
ELIM	- - -	White throated capuchin *Cebus capucinus*
E/2	I * H	Nicaraguan spider monkey *Ateles geoffroyi geoffroyi*
	I * -	Hooded spider monkey *Ateles geoffroyi griscescens*
	I * -	Yucatan spider monkey *Ateles geoffroyi yucatanensis*
V/3	I * -	Ornate spider monkey *Ateles geoffroyi ornatus*
V/3	- * H	White bellied spider monkey *Ateles belzebuth belzebuth*
E/2	- * -	Marimonda *Ateles belzebuth hybridus*
E/2	- - H	Colombian Black spider monkey *Ateles fusciceps robustus*
V/4	- - -	Red-faced Black spider monkey *Ateles paniscus paniscus*
V/4	- - H	Black-faced black spider monkey *Ateles paniscus chamek*

Cebids held in British collections but not regionally coordinated at present:

	- - H	Squirrel monkey *Saimiri sciureus*
4	- - -	Black-capped squirrel monkey *Saimiri sciureus boliviensis*
4	- * -	Red uakari *Cacajao calvus rubicundus*

4	- - -	Black howler monkey Alouatta caraya
4	- * -	Red howler monkey Alouatta seniculus sara
ELIM	- - -	Brown capuchin Cebus apella
	I - -	Weeper capuchin Cebus nigrivittatus
V/3	- - -	Woolly monkey Lagothrix lagothrica

Douroucouli

John Pullen at London Zoo now holds the studbook and Jo Gipps is the coordinator. There are two karyotypes among the 17.8.1 animals in the region: 4.2 are K2 and 9.5.1 are K5. A further 4.1 have not been karyotyped. The majority in mainland Europe are K2. It was found that 2.2.1 K5 animals at Ravensden had been bought from a Federation Zoo. The working party recommends that no animals should be sold until the species coordinator has been consulted first. If not already sold, Ravensden's K5 animals should go to Penscynor whose 3.1 K2s should go to Europe (Emmen). Penny Boyd has most of the Douroucouli accommodation in the region. The holding capacity needs to be assessed and the K5 population should be managed in this region.

Action: John Pullen/Jo Gipps to find out what has happened to the animals at Ravensden, to arrange for an exchange of K2 for K5 animals and assess the holding capacity within the UK.

Small Cebids

Dusky Titis and Black Sakis have left the region. Sarah Christie holds the studbook for Pale-headed Saki and has produced a coordinator's report. To summarise: all moves are arranged and nothing is competing for cage space. There is a problem with low fecundity and survivorship in offspring of captive-bred parents.

Squirrel monkeys require someone to keep a register, but subspecific hybridisation is a problem. The group felt that they still had educational value as an exhibit. This is possibly another candidate for a karyotyping project, especially as Saimiri sciureus sciureus and Saimiri sciureus boliviensis are both recommended by CBSG as Nucleus II.

Large Cebids

Two of the species held are recommended for elimination from captive breeding by CBSG. These are the Brown Capuchin and the White throated capuchin which should be managed to extinction in captivity. David Hughes keeps a register for the latter (see coordinator's report).

Species in need of coordinators are Weeper capuchins and Woolly monkeys. The former are now held in 4 collections and are in a good position for a managed Programme. However, subspecies identification is under review. Woolly monkeys also need subspecific identification. Four subspecies have Mace/Lande threat categories and are recommended for captive breeding.

Spider monkeys: Roy Powell has produced a coordinator's report. To summarise, the most numerous spider monkeys in the region are blacks and particularly Colombian Blacks. Many of these have now been karyotyped and are chromosomally distinct from the other blacks with which they are often confused. In the long term, this region is in a better position to manage black spider monkeys and the two subspecies of A. belzebuth.

There are insufficient Ateles geoffroyi in the region for captive programs now and although only a small number have been examined, they are proving the most difficult to identify even from karyotypes. Some A. geoffroyi/A. belzebuth hybrids exist. More karyotyping is needed, however, so that differences can be found. Collections are strongly urged to send in blood samples whenever possible. Whilst Roy Powell's research group are concentrating on blacks, more work on the karyotypes of Ateles geoffroyi is going on in North America (by Anne Baker and Robert Lacy at Chicago Zoo) where they are the predominant species of spider monkey in captivity.

General comments

All primates should be microtagged to help trace those being traded.

It was felt by the group that private collections wishing to join should be open to inspection (by the coordinator?). Penny Boyd agreed to liaise between the private keepers of primates and the zoo Federation.

Action: Penny Boyd

Species to consider for captive Programmes:

M/L	ON ISIS	
4	21	Douroucouli Aotus vociferans
4	34	Reed Titi Callicebus donacophilus donacophilus
4	6	Red Uakari Cacajao calvus rubicundus
1	20	Black Saki Chiropotes satanus satanus
C/1	?	Buffy-headed capuchin Cebus apella xanthosternos
1	2	Tufted capuchin Cebus apella robustus

The Buffy-Headed capuchin Cebus apella xanthosternos is managed by Mulhouse as part of an EEP, and Chester zoo has expressed an interest in supporting this programme.

AFRICAN CERCOPITHECIDS

Neil Bemment

The African cercopithecids presently held in British collections (see below) were reviewed in conjunction with the CBSG Captive Primate Action Plan.

HA/1	Allen's swamp monkey	Allenopithecus nigroviridus
4	Black mangabey	Cercocebus aterrimus
4	Sooty mangabey	C. atys atys
4	Grass monkey	Cercopithecus aethiops
4	Schmidt's monkey	C. ascanius schmidti
4	Redtail monkey	C. a. whitesidei
V/1	Diana monkey	C. diana diana
V/2	Hamlyn's owl-faced monkey	C. hamlyni
V/2	L'Hoest's monkey	C. lhoesti
4	Syke's monkey	C. mitis albogularis
4	Diademed monkey	C. m. monoides
4	De Brazza's monkey	C. neglectus
V/3	Black & white colobus monkey	Colobus p. polykomos
V/1	Guereza colobus monkeys	C. guereza caudatus
3		C. g. dodingae
4		C. g. kikuyuensis
3		C. g. occidentalis
4	Patas monkey	Erythrocebus patas
V/1	Barbary macaque	Macaca sylvanus
V/1	Mandrill	Mandrillus sphinx
4	Talapoin monkey	Miopithecus talapoin
4	Hamadryas baboon	Papio hamadryas
4	Olive baboon	Papio cynocephalus

Guenons

At the moment none of the four threatened species of forest guenon held in British collections have viable populations and there are problems with their breeding to second generation. Cercopithecus neglectus is the only one for which there are large enough numbers to enable trial changes in husbandry protocol and as such it was recommended that this species continue to be maintained with this in mind.

Similarly, it was agreed that although the subspecies of talapoin presently kept is not threatened, its taxonomic uniqueness warrents that it be maintained unless it can be replaced by the more endangered form. Chester Zoo were to be approached with regards to co-ordinating this species.

It was to be recommended that EEP's be formed for C. hamlyni, C. lhoesti and A. nigroviridus and that regional studbooks be set up for each. In view of the numbers involved it should be possible for them to be managed by one studbook keeper/species co-ordinator; potential candidates were to be approached.

It was agreed that all other non-endangered guenons be phased out in the long term.

Colobus Monkeys

Of the African colobines only Colobus guereza caudatus is listed as in urgent need of captive breeding, but unless sufficient numbers are located and managed as one population in captivity, or additional wild caught animals are acquired, it would appear that Colobus guereza kikuyuensis is the only sub-species held in viable numbers in the British Isles. C. g. dodingae and C.g. occidentalis are neither listed as endangered or represented in large enough numbers, and therefore should be phased out eventually.

Mangabeys

It was agreed that the black mangabey be phased out and although the torquatus group generally is listed as endangered, the sooty mangabey Cercocebus atys atys is not in imminent danger. It was recommended that the latter be maintained at present levels for the time being and as Penscynor is the only collection holding this species, Phil Arnold agreed to monitor the situation.

Baboons

The mandrill is the only threatened baboon held in British collections and the hamadryas and savannah baboons are in numbers above that recommended for Nucleus II level. It was noted that space currently used by the latter two species could be reallocated to either a Mandrillus sp. (or Macaca nigra - see Asian Cercopithecid report) in the future.

Macaques

The only 'African' macaque is Macaca sylvanus (Barbary macaque) and as there are secure groups being maintained outside of Gibraltar it was agreed that this species be managed at Nucleus II levels in British collection s for the foreseeable future.

Research Needs

It was recommended that a standardised observational check sheet for recording social interactions be devised which would be required for any proposed behavioural studies on guenons. This could have broader applications within the Primate TAG and therefore could be an appropriate task for the Scientific Committee.

Below is a list of some threatened species of African cercopithecid not maintained in British collections which could be considered for captive breeding programmes in the future should sufficient numbers of founders be available worldwide.

C/1	Sclater's guenon	Cercopithecus sclateri
C/1	White-throated guenon	C. erythrogaster
C/2	Sun-tailed guenon	C. solatus
E/2	Roloway monkey	C. diana roloway
V/2	Red-capped managabey	Cercocebus torquatus
E/1	Drill	Mandrillus leucophaeus
V/3	Temmink's red colobus	Procolobus badius temminekii
HA/1	Gelada	Theropithecus gelada

ASIAN CERCOPITHECIDS

Hilary Keating/Ernie Thetford

The Asian cercopithecids fall into two main groups namely the macaques (subfamily: cercopithecinae) and the langurs (subfamily: colobinae). Some discrepencies in taxonomic nomenclature were noted between the CBSG species list and that of the British Federation of Zoos and where appropriate the former has been adopted.

The species presently held in British collections were reviewed in conjunction with the CBSG listings of Threatened Asian Primates and their respective Captive Priority ratings according to the Mace/Lande criteria.

Macaques

	Stump-tailed	Macaca arctoides
	Crab-eating	M. fascicularis
	Pig-tailed	M. nemestrina
E/1	Sulawesi crested	M. nigra
E/1	Lion-tailed	M. silenus
	Toque	M. sinica
C/1	Mentawai Island	M. pagensis (one individual)

Of the seven species of Asian macaque listed above three are listed as in the CBSG "Captive Priorities for Asian Primates".

In view of the captive status worldwide of lion-tailed macaques it would appear that there is no immediate need for further space to be made available. Those animals presently held in British collections are soon to be integrated into a EEP.

It was agreed that as there is limited captive space devoted to macaques in British zoos, as and when suitable accommodation becomes available, it should be used for the maintenance of M. nigra, and preferably in large groups. There is no EEP for this species and further data is required on its global captive status before an appropriate 'ceiling' for the population can be set in order to ensure "90% / 100 years I".

It was agreed that all species presently held in the U.K. and Ireland other than M. nigra and M. silenus should be gradually phased out and that no new species should be considered for the time being. The Moor macaque M. maura is listed as "90% / 100 years II" and as such, ensuring its security in captivity is of less immediate concern. Should those safari parks presently holding troops of unendangered Papio or Macaca spp. decide to exhibit a more threatened species, a significant boost would be given towards the captive effort of that species.

Langurs

	Entellus	Semnopithecus entellus thersites
	Silvered	Trachypithecus cristatus
V/4	Black	T. auratus auratus
	Spectacled	T. obscurus
	Phayre's	T. phayrei
	Banded	Presbytis melalophos
(V/1)	Maroon	P. rubicunda
V/1	Douc	Pygathrix nemaeus

Of the eight species of langur listed above only Pygathrix nemaeus and a subspecies of Presbytis rubicunda (P.r.carimatae) are listed by CBSG as in need of captive breeding programmes; both a held by Howletts, the latter being a single male of unknown subspecies.

The Javan brown langurs held at Howletts are a localised colour morph of one of the three subspecies of black langur and as such their true origin is known. The animals held at Bristol, Colchester and Twycross zoos are of the black form.

It was agreed that only the entellus and black langurs could possibly be considered viable in the British Isles and although neither are endangered it was felt that both should be regarded as good 'learning practice' in preparation for more threatened species should there be a surplus in other regions or they be brought into captivity in the future. Even the maintenance of batchelor groups of a non-endangered species was considered to be worthwhile experience for a collection unfamiliar with langurs.

Two 'studbooks' were to be initiated embracing the demography of the existing populations of S. entellus and T. a. auratus. Mick Carman (London) agreed to research the former, Ernie Thetford (Howletts) that of the 'Javan brown' and Hilary Keating/Geoffrey Greed (Bristol) that of the black langurs held at Bristol, Colchester and Twycross zoos. It was recommended that karyotyping analyses be carried out to ascertain whether or not individuals from one or more of these groups could be mixed in future without producing subspecific hybrids. Blood samples would be required as part of the latter's investigations, but neither Mr Thetford or Mr Greed saw this as a problem with animals at their respective collections. Mr Thetford also agreed to look into the availability of T. a. auratus in other regions, particularly continental Europe where it is known to be held in four collections.

It was agreed that 'space' presently holding other non-endangered species of Asian colobine should gradually be re-allocated to one of these two species when required, and in the longer term to one of the more threatened species providing it is part of a co-ordinated breeding programme.

Below are some threatened species of Asian cercopithecid not maintained in British collections which could be considered for captive breeding programmes in the future should sufficient numbers of founders be available worldwide.

C/1	Entellus langur	)	Semnopithecus entellus aeneas
		)	S. e. iulus
		)	S. e. dusumerei
		)	S. e. elissa
C/1	Javan langur	)	Presbytis comata spp.
		)	Presbytis femoralis spp.
C/1	Francoise's langur		Trachypithecus francoisi spp.
C/1	Snub-nosed langur		Rhinopithecus spp.
3	Proboscis monkey		Nasalis larvatus

ANTHROPOIDS

Jo Gipps & Sarah Christie

Unlike the other sub-groups at the meeting, individual species management concerns were not discussed since the studbook keepers and coordinators for gorillas, chimpanzees and gibbons were absent. Geoffrey Greed presented the orang utan studbook to the assembled meeting but made no management recommendations at this time.

The meeting concentrated on the protocol for future management of anthropoid apes in the UK. As with the other species discussed by other sub-groups, it was generally agreed that the UK management arrangements should be subsumed into the corresponding EEPs. That said, it was also agreed that there was a requirement for management within the UK population. Last year as a result of discussion at the meeting of the Anthropoid Ape Advisory Panel it was decided to institute a protocol for electing species management committees from amongst the holders of each of the ape species. Jo Gipps was given the task of initiating this and got as far as inviting nominees from all collections holding apes. This process was then put on hold as the result of the initiative to create the Primate TAG and to incorporate all joint management initiatives under the JMSC of the Federation.

There was general agreement at the meeting, with some dissent, that the anthropoid apes presented a particular problem of management and that whereas many other primates could be successfully managed by a single coordinator and studbook keeper, in the case of the apes this has not proved to be particularly successful in the past.

The situation of each of the four apes is slightly different.

a) Gibbons Sarah Christie was invited to undertake the sub-group coordination for gibbons and she and Linda DaVolls, who was instrumental in helping with the studbook previously, have since the meeting visited Molly at Twycross to discuss studbook preparation and coordination matters. It is intended to hold species management committee elections for the gibbons.

b) Chimpanzees Molly Badham is coordinator and studbook keeper and will receive help from Sarah Christie at London with the latter. **[Jo to contact Molly to discuss options.]**

c) Orang utans Geoffrey Greed is the species coordinator and Hilary Keating has prepared the studbook. Geoffrey indicated at the Banham meeting that whilst he did not at this time want to elect a management committee he would be very happy to receive help and advice with the management task; he mentioned the names of Jo Gipps and Neil Bemment. **[Jo to call Geoffrey and discuss further.]**

d) Gorillas Jeremy Mallinson is the coordinator and the studbook is also looked after at Jersey. **[Jo to contact Jeremy to seek his views and discuss options.]**

Notes arising from a meeting of the Anthropoid Ape Advisory Panel Scientific Committee, held on 17.1.92, are attached for the consultation of members of the Primate TAG. It was agreed at the meeting that this Scientific Committee should now expand its remit to include all primates.

General Recommendations

1. It was agreed that the regional populations of those species with captive priority ratings of 1 and 2 should ideally be increased while those in 3 and 4 should be gradually reduced to numbers reflecting Nucleus I and II levels respectively as and when appropriate captive space is required by the more endangered species. The exceptions to this were threefold :

   (i) Those taxa from which valuable lessons could be learned as to unresolved husbandry problems associated with more threatened conspecifics.

   (ii) Those 'Critical' and 'Endangered' taxa for which the probability of acquiring further specimens (with a view to setting up viable captive populations) is remote and therefore resources could be better utilised for other species.

   (iii) Those taxa in categories 1 or 2 for which there are already secure captive populations and therefore no immediate need for additional captive space to be made available.

2. No new species is to be brought into the U.K. or Ireland unless it fulfills the following criteria:

   (i) It has been recommended for captive breeding by CBSG.

   (ii) It has been confirmed that there is a sufficient number of individuals held in collections worldwide (but preferably within the region) for it to form a viable captive population.

3. No primate should be sent out the British Isles by collections participating in the TAG without having ascertained whether or not it is required within the region. This particularly applies to those species which are presently part of coordinated breeding programmes, the exceptions being those transfers recommended by an EEP coordinator.

4. All confirmed hybrids (which would not otherwise occur in the wild) should be placed in non-breeding situations or sterilised if the former is not practical.

5. It was agreed that all studbook species should be permanently marked either by means of tattooing or microchip transponders especially where there is a danger of confusion between individuals or if an animal is being exported from the region.

Some of the above recommendations reiterate the findings of the 1991 Co-ordinated Breeding of Captive Primates meeting held at Paignton Zoological & Botanical Gardens. They are still valid and need to be acted upon as part of an ongoing process.

ANTHROPOID APE ADVISORY PANEL SCIENTIFIC COMMITTEE

A meeting was held on 17 January 1992 at the Zoological Society of the Scientific Committee of the AAAP and this report attempts to summarize what was discussed. These are not minutes of the meeting.

The following were present: Jo Gipps (Chair), Richard Johnstone-Scott, James Kirkwood, Georgina Mace, Helen Stanley, David Whitehouse.

1. The future of AAAP and the role of the Scientific Committee.

It was acknowledged that AAAP will in future become part of the Federation Joint Management of Species initiative as generally agreed at the last full meeting of AAAP. During the course of the meeting Jo Gipps phoned Roger Wheater in Edinburgh and the committee agreed that should, as seems likely, AAAP continue as an Ape Taxon Advisory Group (TAG), then there was consequently a useful role to be played by an Ape Scientific Advisory Committee in the future. It was generally agreed that it was sufficient for such a committee to meet no more than once a year, perhaps a month or two in advance of the Ape TAG meeting. It was noted that a Primate TAG meeting was scheduled for Banham in March but it was generally felt that it was necessary to have a separate Ape TAG meeting. It is probably too late to schedule a second day of meeting at Banham but in future it was felt that a two day meeting, one of the Primate TAG followed by one of the Ape TAG, would be efficient since it would attract many of the same people. The committee also felt that it was clearly too late to hold the traditional full AAAP meeting this February and that this should therefore be rescheduled as a meeting of the Ape TAG in perhaps April or May. This report of the Scientific Committee meeting is therefore intended for circulation at that rescheduled Ape TAG meeting in the Spring.

There was also discussion of the role of Species Management Committees for each of the ape species - see discussion of studbooks below.

2. Genetic fingerprinting

Helen Stanley presented a report to the committee summarizing the previous year which included one request to resolve a paternity question in the Chimpanzees at Belfast. This is currently being analysed using multilocus DNA fingerprinting (which detects minisatellites) and other hypervariable probes. Helen described the use of microsatellites which are polymorphic loci, found in most species and which can be readily analysed by PCR, allowing non-invasive sampling techniques to be used. It is also likely that primers currently used for human studies will be of use in the anthropoid apes. Although the Conservation Genetics Group is not a service lab as such, we should continue to be able to deal with a limited number of requests for both paternity issues and karyotyping.

3. Karyotyping

Pim Rebholz (who is now undertaking a PhD) successfully karyotyped an Orang from Jersey. The question of karyotyping Chimpanzee subspecies was discussed and it was noted that a student of David Woodruff at UCL San Diego was working on this from both the karyotyping and variable DNA points of view from wild-caught specimens from different regions. Helen Stanley will get in touch with David Woodruff and John Lewis to discuss the possibility of collaboration with Jim Cronin who has a large number of wild-caught animals with obviously different morphologies.

4. Artificial insemination in Gorillas

a) Helen Shaw has been accumulating samples from G'Anne at Jersey and semen is being collected from various males. Richard Johnstone-Scott agreed to speak with Helen Shaw and Harry Moore to determine the latest position on this project.

b) Several other females are candidates for A.I. including Sidonie at Howletts, Naomi at Edinburgh, and Julia at Jersey.

5. Pregnancy diagnosis in Orangs

The product Icon 2 has now been successfully used at Jersey to determine pregnancy in two Orangs and it would be useful to test this product elsewhere. (Pregnosticon is still the most successful test to use for Gorillas and Chimps). Icon 2 is available from Hybritech Europe SA, UK Branch, Minerva House, Spaniel Row, Nottingham, NG1 6EP (Tel: 0602 473300; Fax: 0602 473274). The question was raised as to whether anyone had used a test successfully on gibbons. Helen Stanley thought that Icon 2 or Pregnosticon would probably work but should be tested.

6. All male Gorilla groups

Rafiki from Jersey has now gone to St Louis where five males are being kept together in the age range 6-13. Richard Johnstone-Scott reported on the apparent initial success of this experiment but emphasised that he thought that the large paddock area was very important to enable the animals to get away from each other when necessary. The new facilities at Port Lympne is not now being used for an all male group.

7. Great ape diseases

James Kirkwood reported that a spuma virus had been isolated from the male Orang Dodo at London. All the other Orangs in the group had tested sero positive. This virus had not been reported before and there is no evidence that it can be transmitted to man. However, James concluded that, as is always the case, keepers should be most careful when handling all primates and he had recently circulated a

protocol to all London staff looking after apes and monkeys. It was agreed that the Scientific Committee should circulate this protocol with the notes from the meeting (Appendix 1 attached) so that individual collections could draw their keepers' attention to the potential risks and how best to avoid them.

8. James Kirkwood also reported on recent EC instructions and documentation concerning animal transport and the setting up of zoos with special status between which relatively easy movement of animals would be allowed. However, he also drew attention to the likely requirement for disease testing of a proportion of the animals being moved, including such tests as TB tests. Gerry Benbow, the Federation's consultant veterinary advisor, was dealing with this matter and liaising with the EC, but James felt that AAAP members should be aware of the EC initiative.

9. Studbooks and species management committees

a) Studbooks

It is a general truth that for a studbook to be useful it must be accurate, complete and up-to-date, otherwise useful genetic and demographic analysis is not possible and proper management decisions cannot therefore be made. The committee felt that, in some cases at least, regional ape studbooks in the UK did not yet meet the necessary standard. Even those with full information did not yet contain sufficient analysis, particularly genetic. The Scientific Committee therefore made the following recommendations:

i) That all regional studbooks for apes in the UK should be in SPARKS format and must include a complete historical listing and a full genetic and demographic analysis. It was recommended that all studbook keepers adhere to the guidelines produced for international studbook keepers by Peter Olney, Director of the Federation of Zoos and International Studbook Coordinator.

ii) That Species Management Groups should be established for all apes (see below).

iii) That in particular, the Chimpanzee studbook quickly be brought up to date because the situation in Chimpanzees in the UK is particularly worrying. Breeding success is questionable and the number of breeding males may be low but this information cannot be ascertained fully without a proper studbook being available.

iv) That a review be carried out also of the Gibbon situation. Management of the different species is not adequate and it is not possible to do sufficient analysis on a studbook in its present form.

v) That, if necessary, new studbook keepers should be found for any of the ape species for which the recommendations listed above cannot be met by the end of this year, ie. 1992 studbook.

The Scientific Committee agreed to look at this year's studbooks with a view to recommending improvements where necessary. Georgina Mace will coordinate this activity.

b) Species Management Committees

At last year's full meeting of the Anthropoid Ape Advisory Panel it was agreed that species management committees would be set up for the apes and Jo Gipps undertook to organise this. He had got as far as receiving nominations from all collections holding apes in the UK for representatives from those collections for each of the Species Management Committees, and was on the point of sending out ballot forms to elect the species management committees, when the initiative to incorporate AAAP and other Joint Management of Species Groups into the Federation was taken; it was thought likely that such a Species Management Committee structure would be set up for all jointly managed species along the lines of the EEP and SSP in the US. Rather, therefore, than set up a separate structure which might differ in important aspects from the wider structure set up by the Federation, it was decided to put a hold on the formation of Ape Species Management Committees.

The Scientific Committee of AAAP feels that unless significant progress in the formation of Species Management Committees generally is made in the very near future, the AAAP, now reformed as an Ape TAG, should set the Ape Species Management Committees along the lines previously agreed. The unanimous feeling of the committee was that it was better to get on with the management now than wait for the perfect structure to be agreed. It was agreed that this topic should be raised at the Primate TAG meeting at Banham in March with a view to getting the participants to agree to the formation of the Ape Species Management Committees; perhaps these could be used as a model for further primate SMCs and then on for further SMCs for other species in Joint Management. When Jo Gipps phoned Roger Wheater from the meeting this approach was broadly agreed but requires approval from the CAM of the Federation. Peter Olney has subsequently agreed to raise this at the next meeting of CAM.

Having taken over the studbooks for these species at the JMSG Primate Meeting last year, recent months have found me struggling to convert them to SPARKS format. Unfortunately, I have still not completed working on the White-fronted Lemur data and can only reiterate my recommendation for zero growth in this population of subspecific hybrids. The two animals of known purity are now at Blackpool Zoo and we hope they have success with this pair.

Mongoose Lemur Lemur mongoz

It is envisaged that the regional studbook for this species will be superceded by the International Studbook being compiled by Mike Clark at London Zoo. He has already made a number of recommendations that would establish a nucleus of this species in the U.K. Cricket St. Thomas, have recently imported a pair from France (a wild caught male and female bred at Bristol Zoo) under his direction and two pairs are to be imported from Duke Primate Centre by Banham this year. The pair imported from Duke by Cricket St. Thomas last year gave birth whilst in quarantine but the male infant did not survive.

Black Lemur Lemur m. macaco

1991 was quite an active year for this species with two pairs imported from France by Belfast Zoo in February and then both pairs produced surviving offspring (1.1). These, together with the first successful birth of a female at Cricket St. Thomas, could indicat that the population is set to expand despite the losses of two aged animals and a younger male (euthanased as diabetic) during the year. Belfast are importing a further 2.8 animals this year from various zoos in the U.S.A. for the benefit of the U.K. population.

Once these animals are through quarantine a number of moves are planned that will provide mates for males at Newquay and Fota and will establish groups at Hamerton Wildlife Park and Exmoor Bird Gardens. A further group, male UK19 (Newquay) and a mother and daughter from St. Catherine, U.S.A. will be available if anyone else is interested or alternatively will make up a third group at Belfast. The transfer of a pair (UK25 & UK34) from Cricket St. Thomas to Dudley is also recommended .

Red-fronted Lemur Lemur fulvus rufus

There were several moves last year resulting in the establishment of two pairs at Burstow Wildlife Sanctuary and the transfer of all six (2.4) animals from Bristol to Basilden Zoo. Cricket St. Thomas imported an apparently unrelated male from Saarbrucken Zoo and recorded the only three births but only one female infant survived. Innovative as ever, a group (1.3) was liberated in a small copse at Cricket St. Thomas last September and they are thriving, the proven female currently rearing twins. They are to be joined by another pair later this year.

Mayotte Lemur Lemur fulvus mayottensis

Fortunately, further interest has been shown in this subspecies with Colchester and, the newly resurrected, Kilverstone now holding groups. Unfortunately, Jersey have recently exported their remaining group to Italy and London have decided to keep only one group.

There were three successful births (out of six) but one of these has now gone to Italy and another was sired by the now over-represented founder, male 9, at London. Breeding i especially required at Cricket St. Thomas, Dudley, Fota and from female 62 at Burstow in order to broaden the genetic base for these lemurs. Additionally, two private keepers currently have sibling pairs and Wigan has a closely related pair. The following moves are recommended to improve their potential:-

Male 91 from Chris Hope to Wigan
Male 112 from Sean Lord to Chris Hope
Male 130 from Wigan to Sean Lord

Aloatra Gentle Lemur Hapalemur griseus alaotrensis

A new data base has been established for the group of this species that was imported to Jersey in December 1990. The only change in 1991 was the death of a female. It is anticipated that Jersey will establish an International Studbook for the species if they prove to be fecund.

Stephen Standley

MONGOOSE LEMUR *Lemur mongoz*

The Mongoose Lemur (*Lemur mongoz*) is listed as an endangered species (E) and sufficient numbers exist in captivity to warrant the existence of an International Studbook. There are currently 52.38. living animals in 24 collections listed in the studbook. A further 1.3 lemurs were present in the Census of Rare Animals 1989\90 (International Zoo Year-book 30) held at Seoul in South Korea. The same census shows that 1.1 animals are held at Gdansk and that 1.0 is held at Poznan although my records show 2.1 at Poznan and none at Gdansk. I suspect that a transfer of animals has taken place between these two Polish zoos and I am seeking to confirm this. Also in Eastern Europe, a young female is currently held at Odessa Zoo in the Republic of the Ukraine. My efforts to secure this animal for Poznan have so far been in vain but it remains my aim to place genetically important animals into potential breeding situations.

The population of breeding animals revolves around the collections at Duke Primate Center and the Philadelphia Zoo where consistently successful births and rearings are recorded. Assuming the role of species co-ordinator, it has been one of my principal aims to establish a discreet sub-population of *L. mongoz* consisting mainly of new founders unrelated to the Duke\Philadelphia stock. Several UK zoos have shown an interest in aquiring the species but organising the movement of the animals has proved difficult. Nevertheless, I am optimistic that some of these genetically valuable lemurs will in the future be represented in the breeding population.

Recently, a new pair of mongoose lemurs was transferred from Strasbourg University to Cricket St. Thomas Wildlife Park where a pair of animals from Duke Primate Center are already maintained. Two further pairs from Duke are due to arrive at Banham Zoo in the near future. With tacit agreements from Dudley, Jersey and Paignton Zoos to take animals and other institutions taking an interest, I am confident that the mongoose lemur will become a feature of British collections.

Mike Clark

International Studbook Keeper

Species Coordinator's Report to Primate TAG, March 1992

COTTON-TOPPED TAMARIN (Saguinus o. oedipus)

This Regional population summary is based on studbook returns for the period 01.01.91-24.03.92. At the time of writing, several end-of-year reports are awaited; a more reliable data set will be available in the next regional studbook- May?

TOTAL POPULATION
to date, the regional studbook records 837 animals;

at 24.03.92: 201.175.55 = 431 LIVE ANIMALS
(of these, 34. 26. 1 = 61 outside UK or "lost")
TOTAL BRITISH POP: 167.149.54 = 370

BIRTHS

	01.01.91-31.12.91	'90	'89	'88	'87	'86
instances:	36	40	50	40	65	47
# born:	71	83	94	74	133	95
# surviving >12months:	49	52	47	64	50	

- with the status of c.20% of the end-of-'90 population still to be reported, there is likely to be no significant fall in birth-recruitment; however, there are signs that some of the "active" pairs are newly constituted to include under-represented animals. 26 pairs are reported to have bred; survival to 12 months has increased to 69% (from 59% in'90).

DEATHS (adult)
deaths of animals >12months of age:

01.01.91-24.03.92 (15.12.1)= 28	'90	'88	'87	'86
	18	18	21	11

INSTITUTIONS holding Cotton-tops: data current to March 1992, except where indicated otherwise

	m.f.?	total	change since 12/90	note
B&D Zoological	3.4	7		('89
Banham	2.2	4		('90
Basildon	4.3	7	+7	(1
Belfast	2.3.3	8	0	
Borth	0.3	3	+1	
Bristol	2.4	6	-2	
Burstow	3.2	5	0	(mid 90

Carrie	0.3	3	+3	
Chard	4.1	5	-3	
Chessington	1.0	1	-1	
Chester	6.7	13	+11	
Colchester	14.10.3	27	+21	(i
Colwyn Bay	2.1	3	+1	
Cotswold WPk	2.2	4	+1	
Drusillas	3.3.2	8	0	
Dublin	4.3.4	11	+1	
Dudley	1.0.1	2	2	
Dunfermline	8.5	13	+10	
Fovargue	3.0	3		('89
Fota	6.7.3	16	+13	(i & vi
Glasgow	0.1	1	-1	
Guilsb'ro	5.4	9		(ii
Haigh Pk	3.1	4		('90
Jersey	4.3.4	11	-3	
Kiernan	1.1	2		('89
Kilverstone	8.9.2	19		(vi
Langford	5.4	9		(iii
Little Amazon TWG	4.2.2	8	+8	
Loch Lomond	3.3	6		('88
Lockwood	1.1	2		('90
London RP	2.2.8	12	0	
Marwell	9.5.1	15	+5	
Maley	0.1	1	+1	(ii
Mawby	2.3	5		(ii
Moire	0.1	1	+1	
Mole Hall	1.1	2		('90
Penscynor	9.5.9	23	-2	
Poole	2.4	6	+6	
Ravensden		0	-7	
Reading	12.9	21		(iv
Richards	1.1	2		('89
I of Wight	1.1.4	6	+2	
Scott	2.0	2		('89
Shaldon	1.2	3	-3	
Southport	0.1	1		('89
Stirling		0	-73	
Stratton	0.1	1		('89
Swales	2.2.1	5		('89
Swanson	1.1	2		('90
Sweetman	1.0	1		('89
Tenby	1.2	3	-2	
Twycross	4.3.5	12	-2	
Twyford	1.1	2	+2	
Watchet	2.0	2		('90
unknown	5.3	8		(v
Webster	0.3	3		('90
Whipsnade	0.1	1		('90
Wheeler	1.1	2		('90
Widcombe	1.1	2	0	

i movements reported ex-Stirling; recipients yet to confirm status
ii owners and animals currently untraceable
iii only Langford animals with offspring in the "zoo" population are listed.
iv Reading no longer keeps cotton-tops; transfer details are still awaited for those individuals still recorded "at Reading"- as at end of 1990!
v includes two private keepers, details with E'burgh/Stirling.
vi data rec'd 25/03/92- not yet processed:
K'stone: exported 5.3 (USA), 1.1 (UK, pvt), 0.2 (Rushden)
births 3.1.0 (1.1 DNS); other deaths 1.0
Fota: 1992 transfer from Stirling

SUMMARY

i Peter Bennett, Federation Conservation Coordinator, analysed the end-of-1990 data, allowing specific reccomendations to be circulated mid-1991. Under-represented animals were identified to their holders, with a request to encourage reproduction; contraceptive implants were offered for all others, in agreement with the previous decision to slow/stop population growth. Jersey, Chard, ZSL, Twycross, Fota, Belfast, Colwyn Bay and Penscynor implanted animals (or, in two cases, undertook to ensure that expelled-from-family animals did not enter the breeding population).

ii Stirling University has entirely disbanded its research colony; 4.3 have gone overseas, the rest have been absorbed by the UK. Two of the Stirling families have gone to Chester and Fota; five other families have gone to institutions which have no history (or an unfortunate history) of data-reporting and management cooperation. Investigation is under way into the reproductive status of these transferees; I suspect that Stirling will have implanted some, or all, females.

iii The increasing frequency in the studbook listing of private individuals and zoos unused to the routine of reporting, with all the extra difficulties that result, will doubtless lead to more animals being difficult to track or "lost". It is important that zoos trading-out to private keepers ensure a permanent identifier- two, possibly three, animals came from "nowhere" in 89/90/91.

iv The 1990 decision, to aim for zero-growth in this species' population, continues to stimulate much change in the data set. The disbanding of the Wellcome, Reading and Stirling colonies, and the introduction of implants, is now largely complete and a clearer picture of the situation, and its potential, should become available in the next few weeks (as the remaining 1991 data-returns are collated). An update of this report will accompany the next regional studbook (May '92?).

Rob Colley, March 1992

Species Coordinator's Report to Primate TAG, March 1992

EMPEROR TAMARIN (Saguinus imperator)

End-of-'91 studbook returns for this species are being submitted slowly, and with all the major holders still to report no sensible numbers are available. This situation should resolve over the next few weeks and a summary of the population will accompany the next regional studbook. At present, there is no indication of great change: the possible export of Kilverstone animals may be the most significant event.

The import of Australian emperors is now in-hand (awaiting CITES), with 1.1.2 moving from Melbourne to Penscynor; doubts about sub-specific status have been resolved. Additionally, Edinburgh is currently quarantining an animal from Switzerland. North-west University, USA has asked for a "blood exchange"; this should be possible within the next eighteen months. These moves should considerably enhance efforts with this species.

The "new" pairings at Edinburgh and Combe Martin, referred to in last year's report, have not proved productive, with a death at Edinburgh and an adult Combe Martin-Chard exchange taking place.

The species continues to be "desirable" to the zoo world and the thrust of our efforts should continue to be increased reproduction.

Rob Colley
March 1992

Report to the Primate Taxon Advisory Group

Primate Meeting

Banham Zoo 26th & 27th March 1992

Annual Report on the White-throated Capuchin Cebus capucinus

The current population in U.K. collections stands at 9.11. Since the last report on this species the population has dropped by 20.15 animals. This has occurred because of two factors:

i. The closure of Kilverstone and the subsequent disposal of their capuchins to collections abroad.

ii. Belfast zoos disposal of their stock due to the species not being part of the development plans for primates in the collection.

The collections now holding this species are as follows:

Chessington	:	3.3
Gatwick	:	1.3
Glasgow	:	3.3
Private(1)	:	0.2
Private (2)	:	0.1
Southport	:	1.2

The developments during the reported period highlight the problems of attempting to coordinate a species. We cannot develop programmes if the decision to remove a species is taken arbitrarily, without consultation.

A decision will have to be taken by the TAG on whether this species should be maintained on the list as a studbook/coordinated species. Two collections did not reply to the questionnaire.

David Hughes

Spider Monkeys

Report to the JMSC Primate TAG, March 1992

Roy Powell PhD, Biologist, Paignton Zoo

Status at 31/12/91:

All four species were represented. The generic studbook holds 263 spider monkeys historically of which 103 were living in 20 institutions at the end of the year. A number of others in private hands have been traced, notably those belonging to Mr & Mrs Scott, Lee Warner ("Primate Captive Care Society") and Penny Boyd. Of the 103 alive, 20 are known hybrids.

The most significant change in 1991 was that the UK's major collection of spider monkeys, Kilverstone, closed down and 25 animals left the country. They went to the Lubee Foundation in Florida who had previously assured us that they would not be taking any spider monkeys.

During 1991 there had been 7 births but two of these were known hybrids (at Banham and Cotswold).

Karyotyping progress.

My research group has successfully karyotyped a total of 25 spider monkeys. In this round of sampling, from July to December 1991, only one failed (the female *A. paniscus paniscus* at London). The major problem was in the use of paediatric heparin tubes which do not contain enough heparin to prevent blood clotting. As breeding animals have been blood-sampled, the identity of a further 18 offspring has been deduced from the karyotyping results. Six of the karyotyped monkeys were *A. geoffroyi* subspecies which cannot be easily identified. Notwithstanding this, 37 monkeys have been positively identified.

Ateles geoffroyi. 6.5.5 = 16 in 5 collections
Black-handed spider monkey

There are supposedly representatives of four subspecies and some of unknown subspecies:

A. g. griscescens	1.1
A. g. geoffroyi	1.2
A. g. yucatanensis	1.0
A. g. ornatus	2.0
A. g. unknown subspecies	1.2.5

Black-handed spider monkeys are mostly in non-breeding or hybridising situations. They are not a viable group for a breeding program. Subspecies are difficult to identify. Those that have been karyotyped show very little chromosomal polymorphism. The wild-caught origin needs to be known. Eight *A. geoffroyi* left the country when Kilverstone closed. This to some degree, has "tidied up" the UK population because Kilverstone had the only pairs of some *A. geoffroyi* subspecies.

Ateles belzebuth
Long-haired spider monkey

Two subspecies are held in the UK.

A. b. belzebuth 3.2.1 = 6 in 1 collection.

One pair from Kilverstone went to the Lubee Foundation. Three (1.2) unrelated adults went to Bristol and a baby was born there in 1991. One male is left at Kilverstone Country Park, paired with a known hybrid but there are doubts about his purity.

A. b. hybridus 1.3 = 4 in 1 collection.

Twycross is now the only collection to hold this subspecies as Kilverstone sold 2.3 to the Lubee Foundation. All four monkeys at Twycross are unrelated.

Ateles fusciceps robustus 13.26 = 39 in 9 collections.
Colombian Black spider monkey

This is the most promising of all the spider monkey breeding programs and according to the WWF Primate Program, the species is one of the most threatened in South America. There were 3 births in 1990 and two more in 1991. Seventeen Colombian blacks have been positively identified from karyotypes. There are still 20 animals left to confirm (at Colchester, Southport, Gatwick, Twycross and Belfast). Some of these could be *A. paniscus chamek*. Cooperation in providing blood samples by these institutions would greatly assist the progress of this program.

Ateles paniscus chamek 4.4 = 8 in 4 collections.
Black-faced black spider monkey

Many monkeys originally classified as A. p. chamek have turned out to possess typical *A. fusciceps robustus* karyotypes. The two species are easily misidentified. Banham has a single female "Ezzie" in a group of *A. fusciceps robustus* who has been producing first and second generation hybrids. It is important to place her with a confirmed male *A. p. chamek* as soon as possible. The male at Southport or the groups at Drayton Manor or Twycross offer possibilities, subject to confirmed identification.

Ateles paniscus paniscus 5.7.1 = 13 in 3 collections.
Red-faced black spider monkey

Twycross is the only collection breeding these at present, having had a baby surviving in each of the last three years. The male at Paignton has only just reached sexual maturity but has not been seen mating. This may result from the fact that he was hand-raised at Rotterdam and has been very used to human company. The pair at London arrived from Kilverstone in September. They have bred before, in 1989 and 1990 but lost both babies. If another collection would like to have this species, perhaps Twycross could loan an unrelated pair.

Red-faced spider monkey karyotypes are quite distinct from those of the other species and subspecies in having 16 pairs of chromosomes instead of 17. This fact, and the major differences between the *A.f. robustus* and *A.p. chamek* karyotypes makes the black spider monkeys easily distinguishable.

DE BRAZZA'S MONKEY *Cercopithecus neglectus*

1st March, 1992.

Banham	1.1.4
Blackpool	1.1
Chester	3.4
Colchester	1.1
Cotswolds	1.2
Edinburgh	1.1
Howletts	3.2
Marwell	1.1
Richards	4.3.1
Twycross	1.1
TOTAL	17.17.5

The first issue of the Regional studbook for the de Brazza's monkey is in preparation and will be circulated as soon as the data has been verified by the censused collections.

Neil Bemment

REPORT ON THE EEP PROGRAMME FOR THE DIANA MONKEY 1991

Cercopithecus diana diana

1. Organisation, Structure and Activities

Species Co-ordinator:

Miranda F. Stevenson
Curator
Royal Zoological Society of Scotland
Murrayfield
EDINBURGH EH12 6TS

Studbook Keeper: European Regional Studbook Keeper and International Studbook Keeper.

Species Committee: formed 1990

Miranda F Stevenson	Edinburgh	Co-ordinator
Bruno Van Puijenbroeck	Antwerp	
Richard Faust	Frankfurt	
Ing. Stanislav Rudek	Ostrava	
Jo Gipps	London RP	
John Stronge	Belfast	

The first meeting of the Species Committee was held in in May 1991 in Budapest.

Studbooks

European Studbook: Number two with data up to 1st March 1991 is currently available.

International Studbook: Number one, with data up to 31.12.91 will be available very shortly.

Husbandry guidelines: will be published in the International Studbook.

Research: it is planned to carry out two analysis over the next two years. (a) analysis of post mortems. (b) analysis of which combinations of captive bred animals are most likely to result in breeding pair/groups.

2. Status and Developments of the Captive Population.

Status and development of the EEP population: see Table 1.

The population is now in decline, with the most alarming fact being the death of three adult females and the low surviving birth rate. Nineteen institutions now form part of the EEP, but all the listed institutions in Table 2 do co-operate to some degree with the programme.

At the end of 1990 there were 64 animals in EEP collections, by the end of 1991 there were 58 with only one surviving infant from 1991. The main problem, as before, is the lack of breeding in recently formed groups of captive bred animals. None of the moves that took place in 1991 resulted in breeding. Of the 19 EEP institutions only seven are currently breeding animals and of the 26 institutions holding the species 10 are in breeding situations, however only two young survived in 1991 (see Fig.1.).

Table 3 summarises the history of the species in Europe and the current breeding population and Fig.2. shows the changes in the European population over time.

Age Structure

The age structure of the population is shown in Fig. 3. Although this does not indicate any cause for immediate alarm there may be a shortage of young animals in future years. The critical factor is to establish more young captive bred animals as breeding pairs and groups. There is still a shortage of females suitable for pairing in a breeding situation which was not helped by three females dying during 1991.

3.Recommendations

1. Male 0875 at Edinburgh to be paired at Banham with female 0877 currently at Chessington.

2. Female 0759 currently at Twycross to go to Aalborg.
   Female 0848 at Twycross to be paired at Twycross with male 0861 currently at Battersea.

   The female 0670 at Twycross is in poor health.
   Male 0803 at Banham does not get on with females and is surplus

   Female 0708 at Bahham will go to Les Mathes, France.

   Female 0809 from Chessington went to a private holder in

Jersey and is now paired with male 0775.

Female 0408 at Les Mathes will go to Champrepus to join male 0463 which is wild caught.

Antwerp are going out of Diana monkeys and their female 0556 is going, and may now be, at Les Mathes.

Once the genetic and demographic analysis of the International population has been completed this will be applied to the formulation of future plans for the European population. There is little inbreeding and a sufficient number of founders. Additional females may need to be imported from North America.

4.Problems

The main problem at present is the difficulty of setting up a captive group that subsequently breed. The moves listed above are intended to try and create more potential breeding pairs of captive bred animals.

TABLE 1

DEVELOPMENT OF THE EEP DIANA MONKEY PROGRAMME 01.01.91 - 31.12.91

PARTICIPANT	STATUS 01.01.91	BIRTHS (DNS)	TRANS.BET. EEP ZOOS		TRANS.BET. NON EEP		DIED	STATUS 31.12.91
			IN	OUT	IN	OUT		
Belfast	2.4	(0.1)	0.1	-	-	-	0.3	2.2
Banham	1.1	-	1.0	1.0	-	-	-	1.1
Chessington	1.4	-	1.0	1.0	-	0.1	-	1.3
Colchester	1.1	-	1.0	1.0	-	-	-	1.1
Edinburgh	3.3	1.0	-	-	-	-	-	4.3
Fota	1.1	-	-	-	-	-	-	1.1
Newquay	1.1	-	-	1.0	1.0	1.0	-	1.1
Paignton	2.1.1	-	-	-	-	-	-	2.1.1
London RP	2.2	-	-	1.1	-	-	-	1.1
Shaldon	1.1	-	-	-	-	-	-	1.1
Twycross	2.3	-	-	-	-	-	-	2.3
Champrepus	1.1	-	-	-	-	-	-	1.1
Les Mathes/F	1.2	-	-	-	-	-	-	1.2
Antwerp	1.1	-	-	-	-	-	1.0	0.1
Zoo Punte Verde	1.0	-	-	-	-	-	-	1.0
Duisburg	2.3.1	-		-	-	1.1	-	1.2.1
Frankfurt	1.3	-	-	-	-	-	-	1.3
Ostrava/CS	1.5	-	-	-	-	-	-	1.5
Aalborg/DK	0.0	-	1.0	-	-	-	-	1.0
TOTAL 19 ZOOS	25.37.2	1.0	14.1	5.1	1.0	2.2	1.3	24.32.2
	64	1	5	6	1	4	4	58

FIG. 1.

SURVIVING YOUNG PER YEAR

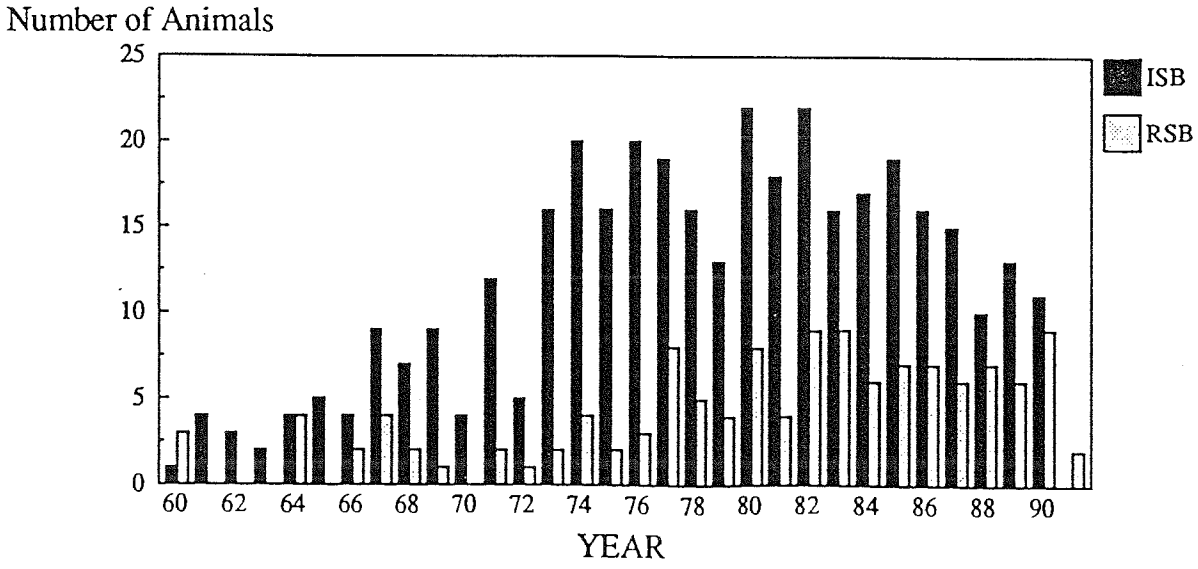


Chart showing the number of young surviving according to the International Studbook and this Regional Studbook

TABLE 2

INSTITUTIONS HOLDING DIANA MONKEYS

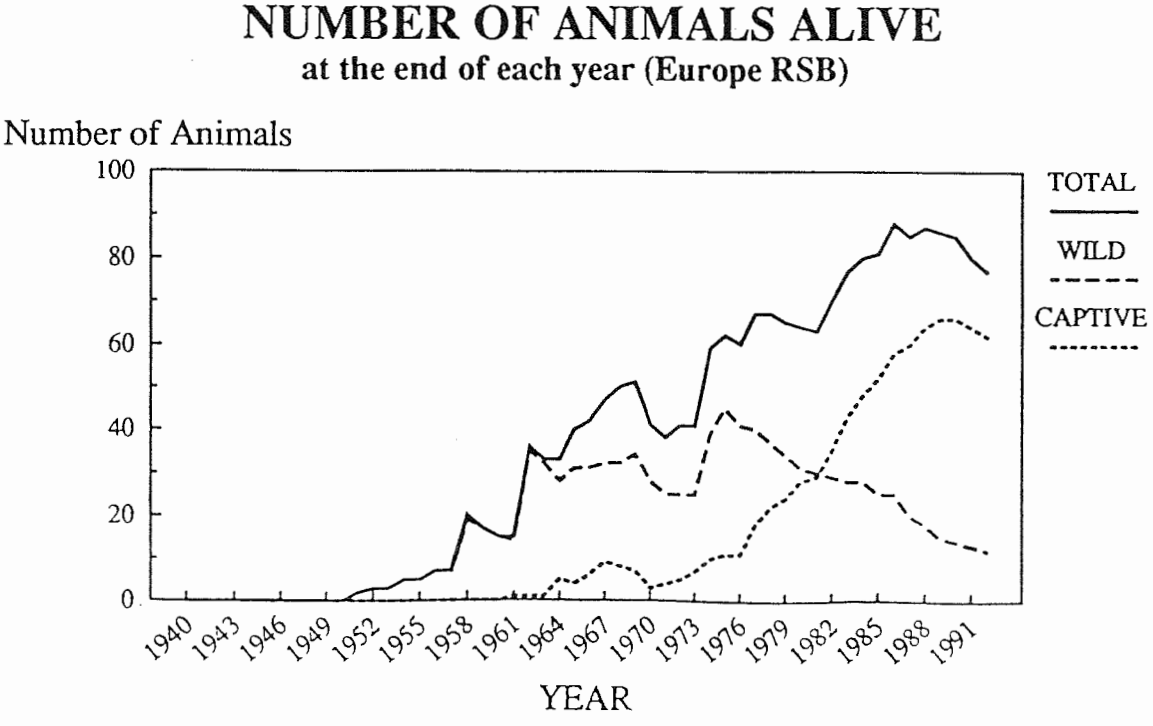
INSTITUTION	TOTAL AT 01.03.92
Aalborg	1 (1.0)
Antwerp	1 (0.1)
Banham	2 (1.1)
Battersea	5 (3.2)
Belfast	4 (2.2)
Champrepus	2 (1.1)
Chessington	4 (1.3)
Colchester	2 (1.1)
Crystal Palace	2 (1.1)
Duisburg	4 (1.3)
Edinburgh	7 (4.3)
Fota	2 (1.1)
Frankfurt	3 (1.2)
Gettorf	4 (2.1.1)
Halstead (Private)	2 (1.1)
Bekesbourne	5 (3.2)
Les Mathes	3 (1.2)
Leipzig	3 (1.2)
London RP	2 (1.1)
Newquay	2 (1.1)
Ostrava	4 (0.4)
Paignton	4 (2.1.1)
Punta Verde	1 (1.0)
Shaldon	2 (1.1)
Twycross	5 (2.3)
Warsaw	1 (1.0)
GRAND TOTAL	77 (35.40.2)

TABLE 3

SUMMARY OF DIANA MONKEYS IN EUROPE AS OF 01.03.92

CATEGORY	NUM. OF ANIMALS
ALL ANIMALS	
TOTAL RECORDED	297 (136.151.10)
TOTAL WILD ORIGIN	109 (47. 62. 0)
TOTAL CAPTIVE BRED	159 (76. 74. 9)
TOTAL ALIVE AT 31.3.91	77 (35. 40. 2)
TOTAL WILD ORIGIN ALIVE	12 (7. 5. 0)
TOTAL CAPTIVE BRED ALIVE	62 (26. 34. 2)
BREEDING ANIMALS	
TOTAL THAT HAVE BRED	74 (28. 44)
TOTAL WILD ORIGIN	42 (21. 21)
TOTAL CAPTIVE ORIGIN	26 (5. 19)
TOTAL ALIVE	30 (7. 23)
TOTAL WILD ALIVE	11 (7. 4)
TOTAL CAPTIVE ALIVE	18 (4. 14)

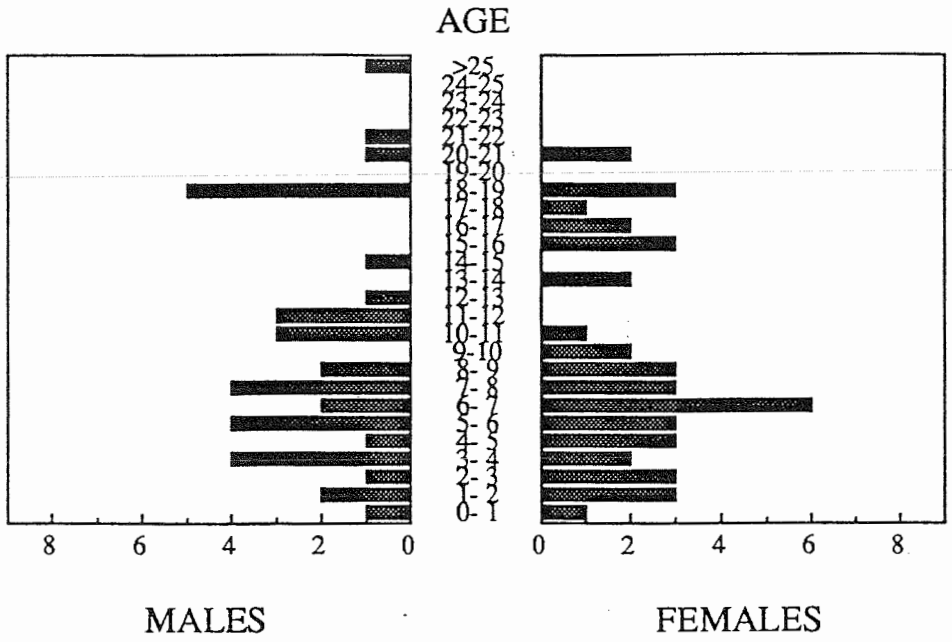
FIG. 2.



This graph shows the total population change of animals and the number that are known captive and wild in origin

FIG. 3

AGE DISTRIBUTION OF LIVING ANIMALS AS OF 31.12.91 (EUROPE)



JOINT MANAGEMENT OF SPECIES GROUP MEETING - 26th March 1992

LION-TAILED MACAQUE (MACACA SILENUS)

Present population within the UK and Eire as at 20th February 1992

BRISTOL	1.3.1
BELFAST	2.3.0
CHESTER	5.2.0
COLCHESTER	1.3.1
EDINBURGH	2.2.0
DUBLIN	2.2.0
FOTA	2.3.2
TOTAL	15.18.4

Births since January 1991	1.1.4
Deaths since January 1991	3.0.0

Only Paignton Zoological and Botanical Gardens has expressed a desire to go into this species.

Within the present population, 3.4 animals are aged animals and no longer productive.

In 1992, this population will be fully integrated into an EEP.

N G Ellerton
North of England Zoological Society

MANDRILL Mandrillus sphinx

1st March, 1992.

Belfast	2.6
Colchester	3.4
Paignton	3.2
Penscynor	1.1
Southport	10.8
TOTAL	19.21

Note: London Zoo sent their remaining animals to Belfast Zoo on 20th February bringing the number of collections holding this species to five.

The third regional studbook is in preparation and will be circulated shortly.

Neil Bemment

Report for the Primate Meeting - 26th & 27th March 1992

COLOBINES

Guerezas

Status of the British Population on 31/12/91.
There are 88 guerezas housed in twelve collections, and four sub-species are represented. The composition of the population is shown in the table "Status of Colobinae in the British Isles at 31-12-91."

Changes in 1991

There was a total of 19 births (3 male, 5 female and 11 unknown sex) of which one did not survive, and another died within the year. Six animals died; two being the babies mentioned above. The others died from various infections. All the guerezas held at Ravensden have been exported.

Langurs

Status of the British Population on 31/12/91.
103 individuals representing eight sub-species of *Presbytis* plus *Pygathrix nemaeus* are being held in seven collections. These are also shown in the table mentioned above.

Changes in 1991

Births occured as follows:

Presbytis entellus thersites	4 unknown sex
Presbtis cristata pyrrhus	5 male, 3 female and 6 unknown sex
Presbytis melalophos	1 male
Presbytis obscurus	2 female

A total of 15 deaths occurred, and 6 moves. Four Entellus Langurs went from Bristol to Doue la Fontaine, France, and one Silvered Leaf Monkey went to Ravensden. One transfer also occurred from Twycross. Howletts Zoo imported one Silvered Leaf Monkey.

STATUS OF COLOBINAE IN THE BRITISH ISLES AT 31-12-91

ZOO	1991	BORN	ARR	LEFT	DIED	1992
Colobus guereza subsp?						
Boreham	2.2					0.0
Colobus guereza caudatus						
Colchester	1.1					1.1
Colobus guereza dodingae						
Kessingland	2.3	0.0.1			0.0.1	2.3
Colobus guereza kikuyuensis						
Banham	3.4	1.1.0				4.5
Port Lympne	4.3	0.1.0				4.4
Belfast	2.3	0.0.1				2.3.1
Bristol	9.3	0.0.2			0.2.0	9.1.1
Chessington	4.0					4.0
Paignton	4.4	1.1.3				5.5.3
Penscynor	1.1	0.0.1				1.1.1
Rushden	2.0			2.2		0.0
Colobus guereza occidentalis						
Howletts	2.2					2.2
Fota	1.1					1.1
Twycross	3.13.1	1.1.4			1.0	3.14.5

Colobus polykomos has not been included as Jersey Zoo now holds the studbook for this species.

ZOO	1991	BORN	ARR	LEFT	DIED	1992
Presbytis cutellus thersites						
Bristol	7.4	0.0.3		4.0.0	1.0.0	2.4.3
Macclesfield (Private)	1.0					1.0
London	1.2	0.0.1		0.0.1	1.2	
Twycross	3.2	0.0.1			0.0.1	3.2
Presbytis cristata cristata						
Banham	3.6				0.1	3.5
Twycross	1.4				0.1	1.3
Presbytis cristata pyrrhus						
Howletts	3.10	4.3	1.0		1.1	7.12
Bristol	6.6	0.0.5		1.0	0.0.1	5.6.4
Colchester	2.4					
Twycross	2.6	1.0.1		0.1	0.0.1	3.5
Presbytis melalophos						
Howletts	2.6	1.0			1.1	2.5
Presbytis melalophos mitrata						
Howletts	2.5					2.5
Presbytis obscurus						
Edinburgh	1.2				0.1	1.1
Twycross	3.5	0.2				3.7
Presbytis phayrei						
Twycross	1.1					1.1
Presbytis rubicunda						
Howletts	1.1				0.1	1.0
Pygathrix nemaeus						
Howletts	2.4		2.0		0.3	4.1

This schedule is subject to audit.

Report for the Primate Meeting - 26th & 27th March 1992

ORANG-UTANS

Current Situation in the British Isles.
There are currently 53 animals (35 Bornean; 16 Sumatran and 2 Hybrid) being held in 11 collections. The table attached shows their classification.

Changes in 1991

Births

Location	Date	ID/Name	Sex	Sire	Dam
London	15/02/91	A1311 Janah	F	68	91
Dudley	11/11/91	647 Jaz	U	34	98

Deaths

Location	Date	ID/Name	Sex	Cause
Twycross	27/06/91	Trudie	F	Euthanasia
London	13/09/91	A16 Dodo	M	Euthanasia. Severe kyphosis of the thoracic spine.

Exports

From	Date	ID/Name	Sex	To
Brentwood	20/02/91	Scooper*	M	Japan via Ravensden

(* hybrid offspring of 50 & 36)

Karyotyping.
It is important to identify those individuals in the region which have not yet been karyotyped, and to arrange for their sub-species to be determined. Dr. Clemens Becker, the European co-ordinator, was contacted in order to acertain whether there had been any development regarding the karyotyping of orang-utan stock. He reported that there seems to be a great deal of confusion in Europe, with animals from different zoos being tested at different times and by various laboratories. He has taken most of his data from the International Studbook and directly from zoos. In 1991 he sent out a questionnaire asking holders for exact information (animals, test-date, institution) but, unfortunately, few zoos replied. He hopes to have better results in the future.

Classification of Orang-utans Living in Britain at 31/12/91

Subspecies	Bornean		Sumatran	
Sex	Males	Females	Males	Females
Wildborn with offspring	3	5	2	2
Wild-born, no offspring	0	0	1	0
Zoo-born with offspring	1	4	1	1
Zoo-born, no offspring (Age => 10)	3	3	1	2
Zoo-born, no offspring (Age <= 10)	2	13	2	4
	9	**25**	**7**	**9**
Hybrids: Bornean x Sumatran	1			1

Sum Totals: **35 Bornean (1 of unknown sex)**
16 Sumatran
2 Hybrid
53 (17.35.1)

Wild-born with no living pure-bred offspring:

Sumatran male	Toby	30yrs	SBN 49	Twycross

Captive-born with no living pure-bred offspring:

Bornean male	James	19yrs	SBN 97	Blackpool
Bornean male	Sibu	15yrs	SBN 115	Chester
Bornean male	Tick	13yrs	SBN 154	Dublin
Bornean female	Bella	12yrs	SBN 135	London
Bornean female	Leonie	11yrs	SBN 155	Dublin
Sumatran female	Julitta	16yrs	SBN 112	Bristol
Sumatran female	Djambi	14yrs	SBN 179	Twycross

Update on the 'captive space' survey for primates (excluding the great apes) in the U.K. and Ireland

Neil Bemment and Roy Powell

The six 'primate type' groups and the three 'maximum holding capacity' categories were retained for the purposes of revising the 1990 census.

S : 'SINGLE' - Capable of holding only one individual

P : 'PAIR' - Suitable for a breeding pair and their dependent offspring

G : 'GROUP' - Suitable for a social unit of more than two potential breeding adults and their offspring

All 'Nocturnal Primates', 'Gibbons', sakis ('Small Cebids') and guenons ('All Other Monkeys') have been recorded under PAIR accommodation while the GROUP category includes the remaining 'Small Cebids', 'Diurnal Lemurs' and 'All Other Monkeys' (except for the guenons) as this, generally speaking, is how they are maintained in British collections.

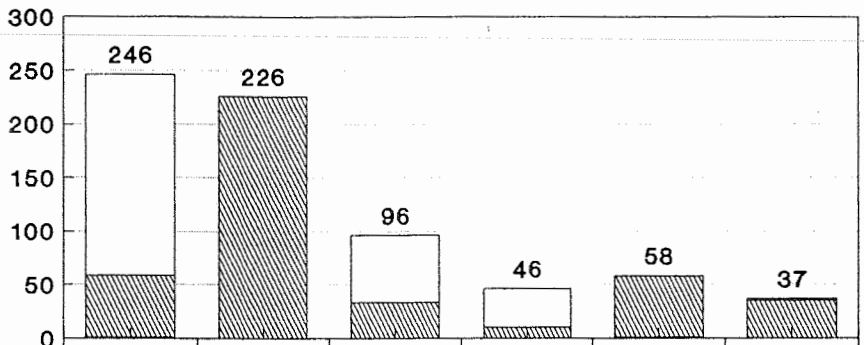
TABLE 1: Summary of the captive space available for primates excluding the great apes in the U.K. and Ireland.

Present Situation:	Occupied			Empty			
	S	P	G	P	G	TOTAL	DIFF.
ALL OTHER MONKEYS	1	58	187	3	26	275	- 3
CALLITRICHIDS	0	226	0	40	0	266	- 40
DIURNAL LEMURS	0	33	63	1	4	101	+ 8
SMALL CEBIDS	0	10	36	1	8	55	- 1
GIBBONS	1	57	0	3	0	61	+ 5
NOCTURNAL PRIMATES	0	35	2	1	0	38	+ 6

Note: The figures in the 'DIFFERENCE' column above refer to the overall changes in total number of captive spaces since the first census.

Projected Situation:	Losses	Gains	Diff.	Capacity
ALL OTHER MONKEYS	1	7	+ 6	281
CALLITRICHIDS	0	15	+ 15	281
DIURNAL LEMURS	0	10	+ 10	111
SMALL CEBIDS	0	1	+ 1	56
GIBBONS	1	1	0	61
NOCTURNAL PRIMATES	0	4	+ 4	42

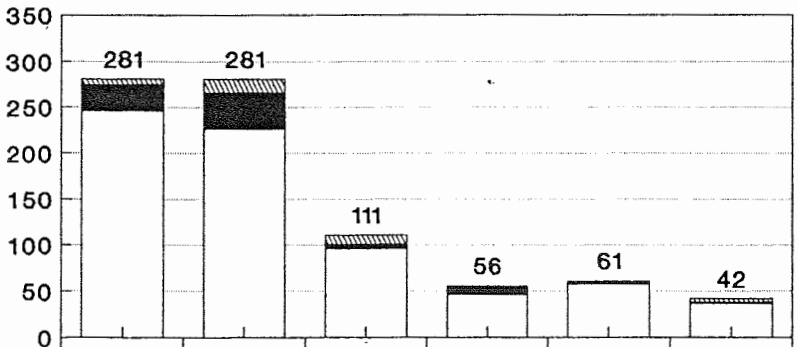
Fig. 1: Occupied primate space in British collections 1992



	AOM	CALLITRICHID	LEMURS	SM CEBIDS	GIBBONS	NOCTURNAL
Group	187	0	63	36	0	2
Pair	58	226	33	10	57	35
Single	1	0	0	0	1	0

Single Pair Group

Fig. 2: Total projected primate space in British collections 1992



	AOM	CALLITRICH	LEMURS	SM CEBIDS	GIBBONS	NOCTURNAL
Future gain	6	15	10	1	0	4
Empty	29	40	5	9	3	1
Occupied	246	226	96	46	58	37

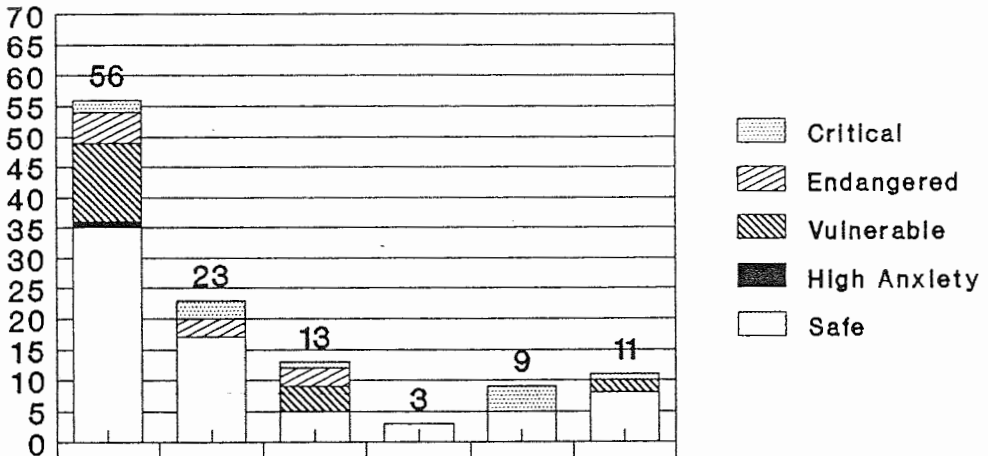
Occupied Empty Future gain

Compiled by Paignton Zoo, UK.

Since the first census was carried out in 1990 three collections which held primates have closed, namely Guernsey Zoo, Guilsborough Grange and Kilverstone Wildlife Park. Kilverstone however, has since re-opened under different management, but much of their primate stock was exported to the U.S. (see co-ordinators' reports) and it is unknown if additional 'space' other than that included in this update will be made available. This event alone has had a particularly detrimental effect on the holding capacity for callitrichids in the region (Table 1).

There are now 52 collections registered on the database and and another three for which information has yet to be collated. The total number of taxa held in British collections has increased from 106 to 114 (Fig 3) due partly to new species coming into the region, but principally as a result of taxonomic changes for certain (sub-)species.

Fig. 3: Status of 114 primate taxa in British collections 1992



	AOM	CALL	LEM	SM C	GIB	NOCT
Critical	2	3	1	0	4	1
Endangered	5	3	3	0	0	0
Vulnerable	13	0	4	0	0	2
High Anxiety	1	0	0	0	0	0
Safe	35	17	5	3	5	8

With the setting up of the Primate Taxon Advisory Group and its six subgroups (see page 2) it is intended that each subgroup leader will maintain an overview of the regional status of 'their' respective taxa. The 'space survey' is intended to be an ongoing exercise such that a listing giving the location of all 'empty' and 'planned' accommodation will be provided in order that surplus stock of the various taxa recommended for captive breeding can be placed as effectively as possible.

Accommodation for great apes is to be included in due course.

Appendix: primate species held in zoos of the U.K. and Ireland.

NOCTURNAL PRIMATES	
Microcebus murinus	Lesser mouse lemur
Mirza coquereli	Coquerel's mouse lemur
Loris tardigradus	Slender loris
Loris tardigradus nordicus	Slender loris
Nycticebus coucang	Slow loris
Nycticebus pygmaeus	Lesser slow loris
Galago crassicaudatus	Thick-tailed bushbaby
Galago senegalensis	Senegal bushbaby
Galago moholi	Moholi's bushbaby
Daubentonia madagascariensis	Aye-aye
Aotus trivirgatus	Douroucouli
DIURNAL LEMURS	
Hapalemur griseus alaotrensis	Alaotran gentle lemur
Lemur catta	Ring-tailed lemur
Lemur fulvus	Brown lemur
Lemur fulvus albifrons	White-fronted lemur
Lemur fulvus albocollaris	White-collared lemur
Lemur fulvus collaris	Collared lemur
Lemur fulvus mayottensis	Mayotte lemur
Lemur fulvus rufus	Red-fronted lemur
Lemur fulvus sanfordi	Sanford's lemur
Lemur macaco	Black lemur
Lemur mongoz	Mongoose lemur
Lemur variegata	Ruffed lemur
Varecia variegata variegata	Black & white ruffed lemur
Varecia variegata ruber	Red ruffed lemur
CALLITRICHIDS	
Callimico goeldii	Goeldi's monkey
Callithrix argentata sp.	Silvery marmoset
Callithrix argentata argentata	Silvery marmoset
Callithrix argentata melanura	Silvery marmoset
Callithrix geoffroyi	Geoffroy's marmoset
Callithrix humeralifer	Tassel-eared marmoset
Callithrix jacchus	Common marmoset
Callithrix penicillata	Black tufted-eared marmoset
Callithrix pygmaea	Pygmy marmoset
Leontopithecus rosalia	Golden lion tamarin
Leontopithecus chrysomelas	Golden-headed lion tamarin
Leontopithecus chrysopygus	Golden-rumped lion tamarin
Saguinus bicolor bicolor	Pied tamarin
Saguinus fuscicollis	Saddle-back tamarin
Saguinus geoffroyi	Geoffroy's tamarin
Saguinus illigeri	Red-mantled tamarin
Saguinus imperator	Emperor tamarin
Saguinus imperator subgrisescens	Emperor tamarin
Saguinus labiatus	White-lipped tamarin
Saguinus labiatus labiatus	White-lipped tamarin
Saguinus midas midas	Red-handed tamarin
Saguinus midas niger	Black-handed tamarin
Saguinus mystax mystax	Moustached tamarin
Saguinus oedipus	Cotton-headed tamarin
Saguinus weddelli	Weddell's tamarin

SMALL CEBIDS

Cacajao rubicundus	Red uakari
Pithecia pithecia	Pale-headed saki monkey
Saimiri sciureus	Squirrel monkey
Saimiri sciureus boliviensis	Black-capped squirrel monkey

ALL OTHER MONKEYS

Alouatta caraya	Black howler monkey
Alouatta seniculus sara	Red howler monkey
Cebus albifrons	White-fronted capuchin
Cebus apella	Brown capuchin
Cebus capucinus	White-throated capuchin
Cebus nigrivittatus	Weeper capuchin
Ateles spp.	Spider monkeys:
Ateles belzebuth belzebuth	Long-haired
Ateles belzebuth hybridus	Marimonda
Ateles fusciceps	Brown-headed
Ateles fusciceps robustus	Columbian black
Ateles geoffroyi geoffroyi	Geoffroy's
Ateles geoffroyi grisescens	Hooded
Ateles geoffroyi ornatus	Ornate
Ateles geoffroyi frontatus	Brown-foreheaded
Ateles paniscus paniscus	Red-faced black
Ateles paniscus chamek	Black-faced black
Lagothrix lagothrica	Woolly monkey
Cercocebus aterrimus	Black mangabey
Cercocebus atys atys	Sooty mangabey
Cercopithecus aethiops	Grass monkey
Cercopithecus aethiops pygerythrus	South African vervet
Cercopithecus ascanius schmiditi	Schmidt's guenon
Cercopithecus ascanius whitesidei	Redtail monkey
Cercopithecus diana	Diana monkey
Cercopithecus hamlyni	Owl-faced monkey
Cercopithecus mitis monoides	Diademed monkey
Cercopithecus mitis albogularis	Syke's monkey
Cercopithecus mona	Mona monkey
Cercopithecus neglectus	De Brazza's monkey
Cercopithecus nigroviridis	Allen's monkey
Cercopithecus petaurista	Spot-nosed guenon
Erythrocebus patas	Patas monkey
Macaca arctoides	Stump-tailed macaque
Macaca fascicularis	Crab-eating macaque
Macaca mulatta	Rhesus macaque
Macaca nemestrina	Pig-tailed macaque
Macaca nigra	Sulawesi crested macaque
Macaca pagensis	Mentawai Island macaque
Macaca silenus	Lion-tailed macaque
Macaca sinica	Toque monkey
Macaca sylvanus	Barbary macaque
Miopithecus talapoin	Talapoin monkey
Papio cynocephalus	Savanna baboon
Papio anubis	Anubis baboon
Papio hamadryas	Hamadryas baboon
Mandrillus sphinx	Mandrill

ALL OTHER MONKEYS CONT.

Colobus guereza spp.	Guereza colobus monkey
Colobus guereza kikuyuensis	" "
Colobus guereza caudatus	" "
Colobus guereza occidentalis	" "
Colobus guereza dodingae	" "
Colobus polykomos polykomos	King colobus monkey
Presbytis melalophos	Banded langur
Presbytis rubicunda	Maroon langur
Pygathrix nemaeus	Douc langur
Semnopithecus entellus thersites	Entellus langur
Trachypithecus auratus auratus	Black langur
Trachypithecus cristatus	Silvered langur
Trachypithecus obscurus	Spectacled langur
Trachypithecus phayrei	Phayre's langur

GIBBONS

Hylobates agilis	Agile gibbon
Hylobates concolor	Black gibbon
Hylobates concolor leucogenys	Black gibbon
Hylobates klossi	Kloss' gibbon
Hylobates lar	Lar gibbon
Hylobates moloch	Moloch gibbon
Hylobates muelleri	Mueller's gibbon
Hylobates pileatus	Pileated gibbon
Hylobates syndactylus	Siamang

CO-ORDINATED BREEDING OF CAPTIVE PRIMATES

Reports from the meeting held at Paignton Zoo on 11th and 12th March, 1991.

Joint Management of Species Group

Compiled and edited by Neil Bemment and Roy Powell

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CO-ORDINATED BREEDING OF CAPTIVE PRIMATES

Joint Management of Species Group

Held at Paignton Zoo on 11th and 12th March, 1991.

CONTENTS

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Unfortunately species reports for Douroucouli, Lion-tailed Macaque, Lion Tamarins and Sulawesi Crested Macaque were not received and demographic analyses for Ruffed lemurs and Ring- tailed Lemurs were not complete at the time of the meeting.

Preface

Peter Stevens

The role of zoos in conserving species is now generally accepted by such organisations as IUCN and ICBP and will lead to a greater demand for managed captive breeding programmes as the pressure on our natural environment continues.

The management of captive populations requires not only an understanding of the biological systems involved but also the skills which enable those systems to be replicated. It goes without saying that often those natural systems are extremely complex, with the process of evolution and the pressures from the surrounding environment constantly acting upon animals in the wild.

To take such effects into account requires a great deal of knowledge and techniques, some of which we have, such as the ability to manage our gene pools to their maximum potential. With the expansion of the service offered by ISIS many more zoos are participating in co-operative breeding programmes but even so the limiting factor of available space is always with us. Consequently it is imperative that we utilise the space available in zoos for conserving target species and this is but a beginning of that process.

Having gained recognition for the contribution zoos make towards conserving species, it is now up to us to accept the challenge by ensuring that what we have is put to the best use.

A review of the 'captive space' for primates (excluding the great apes) in the U.K. and Ireland

Neil Bemment and Roy Powell

Introduction

At the Co-operative Breeding of Primates meeting held at Edinburgh Zoo in April 1990 under the auspices of the Joint Management of Species Group (JMSG) and the Primate Society of Great Britain, all of the species co-ordinators/studbook keepers who presented reports highlighted a desperate need for more 'captive space' for keeping primates as many species were competing for the same type of accommodation. It was therefore agreed that a survey needed to be carried out in order to assess the total captive space available for keeping primates (excluding the great apes) in the U.K. and Ireland. Paignton Zoological & Botanical Gardens undertook to circulate a questionnaire to those collections known to hold primates, collate the data and host a meeting in Spring 1991 at which the results would be reviewed and recommendations agreed.

Survey of zoos in the U.K. and Ireland

The questionnaire was sent to 35 Federation collections and 25 non-Federation collections of which only 5 did not hold primates or intend to in the future. For the purposes of the survey the primates were divided into 6 categories (see Table 1) depending on the suitability of the accommodation for holding a certain primate species. Precise dimensions of enclosures were not requested as it was left to the discretion of each institution to decide whether or not a particular 'space' was deemed suitable to hold a given size of primate. Details on currently unoccupied and planned facilities were also censused.

Although the present occupants of an enclosure were recorded, the main objective was to ascertain the total number of 'spaces' committed to the housing of the different 'groups' of primate. An indication of the maximum holding capacity for each was requested and these were interpreted into either:

'SINGLE'	(capable of holding only one individual)
'PAIR'	(suitable for holding a breeding pair and their dependent offspring) or
'GROUP'	(suitable for a social unit comprising more than two potential breeding adults and their offspring).

All cage space allocated to 'Nocturnal Primates', 'Gibbons', 'Callitrichids', sakis & titis ('Small Cebids') and guenons ('All Other Monkeys') was recorded as PAIR accommodation as this, but for a few exceptions, is how they are usually maintained in British collections.

All cage space allocated to 'All Other Monkeys', (excluding the guenons), 'Small Cebids' (excluding sakis & titis) and 'Diurnal Lemurs' has been recorded as GROUP accommodation except where a collection specified that the enclosure in question could only hold a pair of that species.

The data were stored using a database (dBase, Ashton Tate) on an IBM-compatible computer. The database consisted of a series of individual records, one for each enclosure reported in the questionnaire. Each record consisted of 13 fields which incorporated the zoo name, enclosure name, whether on-show, whether single, pair or group accommodation, the species held in that enclosure, the primate group it belonged to, whether a Red Data species, and lastly the sex ratio currently held. The database offered easy sorting of primate groups and species, and provided summary figures for each grouping. It will offer ease of updating

in future surveys, and possible conformity with surveys done in other geographic regions (copies of the database structure and data are available upon request).

Principle findings of the survey:

TABLE 1: Summary of the captive space available for primates (excluding the great apes) in the U.K. and Ireland.

PRESENT SITUATION	OCCUPIED				UNOCCUPIED			
	S	P	G	SUB TOTAL	S	P	G	TOTAL
ALL OTHER MONKEYS	3	53	214	270	0	0	8	278
CALLITRICHIDS	1	271	0	272	0	34	0	306
DIURNAL LEMURS	0	26	63	89	0	1	3	93
GIBBONS	1	54	0	55	0	1	0	56
SMALL CEBIDS	1	17	33	51	0	0	5	56
NOCTURNAL PRIMATES	0	30	1	31	0	1	0	32

PROJECTED SITUATION	LOSSES			GAINS		CAPACITY			
	S	P	G	P	G	P	G	TOTAL	
ALL OTHER MONKEYS	3	6	12	0	16	47	226	273	(-5)
CALLITRICHIDS	1	0	0	24	0	329	0	329	(+23)
DIURNAL LEMURS	0	0	2	1	8	28	72	100	(+7)
GIBBONS	1	1	0	7	0	61	0	61	(+5)
SMALL CEBIDS	1	0	0	0	1	17	39	56	0
NOCTURNAL PRIMATES	0	0	1	6	0	37	0	37	(+5)

Note: The figures in ( ) indicate the overall changes in captive space available, taking into the account unoccupied accommodation and the expected losses and gains over the next 3 years.

1. There is an expected increase in the number of 'spaces' to be made available for all primates over the next 3 years with the exception of the 'All Other Monkeys' and 'Small Cebids' groups for which there is to be a net loss and no change respectively (see Table 1).

2. In the long term all SINGLE accommodation used for exhibiting primates is to be phased out and there are no plans to build such enclosures in the future.

3. The majority of collections do not have permanent reference names/nos. for their primate enclosures which is a potential hinderance in updating the database if the occupants are changed between censuses.

4. There were 2853 primates representing 106 species/subspecies held in U.K. and Irish zoos in 1990 (see Fig. 1). The most numerous were 'All Other Monkeys' representing 48% of the species held and 42% of the individuals, as shown in Table 2. The smallest group in terms of species was the 'small cebids' (4 species) but in terms of individuals it was the 'Nocturnal Primates' (only 65 animals). 30 of the 106 species/subspecies were Red Data Listed. The group with the largest proportion of Red Listed species was 'All Other Monkeys' (17 out of 51), as shown in Fig. 2.

5. Among the 55 zoos in the survey that held primates, the most commonly held group was 'All Other Monkeys' (91% of these zoos), as shown in Fig. 3. The least common group was 'Nocturnal Primates' which were found in just over 10% of the zoos. The percentage of zoos holding the other groups is summarised in Table 2. The emphasis on 'All Other Monkeys' would of course have a strong bearing on the type of accommodation available.

Table 2: Relative proportions of primate groups held in U.K. and Irish zoos keeping primates

GROUP	% of species held	% of indivs held	% space occupied	% of zoos
All Other Monkeys	48.2	42.2	35.3	91
Callitrichids	22.6	30.1	35.3	69
Diurnal Lemurs	7.5	12.9	11.6	56.4
Small cebids	3.8	8.1	6.6	52.7
Gibbons	7.5	4.4	7.2	41.8
Nocturnal primates	10.4	2.3	4.0	10.9

6. The distribution of primate species in U.K. and Irish collections is shown in Fig. 4. Some species were rare in captivity whilst others were very common. At one extreme, there were 26 cases of a species or subspecies being held by single collections (not necessarily the same one). Ten of these were Red Data species including four subspecies of spider monkey (*Ateles geoffroyi ornatus*, *A. g. griscescens*, *A. g. frontatus*, *A. belzebuth hybridus*), two species of gibbon (*Hylobates concolor* and *H. klossi*), tassel-eared marmosets *Callithrix humeralifer*, lion tamarins *Leontopithecus chrysopygus* and lesser slow loris *Nycticebus pygmaeus*.

   At the other extreme, 3 species were found in over 20 collections. These were the brown capuchin *Cebus apella* and the Red Data Listed cotton-headed tamarin *Saguinus oedipus* and ring-tailed lemur, *Lemur catta*.

7. Fig. 5 shows that the majority (over 70%) of occupied space in 1990 was taken up by primates in the 'Callitrichid' and 'All Other Monkeys' groups (about 35% each). Much less space was available for the other four groups (see also Table 2). Although the total number of spaces occupied by 'Callitrichids' and 'All Other Monkeys' was comparable, relatively fewer zoos specialized in callitrichids but those that did so each tended to provide more spaces for them, as Fig. 3 shows. Fig. 6 indicates the situation with planned and unoccupied space included. It indicates that planned accommodation was directed mostly towards 'Callitrichids'.

Fig. 1: No. of primates in the zoos of U.K. and Ireland 1990

2853 individuals and 106 spp./subspp.

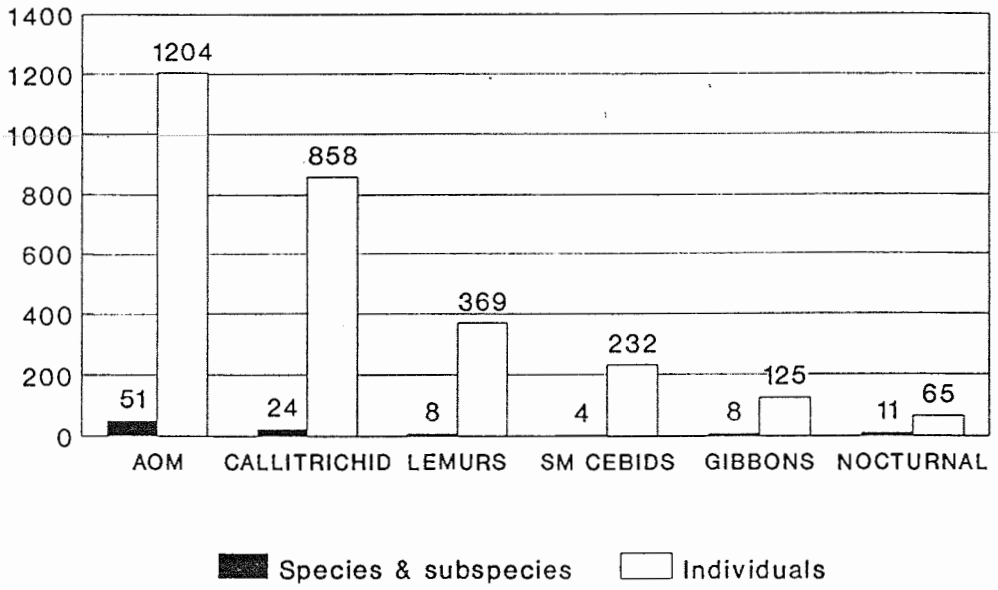
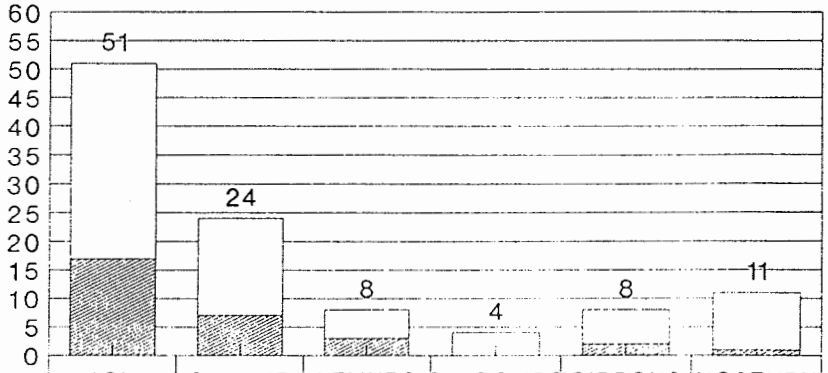


Fig. 2: No. of primate species/subspp. in the zoos of U.K. and Ireland 1990

A breakdown of 106 spp./subspp.



	AOM	CALLITR	LEMURS	SM CEBIDS	GIBBONS	NOCTURN
Not Red Listed	34	17	5	4	6	10
Red Listed	17	7	3	0	2	1

Compiled by Paignton Zoo, UK

Fig. 3: No. of zoos in the UK & Ireland holding primates and mean no. of spaces occupied in 1990

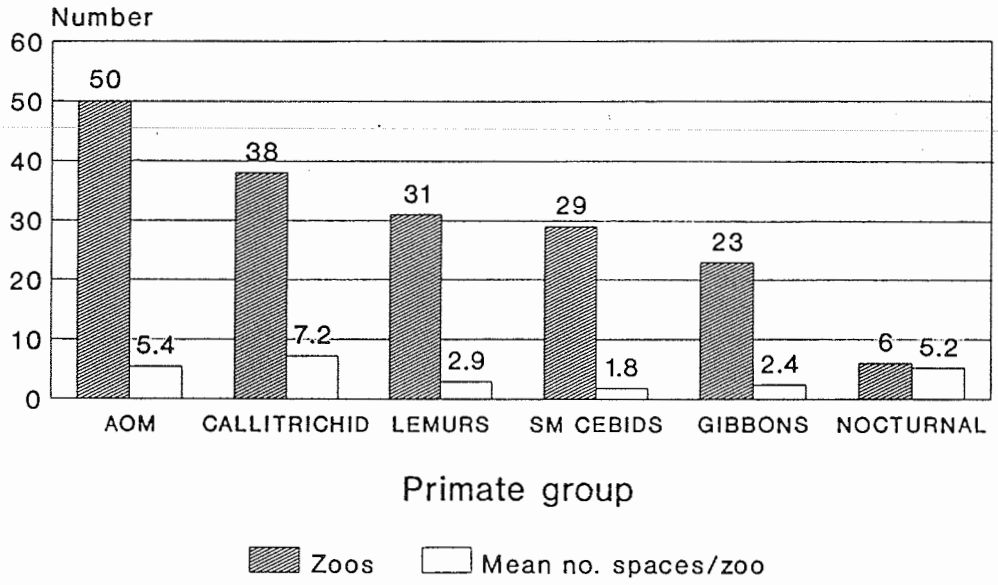
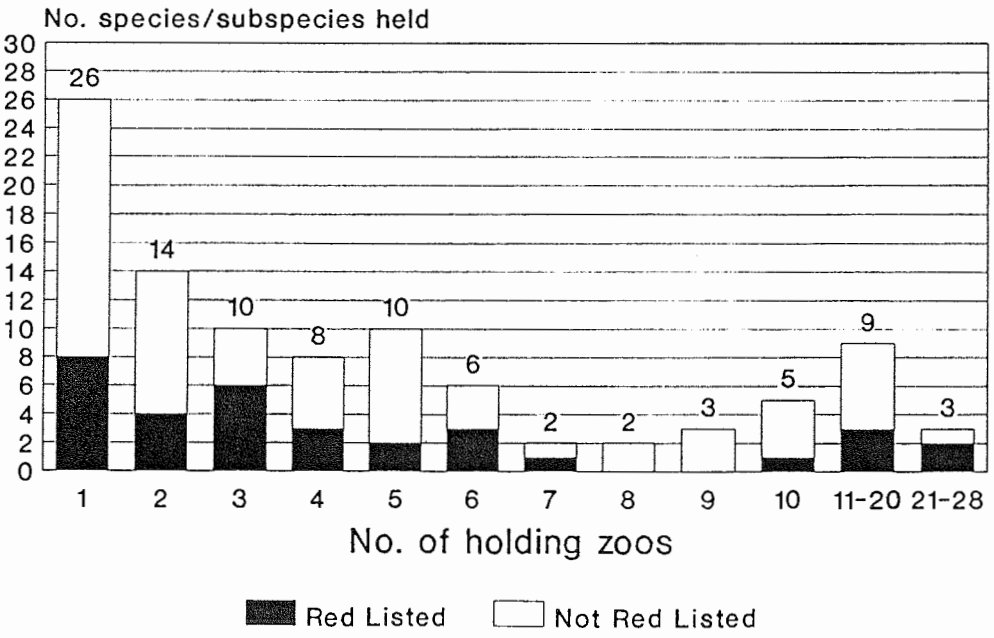
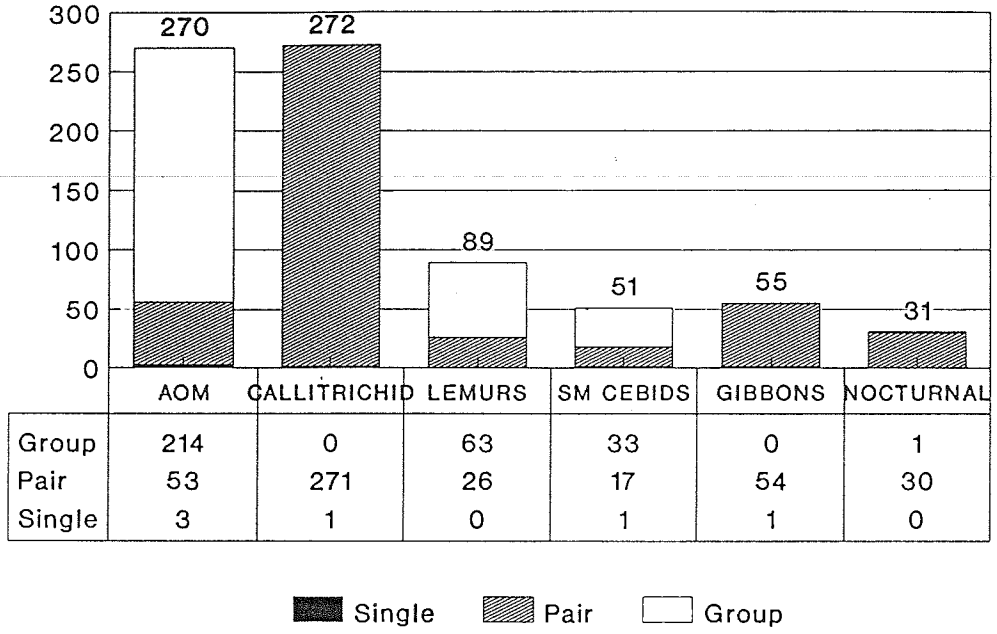


Fig. 4: Primates species distribution in the zoos of the U.K. & Ireland 1990



Compiled by Paignton Zoo, UK

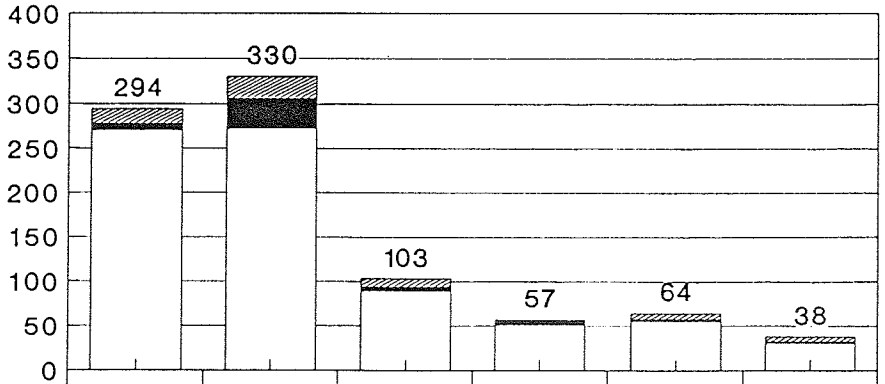
Fig. 5: Occupied primate space in zoos of the U.K. & Ireland 1990



	AOM	CALLITRICHID	LEMURS	SM CEBIDS	GIBBONS	NOCTURNAL
Group	214	0	63	33	0	1
Pair	53	271	26	17	54	30
Single	3	1	0	1	1	0

Single Pair Group

Fig. 6: Total primate space in the zoos of the U.K. & Ireland 1990



	AOM	CALLITRICH	LEMURS	SM CEBIDS	GIBBONS	NOCTURNAL
Planned	16	24	9	1	7	6
Unoccupied	8	34	5	5	2	1
Occupied	270	272	89	51	55	31

Occupied Unoccupied Planned

Compiled by Paignton Zoo, UK.

Co-operative breeding of primates meeting 1991

The meeting at Paignton Zoological and Botanical Gardens was held on 11th/12th March at which the findings of the survey were presented by Neil Bemment (Curator of Mammals) and Roy Powell (Records Officer/Biologist). The species presently recommended by the Captive Breeding Specialist Group (CBSG) for conservation/ captive breeding effort were examined in a series of workshop sessions. The various species co-ordinators' reports on regionally and internationally managed species were presented in conjunction with these.

Principle findings of the workshop sessions

1. That there are insufficient numbers of individuals of certain priority species to be self sustaining in captivity in the U.K. and Ireland although some are already part of an EEP or other internationally recognised breeding programme.

2. For some of the CBSG-listed species held in the U.K. and Ireland, there is no immediate pressure to guarantee extra 'space' as their breeding potential and subsequent security in captivity has yet to be achieved.

3. That there are some species for which the U.K. and Ireland has a sound population base e.g. cotton-top tamarin *Saguinus oedipus*, and could recommend that other regions concentrate on Callitrichids other than this species.

4. More information is required as to the global captive status of all primates and the accommodation available for the different primate groups before decisions concerning the number of species that can be realistically maintained can be taken. For reasons of economy of resources (e.g. transport costs etc.) it would seem sensible to captilalise upon regional strengths to manage the species involved.

Main recommendations from the meeting

1. All known hybrids (which would not otherwise occur in the wild) should be sterilised as should the offspring of those pure species which are hybridising, but which for one reason or another cannot be practically segregated.

2. No new species should be brought into the U.K. and Ireland unless they are part of an internationally recognised breeding programme or in sufficient numbers to be self sustaining in the region.

3. Although the principle of 'reserving' space for priority species was acknowledged, in practice husbandry problems associated with certain species need to be addressed before such spaces ever have to be drawn upon. It was agreed however, that as and when breeding performance improves non-endangered species should have less space allocated to them.

4. A similar space survey has been initiated in the U.S. and it was agreed that one should be proposed for continental Europe at the forthcoming EEP meeting at Budapest in May.

Other recommendations concerned more specific details of species which have been documented in the following reports and/or the minutes of the meeting, previously circulated by the Federation of Zoos.

Acknowledgements

We are grateful to all the zoos involved for providing the initial data for this survey and to Dr Peter Bennett for providing information on primate species held by Federation zoos. We are grateful to the Exeter University Computer Unit for the use of their scanning and OCR equipment to transfer co-ordinators' reports into a word processor.

Lorises

John Buchan

Status in the Wild

The slow loris *Nycticebus coucang* is recorded by the IUCN/SSC Primate Specialist Group in its conservation priority ratings for Asian primates (1) as not known to be especially rare or threatened, i.e 5 points, while the slender loris *Loris tardigradus* is rated slightly higher with 7 points. Neither are listed in the 1990 Red Data Book (2). However, the pygmy slow loris *Nycticebus pygmaeus* is listed as 'Vulnerable' (2) and has a conservation priority rating of 9 points (1) indicating that of the three species it is in the most immediate need of attention.

Status in Captivity

ISIS (31.12.90) lists 100 slow lorises of unknown subspecies in 22 collections, a further 6 *Nycticebus c. coucang* in 2 collections and 8 *Nycticebus c. bengalensis* also in two collections giving an overall total of 114 animals.

Since the last JMSG primate meeting at Edinburgh Zoo in April 1990 there have been two births, one at London (22.7.90) to parents studbook nos. 128 & 129 and the other at Bristol (1.10.90) to 163 & 140. Unfortunately the latter died the same day after being found drowned in the water bowl. There were no deaths in 1990 such that the U.K. regional status of the slow loris now stands at 23 animals in 8 collections. There is still a problem in establishing second generation breeding lines so it is not yet possible to ensure the continuity of the captive population without obtaining additional wild caught founders.

There are 24.24.6 slender lorises *Loris tardigradus* listed by ISIS in 9 collections, a further 6.4 *L. t. nordicus* in 3 collections and 1.1.1 *L. t. tardigradus* in ' 1 collection. Of those, only 4 animals are held in the U.K. namely 1.0 at Bristol and 1.2 at London.

ISIS lists 50 pygmy slow lorises (29.19.2) in 8 collections of which 48% are captive bred and 36% wild caught; 9 animals were born in 1990 of which 3 did not survive. Of the 6.3 in the U.K. only Bristol's are registered on ISIS:

London	1.0	Bristol	1.1
Burstow Wildlife Sanctuary	1.0	Belfast	1.1
Private Collection	1.0		

Given the small amount of cage space available for nocturnal primates I feel that we should be concentrating on the more endangered species i.e. the pygmy slow loris and the slender loris, and reduce the number of 'spaces' devoted to slow lorises in future.

References

(1) Action Plan For Asian Primate Conservation. IUCN Primate Specialist Group : 1987-91 page 14

(2) IUCN (1990) Red List of Threatened Species. IUCN, Gland, Switzerland and Cambridge, UK.

Lemurs

Stephen Standley

Mongoose Lemur *Lemur mongoz*

This species is now categorised as 'Endangered' by I.U.C.N. and is listed as a priority species for captive breeding by the C.B.S.G. primate group. Unfortunately, captive breeding has not been sustained and only two American institutions currently breed them. The U.K. population now consists of two aged pairs at London and Bristol but Cricket St. Thomas imported a young pair from Duke Primate Centre on 28th March. The International Studbook is held by Mike Clark, London Zoo.

Black Lemur *Lemur m. macaco*

Also recognised as a candidate, for captive breeding by the C.B.S.G., this species is currently listed as 'Vulnerable' by I.U.C.N. There is an international studbook held by Roger Birkel at St. Louis Zoo and the species appears to be increasing in captivity. Currently, there is only one consistent breeding female in the U.K., held at Cricket St. Thomas. However, Bristol hold additional pairs and there are males at Newquay and Fota.
Belfast Zoo are importing 5.7 Black Lemurs from France and the U.S.A. this year which should improve the status of this species in the U.K.

White-fronted Lemur *Lemur fulvus albifrons*

This subspecies is rare in the wild and is recommended for monitoring in captivity by the C.B.S.G. However, the U.K. population is primarily of subspecific hybrids with only two specimens of known purity (a male at Blackpool and female at Bristol). It is still recommended that breeding of this subspecies be reduced or prevented in order to make space available for Black or Mongoose Lemurs or even Brown subspecies of known purity.

Red-fronted Lemur *Lemur fulvus rufus*

Also rare in the wild and recommended for monitoring. However, there is little interest in this subspecies in the UK. with Bristol and Cricket St. Thomas both holding 2.4, Paignton a pair, and a further pair held for Bristol at Ravensden. Unfortunately, the world captive population is descended from a limited founder stock in the U.S.A. and may not be viable in the long term.

Mayotte Lemur *Lemur fulvus mayottensis*

I.U.C.N. listed as 'Vulnerable'; it is known that long term prospects are grim for all primates on Mayotte Island due to current massive development. There are doubts about the validity of this subspecies as it could have been introduced to the island by man circa 300 years ago.

The largest collection of this subspecies are now held at London Zoo and by Penny Boyd, a Private keeper who runs the Burstow Wildlife Sanctuary. Other significant groups are held at Cricket St. Thomas, Dudley and Fota. Sadly, Jersey now intend to stop keeping them despite many years of successful breeding. Care should be taken or the significant U.K. population will be lost.

Pygmy marmosets *Cebuella pygmaea*

Miranda F. Stevenson

The data are correct up until 30.9.91 and reflect births over a twelve month period.

This is a very brief synopsis. The accompanying graph illustrates population changes within the U.K. This has decreased in the past twelve months with 20 surviving young and a total of 90 animals.

The reason for the decrease in the population is the removal of the Kilverstone animals. Two of these have gone to Martin Bourne (Private).

Two confiscated wild caught individuals went to Banham Zoo.

Two were exported by Banham and six ex-Kilverstone via Ravensden. Ravensden held no animals at 30.9.91.

One Marwell animal went to a private individual and four from Edinburgh to West Midland Safari.

Most of the Bristol animals are now on loan with Mike Sherborne (Private).

It is probable that more animals will be moving into private hands in the immediate future.

The International Studbook has now been published by Wim. Mager of Apenheul in Holland aided by the National Foundation for Research in Zoological Gardens.

The Foundation are recommending that the population is now healthy enough to be managed on a regional basis and that regional studbooks should be maintained.

A volunteer is required to maintain a U.K. regional studbook. This is being looked into at present.

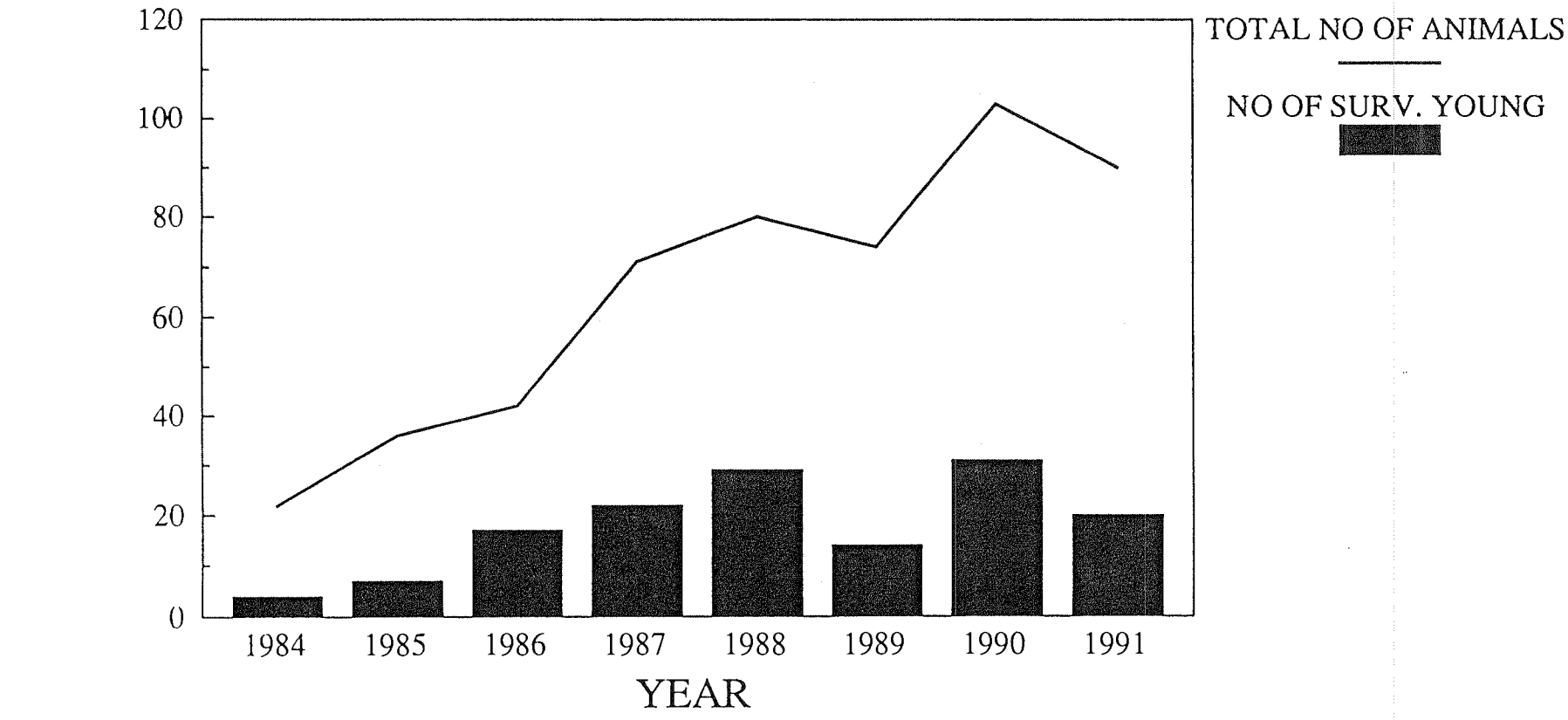
ROYAL ZOOLOGICAL SOCIETY OF SCOTLAND

Survey of U.K. Zoos from 30/09/90 to 30/09/91

Pygmy Marmoset *Cebuella pygmaea*

Zoo	GROUP	Breed Females	Young Born	Survived	Total at 30/09/91
Banham	A	1	4	4	6 (2.1.3)
Banham	B	1	4	4	10 (5.5.0)
Banham	C	0	0	0	2 (0.2.0)
Belfast	A	1	1	0	5 (4.1.0)
Belfast	B	1	1	0	3 (1.2.0)
M. Bourne	A	0	0	0	2 (1.1.0)
Bristol	A	0	0	0	2 (2.0.0)
Chester	A	1	2	1	4 (1.1.2)
Colchester	A	1	1	1	6 (1.0.5)
Colchester	B	1	0	0	2 (1.1.0)
Edinburgh	A	1	4	4	6 (1.1.4)
Edinburgh	B	1	2	0	0 (0.0.0)
London R.P.	A	1	0	0	2 (1.1.0)
London R.P.	B	1	0	0	2 (1.1.0)
Marwell	A	1	4	3	6 (4.1.1)
Penscynor	A	1	4	2	9 (4.1.4)
Penscynor	B	1	3	1	5 (2.2.1)
Shaldon Zoo	A	1	0	0	2 (1.1.0)
M Sherborne	A	1	2	0	8 (2.1.5)
Twycross	A	1	2	0	4 (2.2.0)
W. Mid. Saf.	A	1	0	0	2 (1.1.0)
W. Mid. Saf.	B	0	0	0	2 (1 1.0)
TOTAL			34	20	90(38.27.25)

U.K. PYGMY MARMOSET POPULATION CHANGES



Emperor tamarin (*Saguinus imperator*)

Rob Colley

The most recent reliable census of this species shows 59 animals (26.30.3) held in UK zoos. This data relies, principally, on the 31/12/89 census; 1990 updates have been included where possible but a more current status awaits the submission of Kilverstone data for 1990 and several queries re. Banham data.

Previous end-of-year census totals indicate little change in the total population size- 54, end of '86; 57, end of '87; 57, end of '88. In the period 1986-1989, 6.12 animals were exported; no exports have been recorded for 1990 (to date).

31 animals are recorded as born in 1989; of these, 14 died before the age of 12 months. Few recently established pairs have shown reproductive success; the 1989 surviving-offspring come from Banham (4prs, 8 surviving young), Kilverstone (2prs, 4 surv.), Battersea (2prs, 4 surv.) and Penscynor (1pr, 1 surv.). The available 1990 date seem to confirm that this situation is continuing: possibly, a closer look at husbandry practices is indicated. (Two new pairs have recently been established- at Edinburgh and Exmoor; each pair should begin to breed in the near future.)

Several possible animal movements are currently being considered:

- an exchange of animals with Australian zoos, via Amanda Embury, Australian species coordinator, has been suggested; also, Marwell are hoping to acquire animals from this source. There is a suggestion that some of the Australian animals are *subgrisescens* x *imperator* hybrids: care needs to be taken to ensure the import of *subgrisescens*.

- two breeding-age males, housed together at Kilverstone, may be made available; if this happens, Belfast and Penscynor each have suitable females. Kilverstone have promised "first refusal" if they are unable to find two females. If this does not work out, one of these females could be paired with the 9yr old ex-Battersea male at ZSL, the other could, perhaps, be used in the exchange suggested below.

- Mr W.R. Spira, Eichberg, Switzerland is seeking to exchange a two year old animal, of either sex, for similar; as his proffered male is ex-Banham, I have suggested that he exchange his female (ex S Africa?) for a British similar.

This species continues to be "desirable" to the zoo world, both in the UK and continental Europe. There is no suggestion of a cage shortage, and no difficult decision immediately apparent.

(There continues to be no word of the international studbook.)

Cotton-topped tamarin (*Saguinus o. oedipus*)

Rob Colley

This Regional population summary is based on studbook returns for the period 01.01.90 - 31.12.90. At the time of writing, most of these returns have been received and processed; data from only one major holding institution are yet to be incorporated. Thus, the figures are largely reliable.

TOTAL POPULATION

To date, the regional studbook records 767 animals;

at 31.12.90: 193.169.51 = 413 LIVE ANIMALS are recorded
(of these, 16. 12. 1 = 29 are outside UK or "lost")

TOTAL POP: 177.157.50 = 384

BIRTHS

01.01.90-31.12.90		'89	'88	'87	'86
instances:	=40	50	40	65	47
# born: (23.18.42)	=83	94	74	133	95
# surviving >12months: (13.12.24)	=49	52	47	64	50

- in spite of fewer birth-instances (40 cf 50 in '89), birth recruitment remained largely the same in 1990 as in previous years. An increase in litter size (1.88 to 2.1) and improved survival of neonates (55% to 59%) is evident cf 1989.

- 33 pairs reproduced during 1990.

DEATHS (adult)

deaths of animals >12 months of age:

01.01.90-31.12.90	'88	'87	'86
(11.7)= 18	18	21	11

Institutions holding Cotton-tops:

Data current to the end of 1990, except where indicated otherwise

	m.f.?	total	change since 12/88	note
B&D Zoological	3.4	7	+3	('89
Banham	2.2	4	+1	
Belfast	2.3.3	8	-1	
Borth	1.1	2	+2	
Boyd	2.1	3	+3	
Bristol	3.4.1	8	0	
Burstow	1.1	2	+2	(mid '90
Chard	3.4.1	8	+3	
Chessington	1.1	2	0	('89
Cheater.	1.1	2	-6	
Colchester	3.0.3	6	+4	(i
Colwyn Bay	1.1	2	0	
Cotswold WPk	1.2	3	+1	
Drusillas	3.3.2	8	0	
Dublin	4.4.2	10	+5	(ii
Dudley	2.0.2	4	0	('89
Dunfermline	1.2	3	0	('89
Edinburgh		0	-3	
Fovargue	3.0	3	-1	('89
Fota	2.1	3	+3	
Glasgow	1.1	2	+2	
Guilsborough	5.4	9	-2	
Haigh Park	3.1	4	+4	
I of Wight	1.1.2	4	+4	
Jersey	4.4.6	14	-1	
Kiernan	1.1	2	0	('89
Kilverstone	8.9.2	19	+5	('89
Langford	5.4	9	+5	(iii
Loch Lomond	3.3	6	+1	('88
Lockwood	1.1	2	+2	
London RP	3.4.5	12	+8	
Marwell	6.4	10	0	
Mawby	2.3	5	0	('89
Hole Hall	1.1	2	+2	
Penscynor	11.6.8	25	-7	
Ravensden	5.2	7	-2	
Reading	12.9	21	-7	(iv
Rhyll	2.2.2	6	+6	('89
Richards	1.1	2	0	('89
Scott	2.0	2	+1	('89
Shaldon	3.3	6	+2	
Southport	0.1	1	-1	('89
Stirling	37.35.1	73	+16	
Stratton	0.1	1	0	('89
Swales	2.2.1	5	+2	('89
Swanson	1.1	2	+2	

Sweetman	1.0	1	0	('89
Tenby	3.2	5	+5	(v
Twycross	4.3.7	14	+4	
Watchet	2.0	2	+2	
unknown	5.3	8	+8	(vi
Webster	0.3	3	+1	
Wellcome			-24	
Whipsnade	0.1	1	+1	
Wheeler	1.1	2	0	
Widcombe	1.1	2	+2	

i Colchester data are currently chaotic & under revision
ii includes animals on-loan to a private keeper
iii only Langford animals with offspring in the "zoo" population are listed.
iv Reading no longer keeps cotton-tops; transfer details are still awaited for those individuals still recorded "at Reading".
v includes 1.1 reported stolen, mid-1990.
vi two private keepers, details with Edinburgh/Stirling.

Summary

Essentially, the cotton-top situation is little changed over the preceding year, with a net addition to the population of some 30+ animals, and the recommendations of the working group tasked with addressing the problem of slowing growth should continue to be heeded. *

The principal obstacle to the production of a list of specific recommendations has, again, been the studbook keeper's inability to furnish Peter Bennett with a reasonably current status report for the UK population. (The rapid reproductive rate/short generation time of this species quickly renders data obsolete or unhelpful.) This problem has, hopefully, now been overcome and a reasonably accurate data set will be available as soon as Kilverstone submit 1990 data. This should allow specific recommendations to be offered before the half-year.

It was suggested, in my 1990 report to this meeting, that a "subset" of the studbook population needed to be defined by written agreement to participate in a formal management programme. No moves have been made on this front but I would again suggest that this is a necessary step if future effort is not to be wasted. Perhaps EEP is a more appropriate vehicle than JMSG?

The increasing frequency in the studbook listing of private individuals and zoos unused to the routine of reporting, with all the extra difficulties that result, will doubtless lead to more animals being difficult to track or "lost". It is important that zoos trading-out to private keepers ensure a permanent identifier- two, possibly three, animals came from "nowhere" in 89/90.

Contraceptive implants, seemingly the most favoured means of slowing growth, have not been taken-up with any great enthusiasm - stocks remain, and more can be obtained.

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* copy attached

As far as I know, Stirling, Chester, Penscynor and Jersey are the only holders to have used this method. Hannah Buchannan-Smith, of Stirling, has prepared a protocol, based on Stirling's experiences, to help would-be implanters. It was, and is, intended to distribute this to anyone requesting implants.

As mentioned earlier, the 1990 regional studbook is close to publication (April). This will contain an account of Anna Feistner and Eluned Price's work with Jersey's free-ranging cotton-tops.

Progress with the establishing of an EEP is slow, and faces an awesome problem of scale. It is hoped to establish, at the forthcoming Budapest meeting, a network of regional managers.

The international studbook keeper has wondered, very informally, how long the management of such a large date set will continue to be possible.

MEMORANDUM

TO: Cotton-top Tamarin "Management Committee
FROM: W C McGrew, Convenor
DATE: 26 April 1990

Re: Report of Meeting

5. Recommendations The Management Committee recommends the following measures, effective immediately, to begin to reduce the rate of population growth:

(a) That no further imports of cotton-tops into the British Isles take place. The current population is big and genetically diverse enough to respond to all present needs.

(b) That no more hand-rearing of cotton tops be done. Hand-rearing is expensive and time-consuming and usually produces behaviourally abnormal Individuals who present problems later, eg. taking up scarce space.

(c) That use of contraceptive implants for breeding females be encouraged. Such reversible means are proven and the implants are available at a nominal charge from Colley, who with Peter Bennett will provide advice.

(d) That vasectomy of breeding males be encouraged. This should occur only after they have been identified from stud-book analysis as having made adequate contributions to the UK gene pool.

6. Other Measures. The Management Committee also discussed other forms of sterilisation, euthanasia, and nutritional management of fertility. All of these present both costs and benefits, but they need further exploration before any recommendations can be made. It was agreed to pursue these possibilities.

7. Participation. The Management Committee hopes that all holders of cotton-tops in the British Isles will take part in moves to achieve zero population growth. To encourage this, it was agreed that participating bodies should not take in "surplus" cotton-tops from anyone not participating in the management plan.

8. Future Developments. The Management Committee agreed that pressing on should not wait until its next meeting. (Given the geographical spread of the members, i.e. Scotland, South Wales, Jersey, getting all five together will not be easy!) Bennett will produce the analyses of the 1989 stud-book data as soon as possible after receiving the data from Colley. These will be posted to members, with a view to using the analyses to target cotton-tops for curtailed or cessation of breeding.

9. Next Meeting. The Management Committee tentatively agreed to meet again at the next conference of the Joint Management of Species Groups' Co-ordinators, on 28-29 November in London.

Geoffroy's marmoset (*Callithrix geoffroyi*)

Janette Young

The captive breeding programme for Geoffroy's marmoset (*Callithrix geoffroyi*) remains, as voiced at last year's meeting, a cause for serious concern.

The studbook has now been updated to the and of 1990, and a historical analysis of the programme highlights three major and discomforting trends that must be confronted.

First: the population as a whole is not increasing at a healthy rate.

Total population movements for the period 1983 - 1990 are as follows:

Births	53
Deaths	42
Imports	19
Exports	5

A population based on 19 imported animals has, in eight years increased to only 25 specimens, plus 5 which have been moved out of the population. On the positive side, of the 15 founder animals, only two - both at Kilverstone - are genetically over-represented in the population.

The second major concern is the pattern of mortality and age structure of the UK population, and an examination of these highlight the serious health and husbandry problem encountered by the species.

AGE	0-2 days	3-30 days	1-12 months	1-2 yrs	2-3 yrs	3-4 yrs	4-5 yrs	5-6 yrs	6+ yrs
No.of deaths.	17	6	5	6	0	1	3	0	4
Percent of total.	40.5%	14%	12%	14%	0%	2.5%	7%	0%	10%

Infant mortality is disturbingly high. On average 1 in 3 infants die at or soon after birth.

Animals are not surviving into old age.

High mortality is experienced amongst sub-adults, and particularly in the Jersey colony. Research has, or is planned, to start at J.W.P.T. into the nutritional requirements of this species and into the incidence of pseudo-TB (*Yersinia pseudotuberculosis*); a significant cause of death in Jersey.

Finally, although it has been stated that founder representation is fairly good, the very status of 'founder' animals should be questioned. in particular, much of the Kilverstone stock originates from South Africa. The genealogy of these animals is unknown, however, it seems reasonable to assume that at least some of this stock is related. Not only are founder animals in doubt, but there is a danger of flooding the population with South African descended blood lines. Until this is known, pairings from within the U.K. population should be carefully planned. Currently Jersey offers the only alternative line to the South African one. Projected imports to Banham in the coming year should alleviate the problem to some extent.

Recommendations

1. Research to be continued/encouraged into the many health and husbandry problems which beset this species.

2. An effort should be made to discover the parentage and possible relatedness of the U.K. stock, originated from both S. Africa and Europe.

Goeldi's monkey *Callimico goeldii*

J. B. Carroll

The studbook for this species has not yet been fully updated. This report is, therefore, based on incomplete data for 1990. The regional studbook in currently being converted from the Omaha format to SPARKS and the original numbering system to International studbook numbers. In the process, the International studbook will be updated as well.

Changes in the British lsles population during 1990

The studbook currently shown an increase in the population during 1990 of two. For the last three years, the population has stayed around 90 - 100 animals. On 1st January 1991, the studbook showed 93 animals in eighteen collections. The only new collection to take the species was Shaldon Zoo.

Five births are listed as having occurred, and three deaths. One death was of a one-day-old infant. The other two were older animals.

No population genetic or demographic assessment was made as the studbook is still incomplete.

All collections will be sent printouts with their complete studbook listings, living and dead, for 1991 at the end of the year. We hope to publish the updated studbook for 1991 in SPARKS format around March or April 1992.

White-faced Saki Monkeys (Pithecia pithecia)

Sarah Christie

(Information on very recent births, gained at the meeting, has been incorporated into the report.)

The UK population of this species is, for the present, looking reasonably healthy. Eight pairs in total are breeding and there is every reason to hope that more will soon join them. However there are problems, with some genetic lines being over-represented and others contributing little. Careful management over the next decade could go a long way towards remedying this.

The population has grown by eight since last year to a total of forty-nine animals in ten collections. Nine surviving babies were born; two to the wild-caught pair at London, four to the three pairs at Howletts, one to the breeding pair at Twycross, one to a newly established pair (both captive bred) at Shaldon and one, hand-reared, to the pair at Mike Sherbourne's. One animal, a young female at Banham, died. A female from Howletts has been sent to Kilverstone to be paired with their young male.

The situation in British Zoos (and private collections) is therefore as follows.

Banham	2.2	One potential breeding pair, one old female + son.
Edinburgh	1.1	One potential breeding pair.
Fountain	1.1	Two hand-reared siblings.
Howletts	4.7.2	Three proven breeding pairs + offspring.
Kilverstone	2.2	Two potential breeding pairs.
London	4.3.1	Two proven breeding pairs + offspring.
Shaldon	1.1.1	One proven breeding pair + offspring.
Sherbourne	2.2	One breeding pair with hand-reared offspring.
Southport	1.2	One potential breeding pair + old female (trio).
Twycross	4.2	One proven breeding pair + offspring.
Total	22.23.4 = 49	

Of these, fourteen animals are in established breeding pairs which rear their own offspring. Many of these animals are founders; overall they trace back to a total of nine founders. This in itself is not too undesirable, but two pairs in particular - the wild-caught pair at London (7 & 6), and one of the wild-caught pairs at Howletts (48 & 49), are heavily over-represented. A female from the Howletts pair is due to be exported to Verona along with a male from the London pair. A male from the other London pair is soon to be sent to Banham, who are in the process of importing a female from Mulhouse to pair with him. London intend to export all remaining offspring from their over-represented pair 7 & 6 (a female is going to Copenhagen this month), and are having the breeding female implanted as soon as her current baby is old enough to stand a temporary separation. She has given birth 18 times in the 15 years since she arrived and deserves a peaceful retirement. The implant will be a first for Sakis but the veterinary staff foresee no problems.

There is a further breeding pair held by Mike Sherbourne, consisting of a wild-caught male and a female from Banham. The female has so far failed to rear the four infants that have survived. Two of these hand-reared animals are held by Colin Fountain. The female's only other relatives in the population are her mother and full brother still held together at Banham; the mother is old, though possibly not too old to breed. The wild-caught male has no other relatives. It would therefore be very useful to the population, from the viewpoint of genetic management, to get some animals of this line into positions where they are likely to produce normal mother-reared youngsters. Currently the only other breeding pair with no contribution from any of the over-represented animals is 12 & 11 at Howletts. Only the pair at Shaldon has genes from both over-represented pairs; offspring from this pair will therefore have a limited choice of mates from inside the UK.

Five further pairs have been set up in the last few years but have not yet bred. Three of these ten animals have bred in a previous pairing; some are youngsters not long of breeding age. The pair at Edinburgh contains a female imported from Frankfurt, and the pair at Southport contains a male who is the only descendant of wild-caught pair 9 & 10. (9 is now dead and 10 elderly.) Both of these important animals are paired with partners from London's over-represented pair 7 & 6, making it even more important to establish more breeding lines which do not contain this blood.

Of the remaining animals, one is an old female currently housed in a trio at Southport, two more are the old female and her son at Banham, and the remaining twenty are youngsters still with their parents. Two of the London animals and one from Howletts are being exported. The oldest youngster of the four at Twycross is a female of an age to be paired up. Howletts currently have two young females on the surplus list and five more infants coming along behind.

Possible action

As previously stated, some of the current surplus stock should be exported; it is over-represented and cage space is limited. There are however youngsters whom it would be advantageous to retain; Jim Cronin of Monkey World, a man of much experience with Saki monkeys, has said he would be delighted to house a pair of Sakis should one become available. Banham Zoo, as mentioned, also wish to house another pair of Sakis; the female they are importing from Mulhouse to go with the London male will bring some more new blood into the country. Fota Park in Ireland are also interested in a pair and should have accommodation available by the autumn of 1991. Penny Boyd has kindly offered to house any animals surplus to breeding requirements, should accommodation for such animals become a problem.

It is important that the five pairs currently not breeding begin to do so, particularly the pairs at Edinburgh and Southport. This is very likely just a matter of time, though it is possible that some individual animals might be incompatible for breeding purposes; swapping animals might help should this be thought to be the case. It would also be useful to try to get some of the animals held by Mike Sherbourne and Colin Fountain producing mother-reared offspring. One avenue of approach (not yet discussed with Mike Sherbourne) might be to pair the eldest of the male offspring, currently three years old, with a mother-reared female. One possible mate is female 97 at Twycross, who carries no genetic contribution from 7 & 6 and should make a good mother. In addition, Mike Sherbourne has expressed a willingness in principle to change his adult female for one likely to rear, but wishes to give her one more chance to rear the youngster she is currently carrying. Pairing up the Banham male (79) with an unrelated female would also be helpful. Other important individuals include the youngsters at Twycross, whose mother is a wild-caught animal unrepresented elsewhere in the country.

Closer links with Europe and also with the US are obviously desirable; several European institutions, notably Krefeld, have expressed a willingness to co-operate and exchange both animals and information. It may be difficult to accommodate twenty youngsters over the next few years and we should think seriously about exporting a good proportion. The species is not endangered yet - and for this reason it is hard to justify large increases in the cage space allocated to it. Arguments in favour of maintaining a viable population of White-faced Sakis include the possibility that they may become endangered and the acquisition of husbandry skills which may be useful should the need and opportunity arise to establish captive breeding populations of more endangered small cebids such as the White-nosed Saki, which has been assigned CBSG priority. Combining data from ISIS, the IZYB, the UK Studbook and Wilde's primate census of 1988 (Primate Report 21), there are about 200 White-faced Sakis recorded in captivity. If Europe and the US are breeding them at levels resembling those in the UK, the world population may well be close to self-sustaining levels, though it is of course impossible to establish this without a full survey and analysis. The species should not be allowed to occupy more cage space, in the UK or anywhere else, than is necessary to maintain its genetic diversity. White-faced Sakis might therefore be candidates for international management, in order to coordinate the world population accordingly.

I shall be enquiring, as stated at the meeting, into the numbers of *Pithecia pithecia* held in Europe and the US.

White-throated capuchin *Cebus capucinus*

David Hughes

Details of the White-throated capuchin *Cebus capucinus* population are much as was reported at the Edinburgh meeting. The current U.K. population stands at 29.26, in six collections.

The collections holding this species are as follows:

Glasgow : 3.3

Southport : 1.2

Kilverstone : 11.9

Chessington : 3.3

Gatwick : 1.3

Belfast : 4.5

At the time of reporting there were 3.0 held at Ravensden.

Eight living founders have been identified, from a total of twelve. The population both genetically and demographically is fairly healthy, and shows very little inbreeding for a population that has been maintained in captivity since the early sixties. With coordination we will be able to reduce the inbreeding. The species breeds well and there are no particular management problems that stand out with this species.

Data collection will continue and identification of possible sub-species in the population will be developed. Although this species is not listed by the CBSG Primate Action Plan, there is a healthy captive population, and we should look to manage it for the future.

Spider monkeys *Ateles* spp.

Roy Powell

All four species of *Ateles* are listed as Vulnerable in the 1990 IUCN Red List of threatened species but there is growing evidence that they are among the most endangered of neotropical primates. The WWF-US Primate Program claims that 6 of the 16 subspecies are critically endangered. These include *Ateles fusciceps robustus* from SW Colombia northward into E Panama, 3 subspecies of *A. geoffroyi* found in Panama and 2 subspecies of *A. belzebuth*. *A. b. marginatus* is endemic to Brazil but is now restricted to a small area south of the Amazon and is probably the most endangered of all South American spider monkeys (apart from the woolly spider monkey, *Brachyteles arachnoides*). *A. b. hybridus* is found in NE Colombia and W Venezuela but only in three protected areas. In all cases, disturbance or loss of their natural habitat is the root cause of their decline. *A. g. frontatus* and *A. g. panamensis* are both CITES Appendix I: endangered.

Four of the six critically endangered (sub)species are found in captivity. ISIS data indicates, however, that only *A. fusciceps robustus* and possibly *A. belzebuth hybridus* are held in sufficient numbers for viable captive breeding programs (see "Status in captivity", below). The two critical subspecies of *A. geoffroyi* only number 3 and 4 animals respectively. There is considerable confusion about the identification of any *A. geoffroyi* subspecies in captivity and hybrids are likely to be found.

Combining data from ISIS and the U.K. and Ireland Studbook, it appears that all four species and twelve of the sixteen spider monkey subspecies are held in captivity. In the U.K. and Ireland, the four species and 10 subspecies are represented. Only a few of these, however, have sufficient numbers to sustain captive breeding programs in the region. The *A. geoffroyi* subspecies exist as one or two pairs or single animals mixed with members of other species or subspecies. This is partly due to the problem of their subspecific identification and a superficial resemblance to *A. belzebuth* subspecies.

Table 1 shows that the majority of spider monkeys (74%) held in North American and Canadian zoos belong to the species *A. geoffroyi*. The proportion of black spider monkeys of the total in the North American region is only 17.9% compared with 63.3% in the U.K. and Ireland and 52.4% in mainland Europe. The North American region holds few *A. paniscus*, especially red-faced blacks, *A. p. paniscus*. Zoos in the U.K. and Ireland, on the other hand, hold mostly black spider monkeys (many of known origin) and relatively few *A. geoffroyi*. Of the latter, very few are of known origin and so are not positively identified. The mainland European situation would appear to be similar to that in the U.K. and Ireland. These findings largely concur with those of Konstant, Mittermeier and Nash (1985) who surveyed zoos for the WWF-US Primate Program.

TABLE 1: A comparison of the proportions of spider monkey taxa held.

	USA & Canada (ISIS data)		G. Britain (Regional Studbook)		Europe (ISIS data)	
	No.	Percent	No.	Percent	No.	Percent
A. geoffroyi	336	74.0	22	16.5	15	23.8
A. paniscus paniscus	4	0.9	14	11.8	4	6.3
A. paniscus chamek	13	2.9	17	14.3	14	22.2
A. belzebuth belzebuth	3	0.7	7	5.9	0	-
A. belzebuth hybridus	11	5.5	12	10.1	11	17.5
A. fusciceps robustus	64	14.1	47	39.5	6	9.5
Unknown (sub)species	23	5.1			13*	20.6
TOTALS	454	100	119	100	63	100

In all regions there is a great need to identify spider monkeys. The major sources of confusion are (1) between the various *A. geoffroyi* subspecies, (2) between *A. geoffroyi* and *A. belzebuth*, and (3) between the two black spider monkeys, *A. paniscus chamek* and *A. fusciceps robustus*.

In a previous report (Powell, 1990) I stated that in the U.K. and Ireland no more than five (sub)species are suitable for maintaining captive breeding programs. I would still support this view. The five taxa to concentrate upon are the three black spider monkeys (Colombian, black-faced and red-faced) and the two subspecies of *A. belzebuth*. The ideal situation would be to trade some of the *A. geoffroyi* in the region for further founder stock in these five taxa. Space presently occupied by the 18 hybrids would be much better used by pure species or subspecies.

At a meeting of the North American *Ateles* Interest Group in September 1989, it was agreed that Colombian Black spider monkeys were currently the best managed in their region. It would make sense that they concentrate on these and also try to separate cytogenetically the various subspecies of *A. geoffroyi* that predominate in that region.

Karyotyping progress

Fortunately it is not too late to use karyotyping to identify the majority of the spider monkeys in British zoos. Breeding has only been achieved relatively recently in this region and the only living offspring are either first or second generation. A number of wild-caught monkeys are still alive and breeding. This situation is ideal from the point of view of identification by karyotyping. Known origin, wild-caught monkeys provide badly needed reference karyotypes with which others can be compared.

The JMSG has provided funding for me to coordinate karyotyping in order to positively identify pure (sub)species and hybrids. At the time of writing, about 30 monkeys have been successfully karyotyped. My colleagues at the South West Regional Cytogenetics Labs and I have been able to identify unique karyotypes of the commonly confused *Ateles paniscus chamek* and *A. fusciceps robustus* (Powell *et al*, in press) which correspond with previously published work (Kunkel, Heltne and Borgaonkar, 1980). We have been able to use this information to readily identify first and second generation hybrids of these species in some British collections.

Work has begun on other species and subspecies. What has become clear is that all four of the species are distinguishable by their karyotypes. Subspecies within each species are also distinguishable except in *A. geoffroyi* where polymorphisms are much more difficult to determine. Taxonomically, this suggests that the *A. geoffroyi* group may only represent a cline and not several true subspecies. From their geographical distribution in Central America this would make sense and may be the reason why many of them are so difficult to identify visually. Finally, our results confirm the recent work of DeBoer and DeBruijn (1990) that karyotypes of red-faced black spider monkeys are quite distinct from all the others and may warrant a separate taxonomic status for them.

I had hoped to get blood samples from as many of the spider monkeys in the U.K. and Ireland as possible, and I am very grateful to those collections who have made the effort to supply them. Despite initial assurances of samples from some holding collections, however, there has been some reluctance to provide them. There is clearly a great need to karyotype as many monkeys as possible. We are confident in our ability to do this and it is a great shame to waste this opportunity.

I would be willing to extend the karyotyping work to spider monkeys in mainland European Zoos if appropriate funding were available. ISIS data suggests that there are at least 13 black spider monkeys there which require identification. Similar work is being carried out in the U.S.A. by Robert Lacey and Anne Baker at Brookfield. Whereas the U.K. and Ireland and European collections primarily need to identify their black spider monkeys, the major problem in the North American region is to find chromosomal polymorphism in the various *A. geoffroyi* subspecies that they have in large numbers. In Australasia, a program of coordination and karyotyping is just beginning under the direction of Amanda Howie in Christchurch, New Zealand.

Status in captivity at 31/12/90:

All spider monkeys in the U.K. and Ireland have now been entered on SPARKS and following a questionnaire for 1991 changes, the first studbook will be published early in 1992.

Breeding has been successful in a number of collections but unfortunately in some cases this has resulted in hybrids. A hybrid of *A. paniscus chamek* and *A. fusciceps robustus* was born at Banham in 1990.

In the following summaries, "USA" stands for the United States and Canada combined. "Europe" means mainland Europe. "UK" means the United Kingdom and Ireland.

Ateles

ISIS: 624 animals in 109 zoos (454 in 82 North American & Canadian zoos, 63 in 12 mainland European zoos, 43 in 7 U.K. and Ireland zoos, 51 in 4 Australasian zoos and 13 in 4 other zoos).
U.K. and Ireland Studbook: 139 animals (of which 120 are pure and 19 are known hybrids) in 23 collections. Only 43 of these are recorded by ISIS of which at least 6 are known hybrids but are recorded as pure by ISIS.

Ateles geoffroyi. Black-handed spider monkeys. **Vulnerable.**

ISIS: 389 animals (336 USA, 15 Europe, 14 UK, 24 others).
U.K. and Ireland Studbook: 22 animals. Eight monkeys at Kessingland, Norfolk, have just been purchased by Banham Zoo and have joined the studbook population.

A. geoffroyi **(unknown subspecies)**

ISIS: 60.123.8 = 191 in 44 collections (173 USA, 4 Europe, 8 UK).
U.K. and Ireland Studbook: 1. 0. 8 =9 in 2 collections.

A. g. geoffroyi. Nicaraguan or golden spider monkey.

ISIS: 44.90.8 = 142 in 29 collections (128 USA, 4 Europe, 6 UK)
U.K. and Ireland Studbook: 1. 2 = 3 in 2 collections.

A. g. grisescens. Hooded spider monkey. **Critical.**

ISIS: 1. 2. = 3 in 1 collection (USA).
U.K. and Ireland Studbook: 2. 2 = 4 in 2 collections.

A. g. frontatus. Black-foreheaded spider monkey.

ISIS: no data.
U.K. and Ireland Studbook: 1. 1 = 2 in 1 collection.

A. g. ornatus. Ornate or golden spider monkey.
ISIS: 3. 6. = 9 in 2 collections (2 USA, 7 Europe).
U.K. and Ireland Studbook: 1. 2 = 3 in 2 collections.

A. g. panamensis. Panamanian red spider monkey. **Critical.**
ISIS: 2. 2. = 4 in 3 collections (All USA).
U.K. and Ireland Studbook: None.

A. g. vellerosus. Azuero spider monkey.
ISIS: 16.24. = 40 in 9 collections (26 USA, 14 NZ).
U.K. and Ireland Studbook: None.

A. g. yucatanensis. Yucatan spider monkey.
ISIS: no data.
U.K. and Ireland Studbook: 1. 0. in 1 collection (Fota).

Ateles paniscus. Black spider monkeys. **Vulnerable.**
ISIS: 112 animals (38 USA, 10 Colombia, 32 Europe, 22 UK).
U.K. and Ireland Studbook: 31 animals.

A. paniscus **(unknown subspecies)**
ISIS: 22.31.6 = 59 in 25 collections (21 in USA, 10 in C. America, 15 in Europe, 8 in UK). **N.B. Some of these are probably misidentified *A. fusciceps robustus*.**

A. p. paniscus. Red-faced black spider monkey.
ISIS: 8.9.2 = 19 in 4 collections (4 USA, 3 Europe, 9 UK).
U.K. and Ireland Studbook: 5. 8. 1 = 14 in 3 collections. Two have recently been born at Twycross (14/12/89 and 08/01/90).

A. p. chamek. Black-faced black spider monkey.
ISIS: 9.22. = 31 in 7 collections (13 USA, 14 Europe, 5 UK).
U.K. and Ireland Studbook: 7.10 = 17 in 6 collections.

Ateles belzebuth. Long-haired spider monkeys. **Vulnerable.**
ISIS: 34 animals (15 USA, 11 Europe, 6 UK).
U.K. and Ireland Studbook: 19 animals.

A. belzebuth **(unknown subspecies)**
ISIS: 3.3. = 6 in 4 collections (1 USA, 2 Colombia, 3 UK).

A. b. belzebuth. White bellied spider monkey.
ISIS: 1. 2. = 3 in 2 collections (All USA).
U.K. and Ireland Studbook: 4. 3 = 7 in 1 collection (Kilverstone).

A. b. hybridus. Marimonda. **Critical.**
ISIS: 7.18 = 25 in 7 collections (11 USA, 11 Europe, 3 UK).
U.K. and Ireland Studbook: 3 .9. = 12 in 3 collections.

Ateles fusciceps. Brown-headed spider monkeys. **Vulnerable.**
ISIS: 71 animals (65 USA, 6 Europe, 0 UK).
U.K. and Ireland Studbook: 45 animals.

A. fusciceps **(unknown subspecies)**

ISIS: 1.0. in 1 collection (USA).

A. f. robustus. Colombian black spider monkey. **Critical.**

ISIS: 24.46 = 70 in 12 collections (64 USA, 6 Europe, 0 UK). **N.B. Some of these could be misidentified *A. paniscus chamek*.**

U.K. and Ireland Studbook: 17.28 = 45 in 10 collections.

F_1 hybrids in the U.K. and Ireland Studbook: 16 animals.

F_2 hybrids in the U.K. and Ireland Studbook: 3 animals.

N.B. Some of these hybrids have been recorded by ISIS as pure species e.g. those born at Cotswold Wildlife Park have been recorded as *A. geoffroyi geoffroyi* when they are actually *A. belzebuth\A. geoffroyi* hybrids.

The ISIS data severely underestimates the numbers of spider monkeys in captivity. Only 31% of the monkeys in the British Isles studbook are recorded by ISIS. This is partly because 16 of the 23 British collections holding them were not ISIS member institutions in 1990. The largest collection in the British Isles, Kilverstone with 35 monkeys, is not a member and is unlikely to join in the foreseeable future. The classification of many of the 43 British Isles monkeys recorded by ISIS does not agree with the studbook. This is largely because curators have not been certain about what they hold and have changed the classification of their monkeys at different times. *Ateles geoffroyi* are often confused with *A. belzebuth* and indeed have been hybridized. Similarly, *A. fusciceps robustus* is very commonly confused and hybridized with *A. paniscus chamek*.

Recommendations

1. Identification of spider monkeys down to the subspecies and any hybrids is essential for a healthy, coordinated captive population. An identification service is available by karyotyping. All spider monkey holders are encouraged to participate and should contact Roy Powell at Paignton Zoo.

2. Hybridization should be prevented and pure breeding groups should be set up where possible. Existing hybrids should be sterilized or prevented from breeding.

3. Disposition of hybrid stock: Known hybrids should be sterilized before sending to another institution.

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Mandrill *Mandrillus sphinx*

Neil Bemment

Status in the wild

Mandrills were again listed as 'Vulnerable' in the latest 1990 IUCN Red Data Book, and there has been no indication that hunting of this species has ceased in the five supposedly protected National Nature Reserves in Gabon.

Status in Captivity (ISIS 31.12.90)

WORLD	111.162.9 in 59 collection
CAPTIVE BORN	88%
WILD BORN	3%
UNKNOWN ORIGIN	9%
BORN IN 1990	29 individuals

Note: Of the U.K. collections which hold mandrills only London and Paignton are included in the ISIS figures above.

U.K. Collections Holding Mandrills

At 31st December:	1990	1989
Belfast	1.4	0.1
Colchester	3.2	3.2
London	5.2	5.3
Paignton	2.2	1.3
Penscynor	1.1	1.1
Southport	5.9	4.11
TOTAL	17.20	14.21

With reference to the Number Two Regional Studbook Update (December, 1989) it was recommended that females 'Zelda' (189) and 'Mollie' (204) be sent to Belfast Zoo from London and Paignton respectively; these transfers have now taken place along with that of 1.1 from Southport, 'Micki' (214) and 'Mica' (213).

A male exchange between London and Toronto Zoos has been abandoned as the intended animal at the former collection, 'Boris' (140), died unexpectedly. This leaves London with two breeding females and four male offspring.

The female presently held at Penscynor, 'Deegie' (176), produced her first offspring in November 1990, but unfortunately it was stillborn and there had been some complications with the birth such that surgery was necessary. She is an important potential founder and hopefully will produce again in 1991.

There were 3 deaths (1.2) during 1990 and 5 surviving births (4.1), but with the formation of the new group at Belfast and an additional breeding pair at Southport, the U.K. population should start to increase. However, the disposal of surplus male offspring is a problem such that euthanasia is likely to be the only long-term solution. This is to become more apparent if London decide to go out of mandrills.

Diana Monkey *Cercopithecus diana*

Miranda F. Stevenson

Coordinator, the European Regional Studbook Keeper and the
International Studbook Keeper.

REPORT ON THE EEP PROGRAMME FOR 1991

Organisation, Structure and Activities

Species Committee:	formed 1990	
Miranda F Stevenson	Edinburgh	Coordinator
Bruno Van Puijenbroeck	Antwerp	
Richard Faust	Frankfurt	
Ing. Stanislav Rudek	Ostrava	
Jo Gipps	London RP	
John Stronge	Belfast	

The fist meeting of the Species Committee will be held in May 1991 in Budapest.

One of the subjects on the agenda at this meeting will be research projects that are needed. One obvious possibility is a study of post mortem results, and subsequent analysis of causes of death. Another possibility is methods which result in the formation of successful breeding groups of captive bred animals.

Studbooks

European Studbook: Number one with data up to March 1991 is currently available.

International Studbook: Number one, with data up to 31.5.90 will be available very shortly.

Husbandry guidelines will be published in the International Studbook.

Status and Developments of the Captive Population.

The current status of the EEP population is shown in Table I. The population, as it stands, is the same as at the beginning of 1990. The total number of collections now participating in the EEP is 18, of these seven currently breed the species. Two new pairs were set up in Fota and Shaldon and a young trio is Edinburgh.

There are 27 institutions currently holding diana monkeys in Europe. Most of the institutions that have not actually signed the EEP participation agreement do co-operate in the programme. Table II therefore shows the total population of Diana monkeys in Europe as of April 1991. The only query is Zoo Lesna which may no longer have the species. Information on this would be appreciated. Of the 27 institutions 10 currently breed the species.

Because there is co-operation between the European holders I prefer to look at the whole population, as listed in the European Studbook, rather than just the EEP animals. Table III summarises the situation.

The age structure of the population is fine, the critical factor being to establish more young captive bred animals as breeding pairs and groups. At present there is a shortage of females, and three institutions are at present looking for potential breeding females. Unfortunately six of the eight deaths in EEP institutions were of females.

Recommendations

1. Swap males between Banham and Colchester (0678) and (0803).

2. Male at Newquay to go to Battersea (0760) to pair with female (0453) and male (0841) to go to Newquay.

3. Male (0861) at Battersea to be paired with female (0848) at Twycross and go to another collection, possibly Punta Verde.

4. Male at Punta Verde to go to Antwerp to be paired with female (0556).

5. Three collections need females. Aalborg, Champrepus and War-saw.

Once the genetic and demographic analysis of the International population has been completed this will be applied to the formulation of future plans for the European population. There is little inbreeding and a sufficient number of founders. Additional females may need to be imported from North America.

Problems

The main problem at present is the difficulty of setting up a captive group that subsequently breed. The moves listed above are intended to try and create more potential breeding pairs of captive bred animals.

Table I

Development of the EEP Diana monkey programme 31.12.89 - 31.3.91

Participant	Status 01.01.90	Born	Born Surv	Trans with EEP zoos		Trans with non-EEP		Died 31.3.91	Status
					IN	OUT	IN	OUT	
Belfast	4.5	0.1	0.0	0.1	2.1	-	-	0.5	2.1
Chessington	1.2.2	1.0	0.0	-	-	-	-	1.0	1.2.2
Colchester	1.1	-	-	-	-	-	-	-	1.1
Edinburgh	3.3	0.1.1	0.1.1	1.0	1.0	-	-	0.1	3.3.1
Fota	0.0	-	-	1.1	-	-	-	-	1.1
Newquay	1.1	-	-	-	-	-	-	-	1.1
Paignton	1.2.1	0.0.1	0.0.1	-	0.1	-	-	-	1.1.2
London RP	2.3	-	-	-	-	-	-	-	1.2
Shaldon	0.0	-	-	1.1	-	-	-	-	1.1
Twycross	2.3	-	-	-	-	-	-	-	2.3
Champrepus	1.1	-	-	-	-	-	-	-	1.1
La Palmyre	1.2	1.0	1.0	-	-	-	-	-	2.2
Antwerp	1.1	-	-	-	-	-	-	1.0	0.1
Punte Verde	1.0	-	-	-	-	-	-	-	1.0
*Duisburg	1.3.2	0.0.1	0.0.1	-	0.1	-	-	-	1.2.3
*Frankfurt	1.2	-	-	0.1	-	-	-	-	1.3
*Ostrava	2.3	0.0.2	0.0.2	-	-	-	1.0	-	1.3.2
Aalborg	0.0	-	-	1.0	-	-	-	-	1.0
TOTAL	23.32.5	2.2.5	1.1.5	4.4	4.4	-	1.0	2.6	21.29.10
18 ZOOS	60	9	7	8	8	-	1	8	60

* new since 1990

Table II: Institutions holding diana monkeys.

INSTITUTION	TOTAL AT 31,5.91
Aalborg	1 (1.0)
Antwerp	1 (0.1)
Banham	2(1.1)
Battersea	5(3.2)
Belfast	3(2.1)
Champrepus	2(1.1)
Chessington	5(1.2.2)
Colchester	2(1.1)
Crystal Palace	2(1.1)
Duisburg	6(1.2.3)
Edinburgh	7(3.3.1)
Fota	2(1.1)
Frankfurt	4(1.3)
Gettorf	3(1.1.1)
Halstead (Private)	1(1.0)
Bekesbourne	5(3.2)
La Palmyra	4(2.2)
Leipzig	3(1.2)
Lesna	3(2.1)
London RP	3(1.2)
Newquay	2(1.1)
Ostrava	6(1.3.2)
Paignton	4(1.1.2)
Punta Verde	1(1.0)
Shaldon	2(1.1)
Twycross	5(2.3)
Warsaw	2(1.1)
TOTAL	86(36.39.11)

TABLE III: Summary of diana monkeys in Europe

SUMMARY	TOTAL
TOTAL RECORDED	301 (135.147.19)
TOTAL WILD ORIGIN	109 (45. 64. 0)
TOTAL CAPTIVE BRED	70 (27. 32.11)
TOTAL ALIVE AT 31.3.91	86 (36.39.11)
TOTAL WILD ORIGIN ALIVE	14 (8. 6. 0)
TOTAL CAPTIVE BRED ALIVE	69 (26.32.11)
BREEDING ANIMALS	**TOTAL**
TOTAL THAT HAVE BRED	67 (24.42)
TOTAL WILD ORIGIN	41 (19.22)
TOTAL CAPTIVE ORIGIN	20 (3.16)
TOTAL ALIVE	27 (6.21)
TOTAL WILD ALIVE	11 (6. 5)
TOTAL CAPTIVE ALIVE	20 (3.16)

Status of Colobinae in the British Isles at 31-12-90

Geoffrey Greed (data compiled by Hilary Keating)

Colobus monkeys

ZOO	1990	BORN	ARR	LEFT	DIED	1991
Colobus guereza subsp?						
Boreham	2.2					2.2
Colobus guereza caudatus						
Colchester	2.1				1.0	1.1
Colobus guereza kikuyuensis						
Banham	3.4	1.1		1.1		3.4
Bekesbourne	3.3	1.1			0.1	4.3
Belfast	1.4					1.4
Bristol	6.5	1.1.2			0.3	7.3.2
Chessington	3.2	1.0.1			0.2.1	4.0
Paignton	3.4	3.0			2.0	4.4
Penscynor	2.1		0.1	1.1		1.1
Rushden	0.0		2.0			2.0
Colobus guereza occidentalis						
Bekesbourne	0.0		2.2			2.2
Fota	1.0		0.1			1.1
Penscynor	0.1					0.1
Twycross	5.11.1	0.0.4			2.1.1	4.13
Colobus polykomos						
Chard	1.2	1.0	0.1		1.0	1.3
Jersey	3.5			0.2		3.3
London	1.1		1.0	1.0		1.1
Paignton	1.1		1.1	1.0		1.2
Penscynor	2.0		1.0		2.0	1.0
Rushden	1.0			1.0		0.0

Langurs and leaf-monkeys

ZOO	1990	BORN	ARR	LEFT	DIED	1991
Presbytis entellus thersites						
Bristol	7.4	1.2		1.2		7.4
London RP	0.0		1.2			1.2
Rushden	1.0			1.0		0.0
Twycross	2.1	1.1				3.2
Presbytis cristata cristata						
Banham	3.9	1.2		0.3	1.1	3.7
Twycross	1.4					1.4
Presbytis cristata pyrrhus						
Bekesbourne	5.11.1	1.1.1		1.0	3.2.1	2.10.1
Bristol	1.7	5.0			0.1	6.6
Colchester	1.4	1.0				2.4
Twycross	2.6	0.1			0.1	2.6
Presbytis melalophus						
Bekesbourne	3.4	0.4			1.2	2.6*
Presbytis melalophus mitrata						
Bekesbourne	2.5					2.5
Presbytis obscura						
Edinburgh	2.3			1.0	0.1	1.2
Twycross	2.5	1.1	1.0	1.1*		3.5
Presbytis phayrei						
Twycross	0.1*		1.0			1.1
Presbytis rubicunda						
Bekesbourne	0.0		1.1			1.1
Pygathrix nemaeus						
Bekesbourne	2.4		1.0	1.0		2.4

* Some reclassified as *Presbytis melalophos mitrata.*

This schedule is subject to audit.

Appendix: primate species held in zoos of the U.K. and Ireland.

NOCTURNAL PRIMATES

Cheirogaleus medius	Fat-tailed Lemur
Microcebus murinus	Lesser Mouse Lemur
Loris tardigradus	Slender Loris
Loris tardigradus nordicus	Slender Loris
Nycticebus coucang	Slow Loris
Nycticebus pygmaeus	Lesser Slow Loris
Galago crassicaudatus	Thick-tailed Bushbaby
Galago senegalensis	Senegal Bushbaby
Galago senegalensis moholi	Senegal Bushbaby
Tarsius syrichta	Philippine Tarsier
Aotus trivirgatus	Douroucouli

DIURNAL LEMURS

Lemur catta	Ring-tailed Lemur
Lemur macaco	Black Lemur
Lemur macaco albifrons	White-fronted Lemur
Lemur macaco fulvus	Brown Lemur
Lemur macaco mayottensis	Mayotte Lemur
Lemur macaco rufus	Red-fronted Lemur
Lemur mongoz	Mongoose Lemur
Lemur variegatus	Ruffed Lemur
Lemur variegatus variegatus	Black & White Ruffed Lemur
Lemur variegatus ruber	Red Ruffed Lemur

CALLITRICHIDS

Callimico goeldii	Goeldi's Monkey
Callithrix argentata	Silvery Marmoset
Callithrix argentata argentata	Silvery Marmoset
Callithrix argentata melanura	Silvery Marmoset
Callithrix geoffroyi	Geoffroy's marmoset
Callithrix humeralifer	Tassel-eared Marmoset
Callithrix jacchus	Common Marmoset
Callithrix penicillata	Black-eared marmoset
Callithrix pygmaea	Pygmy Marmoset
Leontopithecus chrysopygus	Lion Tamarin
Leontopithecus rosalia	Golden Lion Tamarin
Leontopithecus r. chrysomelas	Golden-headed Lion Tamarin
Saguinus fuscicollis	Saddle-back Tamarin
Saguinus geoffroyi	Geoffroy's Tamarin
Saguinus illigeri	Red-mantled Tamarin
Saguinus imperator	Emperor Tamarin
Saguinus imperator subgrisescens	Emperor Tamarin
Saguinus labiatus	White-lipped Tamarin
Saguinus labiatus labiatus	White-lipped Tamarin
Saguinus midas	Red-handed Tamarin
Saguinus midas niger	Black-handed Tamarin
Saguinus mystax mystax	Moustached Tamarin
Saguinus oedipus	Cotton-headed Tamarin
Saguinus weddelli	Weddell's Tamarin

SMALL CEBIDS

Callicebus moloch	Dusky Titi
Cacajao rubicundus	Red Uakari
Chiropotes satanus	Black Saki
Pithecia pithecia	Pale-headed Saki
Saimiri sciureus	Squirrel Monkey
Saimiri sciureus boliviensis	Black-capped Squirrel Monkey

ALL OTHER MONKEYS

Alouatta caraya	Black Howler Monkey
Alouatta seniculus sara	Red Howler Monkey
Cebus spp.	Capuchin
Cebus albifrons	White-fronted Capuchin
Cebus apella	Brown Capuchin
Cebus capucinus	White-throated Capuchin
Cebus nigrivittatus	Weeper Capuchin
Ateles belzebuth subsp.	Long-haired Spider Monkey
Ateles belzebuth belzebuth	Long-haired Spider monkey
Ateles belzebuth hybridus	Marimonda Spider monkey
Ateles fusciceps	Brown-headed Spider Monkey
Ateles fusciceps robustus	Columbian Spider monkey
Ateles geoffroyi subsp.	Black-handed Spider Monkey
Ateles geoffroyi geoffroyi	Geoffroy's Spider Monkey
Ateles geoffroyi grisescens	Hooded Spider monkey
Ateles geoffroyi ornatus	Ornate or Golden Spider monkey
Ateles geoffroyi frontatus	Brown Foreheaded Spider
Ateles geoffroyi yucatanensis	Yucatan spider monkey.
Ateles paniscus	Black Spider Monkey
Ateles paniscus paniscus	Red-faced Spider Monkey
Ateles paniscus chamek	Black Spider monkey
Ateles sp.	Spider Monkey
Lagothrix lagothrica	Woolly Monkey
Cercocebus aterrimus	Black Mangabey
Cercocebus torquatus atys	Sooty Mangabey
Cercocebus torquatus lunulatus	White-collared Mangabey
Cercopithecus aethiops	Grass Monkey
Cercopithecus aethiops pygerys	South African Vervet
Cercopithecus ascanius	Schmidt's Guenon
Cercopithecus diana	Diana Monkey
Cercopithecus hamlyni	Owl-faced Monkey
Cercopithecus mitis	Diademed Monkey
Cercopithecus mitis albogularis	Syke's Monkey
Cercopithecus mona	Mona Monkey
Cercopithecus neglectus	De Brazza's Monkey
Cercopithecus nigroviridis	Allen's Monkey
Cercopithecus patas	Patas Monkey
Cercopithecus petaurista	Spot-nosed Guenon
Cercopithecus talapoin	Talapoin Monkey
Macaca arctoides	Stump-tailed Macaque
Macaca fascicularis	Crab-eating Macaque
Macaca mulatta	Rhesus Macaque
Macaca nemestrina	Pig-tailed Macaque
Macaca nemestrina pagensis	Pig-tailed Macaque
Macaca nigra	Black Ape

Macaca nigra brunnescens	Black Ape
Macaca silenus	Lion-tailed Macaque
Macaca sinica	Toque Monkey
Macaca sylvanus	Barbary Ape
Macaca pagensis	Mentawai Island Macaque
Papio cynocephalus	Savanna Baboon
Papio cynocephalus anubis	Anubis Baboon
Papio hamadryas	Hamadryas Baboon
Papio sphinx	Mandrill
Colobus guereza	E. Black + White Colobus
Colobus guereza kikuyuensis	Eastern Colobus
Colobus polykomos	W. Black + White Colobus
Colobus polykomos polykomos	Black & White Colobus
Presbytis cristatus	Silvered Leaf Monkey
Presbytis cristatus pyrrhus	Black Langur
Presbytis entellus	Entellus Langur
Presbytis entellus thersites	Entellus Langur
Presbytis obscura	Spectacled Langur

GIBBONS

Hylobates agilis	Agile Gibbon
Hylobates concolor	Black Gibbon
Hylobates concolor leucogenys	Black Gibbon
Hylobates klossi	Kloss' Gibbon
Hylobates lar	Lar Gibbon
Hylobates moloch	Moloch Gibbon
Hylobates moloch muelleri	Mueller's Gibbon
Hylobates pileatus	Pileated Gibbon
Hylobates syndactylus	Siamang

SUMMARY OF THE CAPTIVE SPACE AVAILABLE FOR PRIMATES (EXCLUDING THE GREAT APES) IN THE U.K. AND IRELAND

The questionnaire was circulated to 35 Federation collections and 25 non-Federation collections of which only 5 did not hold primates or intend to in the future. There are no doubt others which have been missed in the census, but hopefully the following summary of the results will give an fair idea of the situation for the foreseeable future.

For each primate space a category has been given of either 'SINGLE', 'PAIR (+offspring)' or 'GROUP', the latter denoting a social unit comprising more than two, (preferably unrelated), potential breeding adults and their offspring. These have been designated according to the responses regarding 'maximum holding capacity', but the following broad generalisations have been made in order to put forward a 'worst-case'scenario. Namely....

All cage space allocated to 'nocturnal primates','gibbons', 'callitrichids', sakis & titis ('small cebids') and guenons ('all other monkeys' - AOM) have been recorded as PAIR accommodation as this is how they are usually maintained in British collections.

All cage space allocated to 'all other monkeys', (excluding the guenons), 'small cebids' (excluding sakis & titis) and 'diurnal lemurs' has been recorded as GROUP accommodation except where a collection has specified that the space in question can only hold a pair of that species.

In the long term all SINGLE accommodation is to be phased out and there are no plans to build such enclosures in the future.

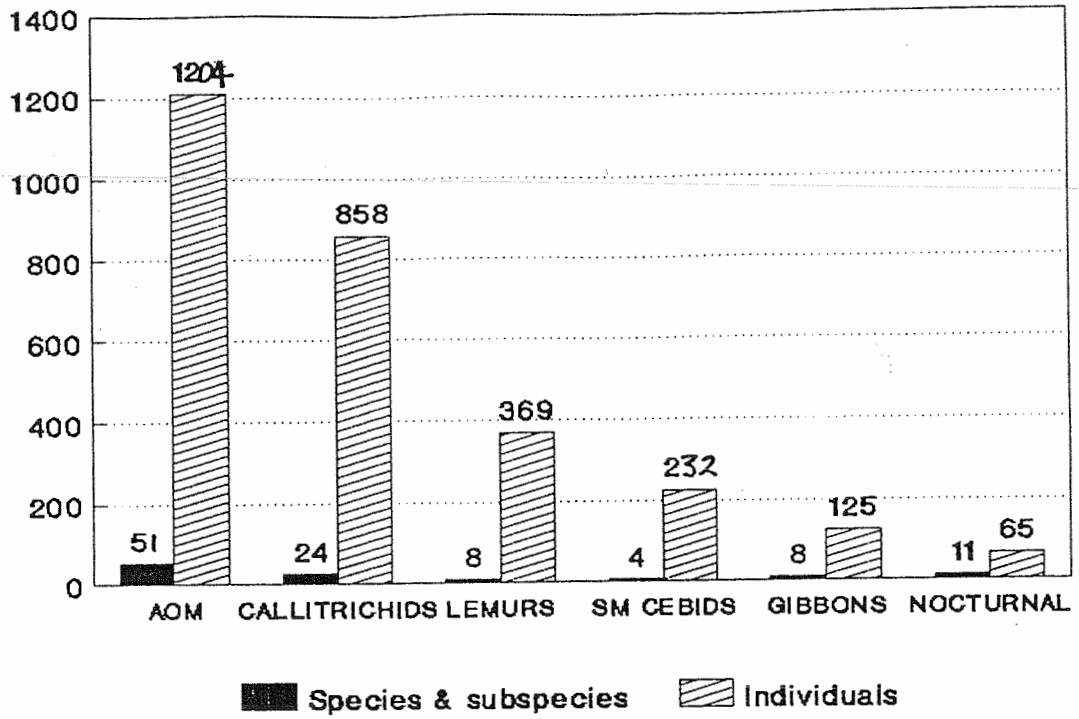
PRESENT SITUATION	OCCUPIED				UNOCCUPIED			
	S	P	G	SUB TOTAL	S	P	G	TOTAL
ALL OTHER MONKEYS	3	53	214	270	0	0	8	278
CALLITRICHIDS	1	271	0	272	0	34	0	306
DIURNAL LEMURS	0	26	63	89	0	1	3	93
GIBBONS	1	54	0	55	0	1	0	56
SMALL CEBIDS	1	17	33	51	0	0	5	56
NOCTURNAL PRIMATES	0	30	1	31	0	1	0	32

PROJECTED SITUATION	LOSSES			GAINS		CAPACITY			
	S	P	G	P	G	P	G	TOTAL	(+)
ALL OTHER MONKEYS	3	6	12	0	16	47	226	273	(3)
CALLITRICHIDS	1	0	0	24	0	329	0	329	(57)
DIURNAL LEMURS	0	0	2	1	8	28	72	100	(11)
GIBBONS	1	1	0	7	0	61	0	61	(6)
SMALL CEBIDS	1	0	0	0	1	17	39	56	(5)
NOCTURNAL PRIMATES	0	0	1	6	0	37	0	37	(6)

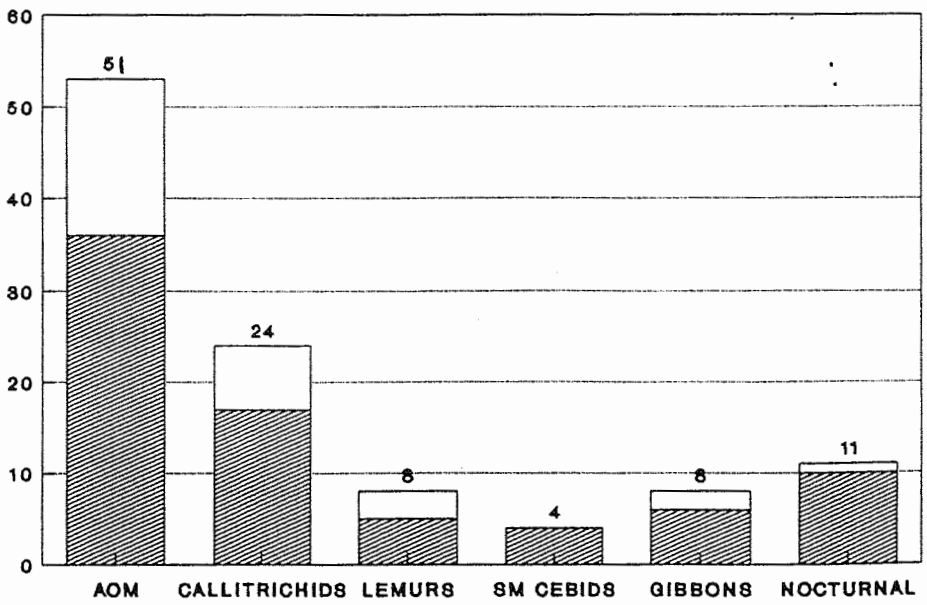
The figures in ( ) indicate the overall increase in captive space available, taking into the account unoccupied accommodation and the expected losses and gains over the next 3 years.

Compiled by Neil Bennent (Curator of Mammals and Roy Powell (Biologist)

No. OF PRIMATES IN UK ZOOS 1990



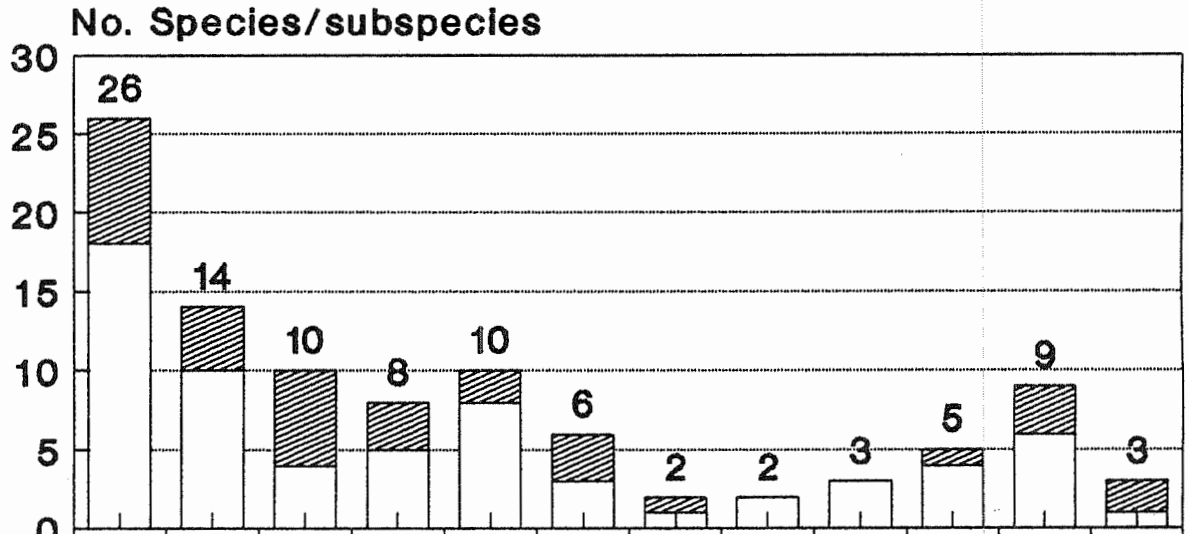
PRIMATE SPECIES IN UK ZOOS 1990



	AOM	CALLITRICHIDS	LEMURS	SM CEBIDS	GIBBONS	NOCTURNAL
Red Listed	17	7	3	0	2	1
Not Red Listed	34	17	5	4	6	10

Compiled by Neil Rowmont (Curator of Mammals and Roy Powell (Biologist)

Primate species distribution in UK zoos 1990



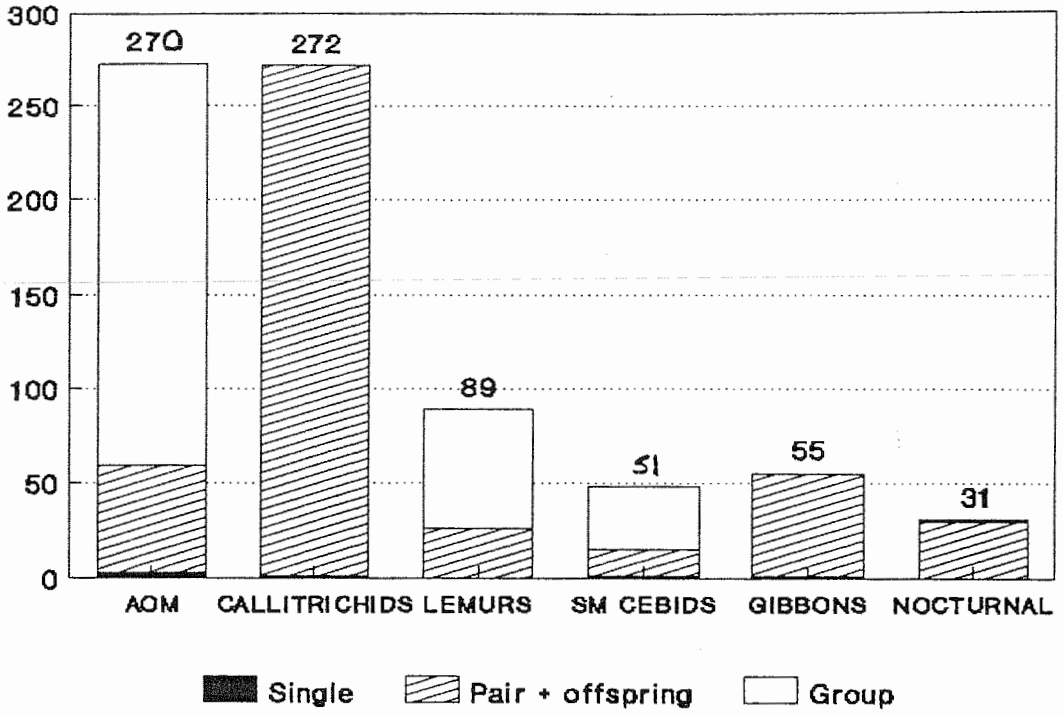
	1	2	3	4	5	6	7	8	9	10	11-20	21-26
Red Listed	8	4	6	3	2	3	1			1	3	2
Not Red Listed	18	10	4	5	8	3	1	2	3	4	6	1

No. Holding Collections

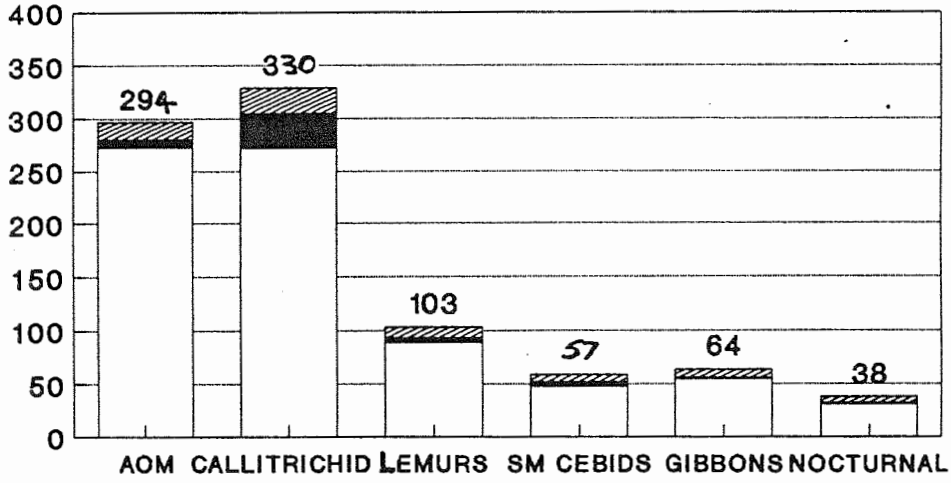
Not Red Listed Red Listed

Compiled by Neil Bemment (Curator of Mammals and Roy Powell (Biologist)
Paignton Zoological & Botanical Gardens

TOTAL SPACE IN UK ZOOS 1990



SPACES IN UK ZOOS 1990



Planned	16	24	9	1	7	6
Unoccupied	8	34	5	5	2	1
Occupied	270	272	89	51	55	31

Occupied Unoccupied Planned

Compiled by Neil Bemment (Curator of Mammals and Roy Powell (Biologist)
Paignton Zoological & Botanical Gardens

PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 12

REGIONAL CAPTIVE CONSERVATION PROGRAMS\AUSTRALASIA ASMP

Australasian Species Management Program

REPORT OF THE

PRIMATE

ADVISORY GROUP WORKSHOP

Dubbo - May 1991

PREFACE

This report endeavours to capture the discussions that took place during two productive, informative and enjoyable days which were the Primate Advisory Group Workshop. Naturally, only a brief summary of disscussions is included - so if the meaning has been lost a little - apologies.

Much ground was covered during the wrokshop, with discussions held about not only every species of Primate presently maintained by major zoos within the region, but several species under consideration for future import.

The report should be considered a starting point, hopefully a solid foundation on which we can build. The group identified various items that require action, and has appointed subtaxon group co-ordinators to implement these recommendations. In order to develop future management plans, we need to review existing populations and determine the most appropriate path to take. These recommendations are listed in the report.

We have established various goals that we hope can be achieved with minimal delay. For those institutions that were not present, we look forward to your input.

The critical component for the success of the regional plan is that every institution has input, is involved and feels satisfied with the recommendations and directions of the Advisory Group.

Thanks to all those who participated in the Primate Workshop (and those who passed on items for consideration) - the body of this report are essentially your comments. And thanks to the staff and management of Western Plains Zoo providing the venue.

Amanda Embury,
Melbourne Zoo

PRIMATE TAXON ADVISORY GROUP

PARTICIPANTS:

Adelaide Zoo	Werner Zur Eich, Bruce Campbell (not present) and David Langdon (not present)
Auckland Zoo	Mick Sibley and Peter West (not present)
Broome	Graham Goldsmith (not present)
Christchurch	Amanda Howie
Dubbo	Kevin Milton
Melbourne	Ernst Weiher
Perth	Darryl Miller (not present)
Sydney	Glenn Sullivan, Polly Cevallos and Paul Davies (not present)
Wellington	Sherri Huntress
Convener:	Amanda Embury (Melbourne)

NOTE: report will be distributed to all those listed above, and Barbara Porter (Conservation Co-ordinator), Richard Jakob-Hoff (Chairman SMCC), and Miranda Stevenson (Convener Primate CBSG)

Primary Objective:
Development of a regional primate collection not only depicting a broad range of groups within the taxa, but a collection of significance from a conservation viewpoint is considered the primary objective of the group. To develop collection there is a need to rationalize species maintained within the region, determine subspecies maintained by various zoos and make recommendations as to which subspecies should be held within the region. A further objective is to determine the carrying capacity of facilities available, and establish time scales for development of future complexes.

The region's primate collection should include representatives of all major groups of Primates, but should reflect contemporary international recommendations for Primate conservation and where possible should act as a repository and producer of individuals for use in in situ conservation programs.

Scope of Review:
The review considered all species of Primates currently held by major zoos within Australia and New Zealand, and considered some species currently not within the region. When possible, for speies under review, consideration given to plans/recommendations of other regions/groups (eg. SSP, CBSG).

Method of Review:
For each species, the significance of the species to the region, the status of teh speceis, and existence of international management plans were used in addition to Prioritisation criteria (as listed below) were used to determine appropriate ASMP category for species.

Discussion re Regional Prioritisation Criteria:
The first session of the Primate Advisory Workshop was devoted to evaluating criteria to be used in allocating species to ASMP categories, and determining priorities with respect to management of species.

Current and anticipated space available:
Noted that Primates are a target taxa for Animal Rights Groups, consequently facilities need to be of excellent standard. Felt that standard of accommodation can be improved with rationalization of number of species in region, i.e. each species will then have more space. Noted that cost of exhibits is a major constraint. Stressed that not only appropriate display enclosures required, but also appropriate off-limits facilities.

How are "spaces" to be defined? Do we include spaces available at small private zoos? Do we include spaces available at research institutions holding primates? Private zoos and research facilities provide an effective way of increasing both overall population size and founder populations. Felt that any institution involved must have appropriate accommodation/husbandry standards, and that care must be taken to ensure that "Zoo Primates" are neither used for research, nor to produce Primates for research. Zoo association with research facilities can bring negative publicity for zoos. However, there is a need to define full potential of "Primate spaces" within region.

Stressed that region needs to be integrated with the global situation - link with CBSG. Regional plans should not be in isolation to global plans.

Current captive population size and composition:
Whilst too small a population poses problems with management, it should also be acknowledged that potential to dispose of surplus stock/relocate progeny is just as critical for effective management. Need to consider interface with other regions, for example a small regional population (eg. some tamarin species) can readily be supplemented with imported stock. Objective is to have sustainable population, either based on individuals within region alone, or with regular import of fresh genetic material (noting that imports to be kept to a minimum if effective management implemented).

Adaptability to captive husbandry and breeding:
If species not presently within region is to be imported, critical that appropriate research undertaken to determine husbandry requirements, etc. Resource material from other regions if captive population exists, alternatively details for husbandry of an analog species may be appropriate. Again, noted that region needs to interface with global scheme - the region's need to be involved with a "new species" should be echoed globally.

Status in the wild:
Should be considered, if a choice of species exists, opt for species having the more threatened status. Noted that the need to manage a species on a regional scale does not always reflect status in the wild - for example a relatively common species may need regional management in order to sustain a regional population due to lack of availability from other regions, or well established regional population.

Number of founders available:
Generally, if insufficient founder animals available it is not worth developing a regional plan for the species. However, if the only way of saving a species is to develop a program with insufficient founders, it would be appropriate to undertake a breeding program.

Usefulness as a "flagship" species:
"Flagship" species are valuable for public education, an attractive species can be used to alert public of the need for habitat conservation and associated issues. Suggested that region concentrates on Asian species, and when possible use Asian species as "flagships".

Public appeal:
The public appeal of a species has implications for attendances, can be used to attract visitors to the zoo and increase revenue. Suggested that Asian species be promoted, and that visitors be made aware of potential to be involved with, and need for conservation programs in Asian region. This objective should be made attractive to public so that their support is given.

Uniqueness:
Difficult to define "what is unique", every species or subspecies is unique. Thought that conservation is a more important issue than phlyogenetic significance.

Ability to survive in human altered ecosystems:
Felt that there is little "pristine habitat" left, most habitats have been subjected to influence of western civilization.

Probability of successful reintroduction:
Cannot really predict probability of successful reintroduction, so many variables involved. Perhaps consider the likelihood of re-introduction program being developed.

Interface with international (global) plans:
An additional point for selection criteria should be interface with international plans such as the CBSG. Regional plans must reflect global actions and philosophies.

Summary of TAG Selection Criteria:
Conservation is the primary goal, both conservation through involvement in programs, and conservation effected by public awareness through education. There needs to be effective use of species, opting for rare species when possible. Criteria for consideration are different for each species. As there are no native species of Primates must rely on importation to establish populations, increase founder size, etc.

ASMP CATEGORIES

Category 1: Co-operative Conservation Program Species
Those species covered by active multi-agency conservation programs involving in situ conservation.

Category 2: Co-ordinated Species
High level regional to international management overseen by an appointed studbook keeper.

Category 3*: Species to be Co-ordinated
A species which will ultimately qualify for Category 2, but awaiting development of management plan

Category 3: Monitored Species:
Medium-level regional management with species jointly monitored by zoos.

Category 4: Censused Species
Low-level regional management via census

Key to symbols, etc.

ASMP Categories:
If category is listed without brackets, then this is current ASMP ranking, if category listed within brackets, the species has been nominated for a new category by the Primate Advisory Group.

Species Co-ordinators:
If the name of a Species Co-ordinator is underlines, it indicates that person has already fulfilled this role. If name of co-ordinator is not underlined, indicates that person is new to the position.

Stock Levels:

4.4.4 (3):	indicates that total population spread over three institutions with stock level consisting of four males, four females and four unsexed individuals
or NIL ?:	indicates that group suggests consideration be given to phasing species out of region, although a zoo has indicated that they intend to maintain the species
(2+):	indicates that group feels that number of zoos holding species should be increased
5.9+:	indicates that group feels that population should be expanded
NOTE:	report considers only species, stock levels indicated are for a species and may include populations of several subspecies

REVIEW OF PRIMATE SPECIES HELD WITHIN THE REGION

SUBTAXON I: PROSIMIANS **Co-ordinator: Ernst Weiher, Melbourne**

Prosimian group to focus on lemurs and other prosimians. Need to appoint someone to investigate Ring-tailed Lemur. For Ruffed Lemur, encourage Perth to determine subspecies of their colony. Other lemur species presently maintained within the region destined for export (White-fronted, Red-fronted, Mongoose and Ruffed hybrid - ultimately).

Six species of Prosimian being considered, of these the Western Tarsier and Lesser Bushbaby will not be maintained. Suggest that Adelaide opt for Slow Loris rather than Slender Loris, and that Perth considers phasing out Bush-tailed Bushbaby. Possibility exists to be involved with in situ conservation of Philippine Tarsier.

Ring-tailed Lemur: **(3*)**

Presently held by three institutions, five institutions interested. Felt that species needs to be managed within the region. Recommended that Ring-tailed Lemurs be moved from Category 4 to Category 3* as will require management to ensure optimal use of stock and co-ordinated imports, etc.

Current level: 15.10.5 (3) **Proposed: 15.18.5 (5)**

White-fronted Lemur: **4**

The species is currently held only at Perth, and will be phased out of the region. To remain in Category 4.

Current level: 4.5.2 (1) **Proposed: NIL**

Red-fronted Lemur (hybrid): **4**

Held only by Sydney and will be phased out of region. To remain in Category 4.

Current level: 2.1.0 (1) **Proposed: NIL**

Mongoose Lemur **4**

Held only at Adelaide, intended to ship animals to Kuala Lumpur but awaiting permits. Will be phased out of region, to remain in Category 4.

Current level: 1.1.0 (1) **Proposed: NIL**

Black and White Ruffed Lemur: **(2)**

The species is held by four institutions. There is a high level of international management for the species with an International Studbook keeper (I. Porton - St. Louis) appointed, hence felt that species should be promoted to Category 2. Also noted that difficulties have been encountered when seeking a response from studbook keeper. Hopefully, if Species Co-ordinator appointed, this person can act as liaison with studbook keeper and "speed up proceedings".

Stock held by Christchurch are full siblings of stock held at Wellington. As Wellington stock known to be *variegata*, then fair to assume that Christchurch stock is also *variegata*.

Perth to determine what subspecies their stock is (if possible) - if Perth stocks found to be hybrids, consideration to be given to maintaining *variegata* at Perth.

Co-ordinator: Karen Stevenson (Melbourne)

Current level: 7.7.0 (4) **Proposed: 5.9.0 (4)**

Ruffed Lemur Hybrid 4

This form of Ruffed Lemur only held at Auckland. Noted that they will ultimately be phased out of region. To remain in Category 4.

Current Level: 1.2 (1) **Proposed: 1.2 (1)**

Slender Loris 4

This species is held only at Adelaide, no other property interested in obtaining Slender Loris. Suggested that species be phased out of region by attrition, and Adelaide to consider maintaining Slow Loris in keeping with rest of region. To remain in Category 4.

Current Level: 2.1 (1) **Proposed: 1.2 (1) or NIL?**

Slow Loris (3*)

Presently held only by Perth, but both Melbourne and Sydney interested. Import should be done collaboratively, with management plan to be developed once imports proceed. To be nominated for Category 3* pending addtional import of stock and invovlement of other institutions.

Current Level: 1.2.1 **Proposed: 2.2 (1+)**

Lesser Bushbaby 4

Represented at Adelaide by a single specimen, Melbourne no longer interested in the species. To be phased out of region.

Current Level: 0.1 (1) **Proposed: NIL**

Thick-tailed Bushbaby 4

Only held at Perth. Suggest that Perth review this species, possibly considering expanding stocks of Slow Loris or Philippine Tarsier. To remain in Category 4.

Current Level: 3.3 (1) **Proposed: 3.3 (1) or NIL?**

Western Tarsier 4

Presently not in region, Sydney listed as interested, but has opted to obtain Philippine Tarsier rather than Western Tarsier. No further consideration to be given to this species (at this stage!)

Current Level: NIL **Proposed: NIL**

Philippine Tarsier (1*)

The species is presently not within the region. Melbourne Zoo is considering involvement in co-operative program with Philippine fauna authorities, the program will include both in-situ and ex-situ conservation. Import should involve a number of zoos within the region, to maximize captive stocks, and will be in collaboration with captive stocks held in the Philippines. Pending development of the program, consideration to be given to placing species in Category 1.

Current Level: NIL **Proposed: 5.5 (2)**

SUBTAXON II: MARMOSETS & TAMARINS Co-ordinator: Amanda Embury (Mel.) and Graham Goldsmith, Broome

Seven species presently held in region. Another four species (Golden-headed Lion Tamarin, Silvery Marmoset, Callimico and Pied Tamarin) are being considered. Need to determine most effective use of resources. Agreed that Callimico no longer be considered for region as well established captive population exists - would be more beneficial to opt for species whose captive population needs expansion. Region should maintain only one subspecies of Emperor Tamarin, and number of groups of both Emperor Tamarins and Cotton-top Tamarins be reduced. Need comment from Broome re their intentions for marmosets/tamarins.

Common Marmoset 4

Species held only at Gorge Wildlife Reserve in South Australia, but many specimens held by research institutions. Presently, species need not be considered by ASMP.

Current Level: NIL Proposed: NIL

Pygmy Marmoset 4

Species presently held only at Perth. Known that Perth stock includes hybrids and related animals. Felt that preferred option for region is to phase out this species and opt for a species (Tamarin/Marmoset) for which either the captive population needs expansion, or re-introduction program exists. To remain in Category 4.

Current Level: 7.8 (1) Proposed: 3.5 (2)

Emperor Tamarin (3*)

Presently held at two institutions (Melbourne & Perth), with another two institutions (Broome & Sydney) interested. Subspecies of Melbourne population known, whilst Perth colony known to include hybrids. Recommended that region opts for the subspecies *subgrisescens*. Importation of additional stocks to be done on a co-operative basis, hence felt appropriate to nominate species for category 3*. With a view to the recently formed International Studbook (L. Nesler - Riverbanks), it may be appropriate to include this species in Category 2 at a later date.

Current Level: 10.9.4 (2) Proposed: 4.4.4 (3)

Red-handed Tamarin 4

Species listed as being held only at Perth, but now held by Broome. No other institution interested in species, hence to remain in Category 4.

Current Level: 3.4 (1) Proposed: 1.4 (1)

Cotton-top Tamarin 2

Species held at four institutions (Perth, Adelaide, Auckland and Melbourne), with Sydney and Broome interested. Noted that zero population growth recommended for region, and consideration be given to number of groups maintained. Species well represented in captivity and readily acquired. Despite endangered status, no plans for re-introduction program. Suggested that some facilities presently used for Cotton-tops be made available to species for which either the captive population needs expansion, or re-introduction program exists. Noted that Melbourne keen to retain Cotton-tops as a flagship species. To remain in Category 2.

Current Level: 26.12.12 (4) Proposed: 12.12.6 (6)

Co-ordinator's report
Aim to achieve zero population growth, and reduce number of groups housed in region. This follows strategy for British plan.
Co-ordinator: Amanda Embury, Melbourne

Golden Lion Tamarin **(1)**
Held by three institutions (Melbourne, Adelaide and Wellington), Broome interested but wants a breeding rather than non-breeding group. Noted that species well represented in captivity, but re-introduction program continues. Good liaison with International studbook (J. Ballou - National Zoo). Golden Lions are an excellent flagship species for interpretive material. Considering in situ conservation for the species, Golden Lion Tamarins should be included in Category 1.
Current Level: 3.8 (4) **Proposed: 13.13 (5)**
Co-ordinator's report:
Notes recent transfer of ownership of Golden Lion Tamarins to Brazilian Government.
Co-ordinator: David Langdon, Adelaide

Callimico
Consideration has been given to obtaining Callimico as a co-operative effort - Broome and Melbourne expressed interest. However, preferred option for region is not to import Callimico and keep facilities available for more threatened species.
Current Level: NIL **Proposed: NIL**

Golden-headed Lion-tamarin **(1*)**
Species not yet in region, but interest expressed by several institutions. Suggested that any involvement be done collaboratively with a view to participation in re-introduction programs, hence recommended that this species be considered for inclusion in Category 1. A well established international studboook exists (J. Mallinson - Jersey) exists, so liaison with Jersey required to determine most appropriate action. Marmoset/tamarin group to work on this.
Current Level: NIL **Proposed: ??**

SUBTAXON III: CEBIDS
Co-ordinator: Spiders - Amanda Howie (Christchurch)
Squirrels & Capuchins - Peter West (Auckland)
Need to determine which subspecies are presently within the region. Will require investigation, and co-ordinators will need to seek input from all zoos involved. Once we know what we have, then decisions can be made relating to development of management plans.

Two co-ordinators nominated as felt that considerable effort will be required to sort out the genetics of the species concerned.

White-fronted Capuchin **4**
Species held only at Perth Zoo, suggested that species be phased out of region. Need to seek comment from Perth. To remain in Category 4.
Current Level: 3.2.3 (1) **Proposed: 3.2.3 (1) or NIL?**

Black-capped Capuchin (3*)
Held at four institutions (Melbourne, Auckland, Sydney and Wellington). Noted that Melbourne plans to ship species to a private zoo. Need to determine subspecies held by various zoos, in order to determine appropriate management plan. Melbourne population thought to be hybridised, or include at least two subspecies. For effective development of regional population species will require management, hence nominated for Category 3*.
Current Level: 14.16.2 (4) **Proposed: 15.12 (4)**

Douroucouli 4
Adelaide has exported their stocks, Perth holds a single animal. Recommended that species be phased out of region. Noted that Douroucoulis are held by research institutions within region.
Current Level: 1.1 **Proposed: NIL**

Common Squirrel Monkey (3*)
Adelaide, Auckland, Melbourne and Sydney hold the species. Need to determine which forms held at each zoo prior to developing management plan. Melbourne animals thought to be Bolivian form. Sydney intends to phase out species, but Dubbo interested in obtaining it. As several zoos maintain species, felt that regional management is required. Species nominated for Category 3*.
Current Level: 13.22.3 (4) **Proposed: 9.20 (4)**

Spider Monkey 3
For purpose of discussion both **Black-handed Spider Monkey** and **Mexican Spider Monkey** considered together. There is a need to consider which subspecies are represented in the various populations prior to developing management plan. Noted that Dubbo stock's ancestry traces back to San Francisco. Seek input from those working on Spider Monkey taxonomy.
Current Level: 17.45 (7) **Proposed: 16.35 (7)**
Co-ordinator's Report
Amanda Howie reported on Mexican Spider Monkeys and the need to confirm karyotyping.
Co-ordinator: Amanda Howie, Christchurch

SUBTAXON IV: MACAQUES AND BABOONS Co-ordinator: Glenn Sullivan, Sydney
Of the seven species of Macaque held within region, noted that four or five will probably phased out of region. Need to consider expansion of Lion-tailed Macaque population (Adelaide received two individuals after the workshop). Also consideration to developing regional population of a second threatened Macaque.

For baboons, main objective is to determine genetics of populations, and rationale for further management. Confirm which zoos want to maintain Mandrills, and likelihood of acquiring Geladas.

Crab-eating Macaque 4
Presently held only at Sydney. Sydney to retain colony, perhaps with view to opting for a rarer Macaque if appropriate. To remain in Category 4.
Current Level: 3.18.9 (1) **Proposed: 1.11 (1) or NIL ?**

Japanese Macaque 4
Perth only zoo to hold this species, plan to phase out species. Noted that other institutions within region maintain species. To remain in Category 4.
Current Level: 4.6.1 (1) **Proposed: NIL**

Moor Macaque 4
Only Perth maintains this species, and plans to phase it out. To stay in Category 4.
Current Level: 2.1 (1) **Proposed: NIL**

Pigtail Macaque 4
Presently held by Auckland, Melbourne and Wellington. Both Auckland and Melbourne plan to phase out species, whilst Wellington prepared to opt for a rarer Macaque. To remain in Category 4.
Current Level: 6.10.1 (3) **Proposed: 1.2 (1) or NIL?**

Celebes Macaque 4
Perth is only zoo to maintain this species. Although Melbourne expressed interest, Lion-tailed Macaques will be obtained rather than Celebes Macaques. Noted that certain subspecies of Celebes Macaque are extremely endangered. In long term, could be possibility of region becoming involved with species as conservation effort. For time being, species to remain in Category 4.
Current Level: 3.2 (1) **Proposed: 3.2 (1) or ??**

Bonnet Macaque 4
Presently held by Adelaide and Auckland. Adelaide intends to export population, whilst Auckland has limited breeding within group. Likely that species will be phased out of the region in the long term. To remain in Category 4.
Current Level: 6.17.3 (2) **Proposed: 5.5 (1)**

Liontail Macaque (2)
Presently only Adelaide holds this species. Both Melbourne and Sydney are interested in obtaining Liontail Macaques in the long term. A well established international studbook (L. Gledhill, Woodland Park) exists, so species should be nominated for Category 2. Noted that it is not possible to import specimens from India - they are not allowed out of the country. Also recommended to undertake virology check on animals.
Current Level: 1.4 (1) **Proposed: 5.9 + (2+)**
Species Co-ordinator <u>David Langdon, Adelaide</u>

Black Mangabey
The species is not presently within the region. Melbourne Zoo nominated the Black Mangabey to its stocking policy, but has revised this decision, opting for greater representation of Asian species.
Current Level: NIL **Proposed: NIL**

Hamadryas Baboon (3*)
Hamadryas Baboon are held by Adelaide, Melbourne, Perth and Wellington. All but Perth intend to keep the species. Noted that the species is now listed as Rare. Many captive populations tend to be inbred as one male generally mates with several generations of females - need to assess genetics of present regional

population. There is a need to rationalise regional population, and to arrange for collaborative imports as deemed necessary. A species for which contraceptives could be used to enable selective breeding as required. As there is a need to manage the species it is recommended for Category 3*
Current Level: 9.23 (4) **Proposed: 5.15 (3)**

Guinea Baboon 4
Held only at Adelaide, destined for export. Species to be phased out of region. To remain in Category 4.
Current Level: 3.5 (1) **Proposed: NIL**

Chacma Baboon 4
Species held by Auckland and Wellington. Melbourne will phase out species, and Werribee to display species in the long term. Noted that breeding is controlled at Auckland. Concern about "purity" of Melbourne stocks - most likely hybrids, probably with Olive Baboons. To remain in Category 4.
Current Level: 8.11.1 (2) **Proposed: 3.5 (1+?)**

Mandrill 4
Presently held by Adelaide, Melbourne, Perth and Sydney, Only Perth intends to phase out species, whilst Sydney would like to maintain a bachelor group. Recommend that Perth review decision to phase out this species. Determine whether or not Broome interested in this species. Concern about purity of Melbourne stocks, most likely population consists of Drill/Mandrill hybrids (genetic study being done to verify this). Need to monitor situation with Mandrills, at this stage to remain in Category 4.
Current Level: 10.14.1 (4) **Proposed: 6.5 (3)**

Gelada Baboon
Species recently phased out of region with Melbourne exporting stock to New York. Wellington has expressed interest in obtaining Geladas as felt they would adapt well to climate. Possibly other zoos may be interested in Geladas.
Current Level: NIL **Proposed: ??**

Savanna Monkey 4
Presently held only at Perth, to be held at Perth in the long term. Recommend that Perth review decision to maintain this species, and consider species being held elsewhere in region such as Patas Monkey. To remain in Category 4.
Current Level: 7.5.1 (1) **Proposed: 2.3 (1) or NIL?**

SUBTAXON V: GUENONS/LANGURS/COLOBUS **Co-ordinator: to be determined possibly, Werner Zur Eich, Adelaide**

Seek input from Perth as to whether or not Savanna Monkeys to be obtained for long term. Determine which zoos interested in holding Diana Monkey, or perhaps consider import of a threatened species of guenon collaboratively. Need to determine which subspecies of Black & White Colobus should be held in the region. Determine which species of Langur should be maintained.

Diana Monkey (2)
Presently held only at Auckland. Consideration to be given to maintaining this species by other institutions. Noted that established international studbook exists (M. Stevenson, Edinburgh), hence species to be proposed to Category 2.
Current Level: 1.3 (1) **Proposed: 2.4 (1+?)**

Diademed Monkey 4
Held only at Adelaide and export of group imminent - will be phased out of region. To remain in Category 4.
Current Level: 1.2 **Proposed: NIL**

De Brazza's Monkey (3*)
Presently held at Adelaide, Melbourne, Perth and Sydney, only Perth intends to phase out species. There is a need for co-ordinated management within the region, hence recommended for Category 3*.
Current Level: 8.10.1 (4) **Proposed: 4.8.1 (3)**
Species Co-ordinator Paul Davies, Sydney

Patas Monkey (3*)
Species maintained at Christchurch and Dubbo - both zoos intending to retain species. Felt that co-ordinated program for management of species within region be developed, hence promoted to Category 3*. Possibility that interest from other zoos in Patas Monkeys be encouraged.
Current Level: 4.9.2 (2) **Proposed: 3.14 (2)**

Black and White Colobus (3*)
Noted that Melbourne holds the Ethiopian form, whilst Wellington and Christchurch hold the Kenyan form. Adelaide has expressed interst in obtaining species. Discussion about which subspecies to be kept within the region. Suggested that region opts for subspecies which is more readily obtainable. speccies will require management, nominated for Category 3*.
Current Level: 6.6.1 (2) **Proposed: 5.11 (3)**
Co-ordinator: To be determined

Silvered Leaf Monkey 4
Only Melbourne holds this species, and plans to phase out species in the long term, Melbourne to obtain a more threatened species of langur. To remain in Category 4.
Current Level: 3.2 (1) **Proposed: NIL**

Hanuman Langur 4
Only Adelaide maintains this species and plans to export it, to be phased out of region. Species to remain in Category 4.
Current Level: 2.5 (1) **Proposed: NIL**

Dusky Leaf Monkey 4
Adelaide only zoo to hold this species. Presently, Adelaide intends to keep the species for the long term. To remain in Category 4.
Current Level: 1.1 (1) **Proposed: 1.4 (1) or NIL?**

Purple-faced Leaf Monkey 4
Species to be phased out of region, presently only held at Adelaide, individuals to be exported. To remain in Category 4.
Current Level: 1.1 (1) **Proposed: NIL**

Sri Lankan Purple-faced Leaf Monkey 4
Held only at Perth and to be phased out of region. To remain in Category 4.
Current Level: 1.2 (1) **Proposed: NIL**

Snub-nosed Langur
Dusky Douc Langur
Red Colobus
None of the above species presently within the region. Suggested that only one of these species be imported to the region, and that this be done collaboratively. Need to consider a species with greatest potential for conservation. Noted that additional founders needed for captive population of Dusky Douc Langurs.
Current Level: NIL **Proposed: ???**

SUBTAXON VI: **GIBBONS** **Co-ordinator, Graham Strachan, Wellington**
Presently seven species of gibbon maintained within the region, two (Agile & Muller's) will be phased out. Need to determine what Perth will do with Hoolocks and Molochs, and determine whether or not to pursue White-handeds. Suggest that focus be on White-cheeked Gibbons, with considerations being given to obtaining another threatened Gibbon (Molochs?) co-operatively. Noted that Siamangs of value.

White-cheeked Gibbon (2)
Held by Melbourne and Perth, Wellington to obtain species soon. Broome possibly interested in obtaining White-cheeked Gibbons. An International Studbook (J. M. Lernould - Mulhouse) exists, therefore species to be nominated to Category 2. Noted that species is critically endangered in the wild.
Current Level: 4.3.2 (2) **Proposed: 4.5 (3)**
Species Co-ordinator Sherri Huntress/Graham Strachan - Wellington

Hoolock Gibbon 4
This species only held at Perth, no plans to phase out the species. To remain in Category 4.
Current Level: 1.1 (1) **Proposed: 1.1 (1)**

White-handed Gibbon 4
Presently held at Adelaide, Melbourne, Perth and Sydney. Melbourne and Sydney still reviewing whether or not to keep this species for the long term. Greater benefit would be obtained by making spaces available to rarer species of gibbon. Situation yet to be resolved. To remain in Category 4.
Current Level: 6.9 (4) **Proposed: 2.2.3 (2)?**

Agile (Dark-handed) Gibbon 4
Presently only held at Wellington, to be replaced with White-cheeked Gibbon and phased out of region. To remain in Category 4.
Current Level: 1.1 (1) **Proposed: NIL**

Moloch (Silvery) Gibbon 4

Species held only at Perth, to be retained. Noted that species is critically endangered, so could be suitable for region. At this stage to remain in Category 4.

Current Level: 2.1 (1) **Proposed: 2.2 (1) or more?**

Muller's Gibbon 4

Species held by Melbourne and Sydney. Melbourne intends to send stock to Gorge Wildlife Park, S.A.. Sydney has one animal that is getting old, will phase out by natural attrition. Species to be lost from region. To remain in Category 4.

Current Level: 1.2 (2) **Proposed: NIL**

Siamang 2

Siamangs held at Adelaide, Auckland, Melbourne and Perth. Dubbo interested in obtaining. Noted that Siamangs fairly common and using space that could be made available to rare species. Noted that Siamangs good for educational purposes, being a spectacular Primate. Well established regional studbook, so to remain in Category 2.

Current Level: 8.6 (4) **Proposed: 7.8 (5)**

Co-ordinator's Report:

Reports outlines pairings, and movement of animals from Adelaide to Dubbo.

Species Co-ordinator Bruce Campbell, Adelaide

SUBTAXON VII: APES **Co-ordinator: not required**

As all ape species have species co-ordinators felt that it is not necessary to have a subtaxon group co-ordinator.

Orang-utan 2

Long term goal is to group Bornean Orang-utans in New Zealand, and Sumatran Orang-utans in Australia. The problem of hybrids raised. Felt appropriate that hybrid animals being exported should be sterilised to prevent breeding and creation of further hybrids - making less space available to pure-breds. Regional plans should be in keeping with philosophies of other region. An International Studbook (L. Perkins - Zoo Atlanta) exists, and regional studbook well developed.

Current Level: 11.19 (5) **Proposed: 8.20.6 (5)**

Co-ordinator's report:

Apologies for lack of reporting, due to completing PhD thesis. A report will be completed in the near future.

Species Co-ordinator: R. Markham, C/o Perth

Chimpanzee 2

Chimpanzees at Adelaide, Auckland, Melbourne, Perth, Sydney and Wellington. Dubbo in interested in housing a bachelor group, whist Perth and Melbourne intend phasing out species. Shipments planned for 1990 put on hold due to restructuring of group at Sydney. Noted that communications with Species Co-ordinator have been limited of late - need to determine what transactions will take place during 1991. Management plan has been developed, obviating need for imports, to remain in Category 2. Suggested that consideration be given to identifying which subspecies are held in region. Three subspecies of Chimpanzee are known, should consult with

CBSG to determine global strategy for Chimp management, perhaps seek input from Barbara Porter. Need to determine ways of identifying subspecies.
Current Level: 19.33 (6) Proposed: 12.29.5 (5)
Species Co-ordinator Paul Davies, Sydney

Lowland Gorilla (2)
Presently only held at Melbourne, although Auckland and Broome could be interested in the long term. As well established International Studbook exists, species nominated for Category 2.
Current Level: 4.2 (1) **Proposed: 2.4 (1) +?**

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Themes of various institutions (summary):

Adelaide:
Collection will be conservation oriented wiht bias towards South-east Asian species, although hope to achieve broad representation of Primates. Surplus stock will be exported as a matter of routine.

Auckland:
Theme remains undefined, will be happy follow regional trends, various thematic zones on Master Plan

Dubbo:
Developed as ecosystems within continents. Priority will be given to species within the plan. For Primates, species that can be accommodated on islands will be selected.

Melbourne:
To be developed as series of bioclimatic zones, for Primates focus will be on Asian species. Conservation issues will be of significance

Orana Park:
Will display mainly African species, and some South American species

Sydney:
Will focus on South American species. Representative species from Africa and South America will also be displayed (not necessarily in breeding groups).

Wellington:
Theme of diversity with representatives of major groups, focus on groups with conservation significance.

Recent developments of institutions:

Adelaide:
Work is soon to start on the World of Primates.

Auckland:
Chimp exhibit has been renovated with new glass windows.

Dubbo:
Will soon obtain Siamangs for island. Two islands vacant, to be used for Capuchins and Squirrels. Eventually will obtain Ring-tailed Lemurs. Looking at housing a bachelor group of Chimpanzees in 1994.

Orana Park:
African savanna continues to be developed, housing Patas Monkey. Kopje rock exhibit is underway.

Melbourne:
Gorilla Tropical Forest has been open for 12 months and is working well. Design for new Mandrill exhibit nearing completion. Modification of baboon exhibits planned for near future.

Sydney:
A suite of three exhibits suitable for housing tamarins has been constructed. South America feature being developed, will house Capuchins and Spider Monkeys.

Wellington:
Construction of Chimpanzee exhibit has started. A glassed exhibit for Golden Lion Tamarins has been built near the front entrance

Significant imports/exports:

Melbourne:
A six year old male gorilla imported from Jersey, a pair of Siamangs obtained from Munich (note related to other Siamangs in region), male Orang-utan (hybrid) to be sent to Hyderabad, and female Sumatran Orang-utan to arrive from San Diego, with additional 1.1 Sumatran Orang-utan to be obtained from Jersey. Ruffed Lemur will be imported from Cincinnati. Male White-cheeked Gibbon to go to Wellington, and one to go to U.S..

Adelaide:
Two female Lion-tailed Macaques imported from Woodland Park, Diademed Monkeys to go to Indonesia, group of Cotton-top Tamarins to Kuala Lumpur and female Orang-utan to go to San Diego.

Sydney:
Shipment of chimpanzees and Orang-utans to be exported shortly. Male de Brazza Guenon arrived from Bristol.

Wellington:
Golden Lion Tamarins obtained from Adelaide, White-cheeked Gibbon to come from Melbourne. Agile Gibbons to be exported.

Notable births/deaths,etc.

Adelaide:
Some significant losess to report, the death of two female Sumatran Orang-utan, and the deaths of six Golden Lion Tamarins whod died from Toxoplasmosis, believed to have been "spread" by cats.

Auckland:
A second Siamang has been born at Auckland. Spider Monkeys have bred.

Melbourne:
Girlie, a thirty year old female Bornean Orang-utan died, Max the breeding male MAndrill died. Motaba, the recently obtained gorilla, has integrated well and been observed mating the two female gorillas. A Cotton-top Tamarin gave birth to three young in one litter, whilst a male Cotton-top Tamarin died at 21 years of age, possibly a longevity record

Orana Park:
Both the Patas Monkeys and Spider Monkeys have bred

Sydney:
The new line of de Brazza Guenons has bred. The first Chimpanzee birth for three years. The first Ring-tailed Lemur to be born in 7 years. Paul Davies got married. Two male Mandrills died, one aged ten, and one aged nine - the latter dying of leukaemia.

Wellington:
Male Chimp Tom died, enabling integration of other Chimps into one group

Links with other regions:

IUCN:	during Roland Wirth's recent visit, information supplied about natural populations of various endangered Primates, end IUCN priorities with suggestions made as to development of regional stocking policy
CBSG:	some correspondence with Miranda Stevenson including copy of 1990 Captive Action Plan for Primates, CBSG interested to know if region plans to maintain Uakaris or Howler Monkeys?
Gibbon SSP:	suggestion that Moloch Gibbons are good starting point, and sought details of regions White-cheeked Gibbon population (this has been provided)
Callimico:	correspondence with International studbook, advised that a minimum of 5.5 Callimico be sent to region if Callimicos to be established.
UK Assoc:	enquiry made re composition of region's Emperor Tamarin population, as noted that Marwell intending to import Emperors from Melbourne
Brazil:	noted that Black Lion Tamarins will initially be made available only to Jersey and National Zoo
Prosimian TAG, USA:	noting that not much progress has been made, husbandry manuals to be developed
Great Apes:	no reply from U.S. Great Ape group
Japan:	no reply to letters sent to Gibbon group and gorilla group

Other items discussed/considered/in need of resolution:

Commitment to regional plan:

In order that regional management plan is effective and worthwhile, there needs to be a commitment for institutions to adopt recommendations of Taxon Advisory Groups as far as practicable.

Management of reproductive behaviour:

Reproductive behaviour needs to be monitored closely to ensure that unwanted stock is not produced. Rather than generate surplus stock which cannot be placed, breeding should be prevented. Discussion about various contraceptive techniques and effects on behaviour, for example females don't cycle, so educational value of display may be reduced. FOr some species it is not advisable to limit breeding. Discussion about artificial insemination techniques, and semen collection and storage. These options will no doubt be used to a greater extent in the future. Establishing bachelor groups provides an effective way of housing surplus animals, males can be recruited from a bachelor groups to breeding groups as required.

Euthanasia:

Discussion about use/non-use of euthanasia. Important that institutions have policies on euthanasia, particularly addressing euthanasia of Apes. Also need to address when infants will be hand-reared or euthanised.

Exhibit Design:

Need to have consistency for housing standard required. Suggested that A.R.A.Z.P.A. be considered an authority for people seeking advice on husbandry/exhibit standards. This also relates to accreditation procedures. Important that state/federal authorities do not develop standards without input/advice from A.R.A.Z.P.A.

Overseas shipments:

Discussion about overseas shipments and problems encountered. Important to research route thoroughly, opting for route with fewest stopovers. When possible, have personnel from zoo where stopover is check condition of animals. Discussion about the need for keepers and/or vets to accompany shipments. Need to consider each case separately - depends on individual being transported, length of shipment, expertise of staff at receiving zoo.

Zoo Mission Statements/Policy:

felt that underlying missions of zoos within region need to be essentially the same, or it will be difficult for regional management plan to work effectively. Perhaps institutions seeking to join A.R.A.Z.P.A. need to demonstrate that their objectives do not conflict with objectives of regional management plans.

Agenda items not discussed:

Research projects:

- outline of any research being undertaken by institutions
- suggestions of areas/topics that require investigation

Fieldwork/involvement in conservation projects:

- reports on zoo involvement with fieldwork
- reports on zoo involvement with in situ conservation projects

Evaluation of Workshop:

1. Benefits of workshop:

progress has been made, able to get to know other people working with Primates, able to confirm ideas, good to see parallel thinking at different zoos, interesting, source of knowledge, able to see current planning and thinking of carious zoos, many recommendations have been made, good to meet others, good to know that you can seek input from others, informative, able to "bounce ideas", able to clarify thinking on collection policy for conservation, good to hear the directions that zoos are heading, good to know that zoos have been thinking at a regional level and have revised species lists accordingly.

2. "Gaps" which require attention:

a lack of details information of global plans or plans for other regions, not able to bounce ideas in this context, for example details of wild populations not always known, or likelihood of developing re-introduction programs for species, also availability of individuals from other regions (e.g. Colobus). ALso unfortunate that no representatives from Perth or Broome present, as couldn't seek comment (and PErth & Broome won't know details of discussions). Many questions relating to SOuth East Asia need to be answered, such as developing links with appropriate authorities, not having time-scale on activities, also influence of various outside forces such as wildlife authorities, Animal Rights groups, quarantine restrictions which can affect management of stock.

3. Frequency for workshops:

Need to have more communication between zoos, need to keep each other informed of developments, constant review of species held and review of priorities required; suggest two meetings of ADvisory Group each year, in addition to A.R.A.Z.P.A. conference. Suggest that quarterly updates be provided (could be via A.R.A.Z.P.A. newsletter). Felt that this first meeting will be the "hardest one", now that we have defined directions, things should be easier. Critical to have input from all involved - if they can't make the workshop, at least they can forward recommendations.

4. Suggested change in format:

there are problems in running all workshops concurrently, eg. both Perth and Broome had delegates at conference but they were unable to participate in Primate Taxon Advisory Group. Need to have funding created to allow participation at workshops - both from individual zoos and A.R.A.Z.P.A., possible sponsorship be provided to smaller institutions. Alternatives might be phone hook-ups, etc.

5. Is there a need for additional expertise?

felt that Species Co-ordinators should seek expertise to assist with specific management plans, rather than group as a whole using geneticists, populations biologists, etc. GOod to have a vet involved in Advisory Groups to provide veterinary rather than husbandry aspects.

6. Any issues which could not be resolved?

Several, such as whether or not hybrid ORang-utans should be sterilised, whether to manage Chimpanzees at subspecific level, decisions relating to euthanasia or exhibit design.

7. Barriers to communication?
Barriers to face-to-face communication, namely financial constraint, but we can use telephones, faxes or mail!

8. Other general comments?
Nothing of note, workshop concluded with everyone in a positive frame of mind, and feeling that something had been accomplished

9. What Next?
Need to distribute this report? Need to ratify recommendations for Species C-ordinators, Taxon Subgroup Co-ordinators and Taxon Advisory Group Conveners. The next stage is work on recommendations, particularly rationalizing stocking policies.

SUMMARY OF PROPOSED ASMP CATEGORIES FOR PRIMATES

Species:	Category:	Proposed Species Co-ordinator
Ring-tailed Lemur	3*	Vacant
B & W Ruffed Lemur	2	Karen Stevenson, Melbourne
Philippine Tarsier	1	Co-ordinator to be nominated pending development of program
Emperor Tamarin	3*	Co-ordinator to be nominated pending involvement additional zoos
Cotton-top Tamarin	2	Amanda Embury, Melbourne
Golden Lion Tamarin	1	David Langdon, Adelaide
Golden-headed Lion Tamarin	1	Co-ordinator to be nominated pending development of program
Black-capped Capuchin	3*	Vacant
Common Squirrel Monkey	3*	Vacant
Black-handed Spider MOnkey	3*	Vacant (Note: Spider Monkey population under review by subtaxon group)
Mexican Spider Monkey	2	Amanda Howie, Christchurch
Liontail Macaque	2	David Langdon, Adelaide
Hamadryas Baboon	3*	Vacant
Diana Monkey	2	Co-ordinator, not required
de Brazza's Guenon	3*	Paul Davies, Sydney
Patas Monkey	3*	Vacant
Black and White Colobus	3*	Population under review, co-ordinator to be appointed pending outcome of review
White-cheeked Gibbon	2	Graham Stachan/Sherri Huntress, Wellington
Siamang	2	Bruce Campbell, Adelaide
Orang utan	2	Rosemary Markham, C/o Perth
Chimpanzee	2	Paul Davies, Sydney
Lowland Gorilla	2	Co-ordinator not required

SUMMARY OF CO-ORDINATORS (BY PROPERTIES)

Name:	Species/subtaxon
Adelaide:	
David Langdon	Golden Lion Tamarin
	Lion-tailed Macaque
Werner Zur Eich	Guenon/Langur/Colobus subtaxon - expressed interest in co-ordinating group
Bruce Campbell	Siamang
Auckland:	
Peter West	Cebid subtaxon group (in conjunction with Amanda Howie)
Broome:	
Graham Goldsmith	Marmoset/tamarin subtaxon group (in conjunction with Amanda Embury)
Christchurch:	
Amanda Howie	Cebid subtaxon group (in conjunction with Peter West)
	Mexican Spider Monkey
Dubbo:	
None	
Melbourne:	
Amanda Embury	Convener, Primate Taxon Advisory Group
	Marmoset/tamarin subtaxon group (in conjunction with Graham Goldsmith)
	Cotton-top Tamarin
Ernst Weiher	Lemur/Prosimian subtaxon group
Karen Stevenson	Black and White Ruffed Lemur
Perth:	
Rosemary Markham	Orang-utan
Sydney:	
Glenn Sullivan	Macaque & Baboon subtaxon group
Paul Davies	de Brazza's Guenon
	Chimpanzee
Wellington:	
Graham Strachan	Gibbon subtaxon group
	White-cheeked Gibbon (with Sherri Huntress)
Sherri Huntress	White-cheeked Gibbon (with Graham Strachan)

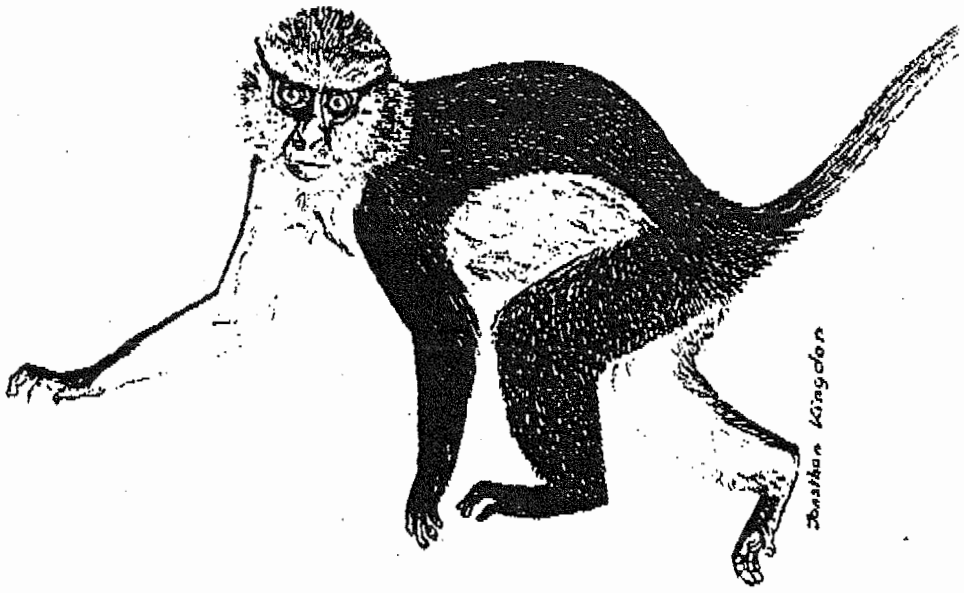
ASMP

AUSTRALASIAN SPECIES MANAGEMENT PROGRAM

PRIMATE TAXON ADVISORY GROUP

WORKSHOP

APRIL 1992



Currumbin Sanctuary

AGENDA ITEMS

Convener's report

1. Marmoset/tamarin report
2. Squirrel Monkey Report
3. Capuchin Report
4. Squirrel Monkey Report
5. Macaque Report
6. Baboon Report
7. Guenons
8. Black and White Colobus Report
9. Leaf-eating Monkey Report
10. Gibbon Report
11. Chimpanzee Report
12. Items from Conservation Co-ordinator
13. Conference Reports (eg. Chimp Workshop, Ape Workshop, forthcoming conferences - eg. Endangered Species Conference, Gorilla Workshop)
14. Progress re "International Activities" (eg. Indonesia, Malaysia, Philippines, Vietnam)
15. Species Co-ordinator Reports
16. Other Items
17. General Discussion: progress of Primate T.A.G., action required
18. NEXT MEETING

Convener's report

Since the October meeting, it is apparent that a lot of you have devoted a lot of time to researching information and preparing recommendations. For those of you who have not been directly involved with preparation of the attached reports, please devote the time to read and digest these reports, so that Currumbin proves a worthwhile meeting, with everyone well prepared.

Please copy and circulate this document as considered necessary, certainly I'd hope that all personnel working with primates are aware of this document and the various matters being considered by the Primate Taxon Advisory Group. It is also important that not only those working within the area of Animal Husbandry are made aware of the role of Taxon Advisory Groups, but also staff in areas such as Education, Public Relations, and anyone wanting an understanding of how Zoos in the region are developing stocking policies, and how Zoos are working towards effective conservation.

There are still several matters which require resolution. In particular the Spider Monkeys and the Squirrel Monkeys still need to be identified to sub-specific level.

Response from overseas has been quite positive in the past six months. Several Species Co-ordinators have established regular contact with their "counter-parts" in other parts of the world, and negotiations for import of several species continue.

Furthermore, progress has been made in several of the international collaborative projects discussed at the October workshop. More detailed updates will be provided at Currumbin.

Whilst in some ways progress following the Dubbo meeting has been tedious, with not much in the way of results, a lot of ground has been covered. THe amount of research and "investigative work" that has been undertaken in recent months will prove valuable, and will guide us along the appropriate path with respect to the regional Primate stocking policy.

It is important that we collectively use the reports produced and continue to work in close co-operation. Once that Species Co-ordinators are appointed, it is vital that we give them the support required, and implement recommendations of species management plans.

Now that the foundations have been laid, management plans can be developed, and no doubt during the next twelve months much will be accomplished.

If you are unable to make it to Currumbin, but have items for discussion, or reports to submit, please forward them to me by the 3rd April '92.

Amanda

Amanda S. Embury
Convener, A.S.M.P. Primate T.A.G.

9-Mar-92

Appendix 1: Marmoset/tamarin report - Gert Skipper & Amanda Embury

REPORT ON THE REGION'S HOLDING OF MARMOSETS AND TAMARINS

by

Amanda Embury and Gert Skipper

At the October 1991 meeting of the TAG (Primates) we were given the task of recommending the optimal space usage and the amount of species the region could hold.

The following process was followed to produce the report:

1. Establish spaces available in the region at present and projected in 5 and 10 years. This was done by asking every institution holding primates to fill out a questionnaire, which was promptly returned - Thank you everyone!

2. Establish criteria for the selection of species by referring to:

   * Regional Plans
   * TAG recommendations (Dubbo 1991 and Melbourne 1991)
   * CBSG Global Captive Action Plan for Primates
   * Other: "Flagship" species etc.

3. Establish criteria for minimum numbers by considering:

   * Availability of International Studbook
   * Need for proper genetic management

SUMMARY OF RESPONSES

+ : DEPENDENT OFFSPRING

LEVEL OF THREAT : BASED ON MACE/LANDES CRITERIA

CAPTIVE PRIORITY : BASED ON GLOBAL CAPTIVE ACTION PLAN FOR PRIMATES RECOMMENDATIONS

PECIES HELD/PLANNED	Level of Threat	Captive Priority	NOW		< 5 YEARS	< 10 YEARS
			No's now	Max. spaces available	Max. spaces available	Max. spaces available
olden Lion Tamarin Leontopithecus rosalia rosalia)	'C'	90%/100 years I	2.5.3 ADL 0 AUCK 0.5 MEL 1.1 PER 0.2 SYD 1.2 WEL	6.6 0.0 0.0.6 1.1 + 2.2 1.2 WEL (non breed)	6.6 2.2 0.0.6 (single sex) 2.2 + 0.0.4 1.2	6.6 0.0.6 (single sex) 2.2 + part of 0.0.20 1.2
otton Top Tamarin Saguinus oedipus oedipus)	'E'	90%/100 years I	22 7.4 ADL 3.3 AUCK 10.8.5 MEL 6.5.3 PER 3.0 SYD	31 2.2 3.3 2.2 6.5.5 4.0	29 2.2 2.2 + 1.1.6 0.0.4	2.2 1.1.6 part of 0.0.20
mperor Tamarin Saguinus imperator)		NucleusII	57 4.4.3 MEL 3.3 PER 3.0 SYD	34 2.2 3.3 4.0	20 2.2 0 0.0.4	0 part of 0.0.20
			20	9.5	8	

5

SUMMARY OF RESPONSES

+ : DEPENDENT OFFSPRING

LEVEL OF THREAT : BASED ON MACE/LANDES CRITERIA

CAPTIVE PRIORITY : BASED ON GLOBAL CAPTIVE ACTION PLAN FOR PRIMATES RECOMMENDATIONS

SPECIES HELD/PLANNED	Level of Threat	Captive Priority	NOW		< 5 YEARS	< 10 YEARS
			No's now	Max. spaces available	Max. spaces available	Max. spaces available
Red-handed Tamarin (Saguinus midas)		NucleusII	2.0.0 PER	2.0.0	0	0
Pygmy Marmoset (Cebuella pygmaea)		NucleusII	10.6.0 PER 0 WEL	10.6.2 1.1 +	1.1.6 1.1 +	1.1.6 1.1 +
Black Lion Tamarin (Leontopithecus crysopygus) (* Auckland, Melbourne and Perth have indicated willingness to change/supplement to another Lion Tamarin if region requires it.)	C	90%/100 years I	0 ADL	2.2	2.2 (*	2.2 (*

NEW SPECIES

Based on the Dubbo and Melbourne meetings, discussions and the questionnaire results, the following species which fall into the "Critical" or Endangered" categories, which are already in captivity and population requires expansion to 200-500 individuals, could be considered for inclusion in the region:

	Threat Category	Est No. ISIS	Est No. Studbook	Captive Priority
Black Lion Tamarin *Leontopithecus crysopygus*	'C'		60	90%/100 I
Bare-faced (Pied) Tamarin *Saguinus bicolor bicolor*	'E'	30		90%/100 II
BuffyTufted-eared Marmoset *Callithrix aurita aurita*	'E'	9		90%/100 II

RECOMMENDATIONS

Based on questionnaire replies and previous mentioned criteria, the following recommendations are proposed for the region:

Species Retained:

Golden Lion Tamarin *Leontopithecus rosalia rosalia*
Cotton-top Tamarin *Saguinus oedipus oedipus*
Emperor Tamarin *Saguinus imperator subgrisescens*
Pygmy Marmoset *Cebuella pygmaea*

Species to be Phased Out:

Red-handed Tamarin *Saguinus nuidas*

Species to be included in the Region:

Black Lion Tamarin *Leontopithecus crysopygus*

CONCLUSIONS

There appears to be a dramatic reduction in spaces available for Cotton-top and Emperor Tamarins in particular. This may not be as drastic as it first appears, as several of the numbers would refer to adult pairs only and not include offspring.

Bearing in mind the desirability of letting juveniles experience infant rearing by staying with adults for some time during raising of the second litter, the actual carrying capacity could in some instances be higher than stated.

Cotton-top Tamarin spaces could be reduced to approximately half of present holdings, with most institutions reducing their projected maximum carrying capacity. This does follow the strategy suggested at the Dubbo meeting. This will of course have implications for management plans, essentially management plans will be nominating breeding pairs, and recommending dispersal of surplus individuals.

By reducing numbers of breeding pairs, will mean that regular import of stock will be required, that should not be a problem, but any imported stock should be of known ancestry to prevent any relations to individuals held within the region.

Similar comment is valid for the Emperor Tamarins, but that should not be a problem either.

Note the recommended subspecies nominated is Subgrisescens, as discussed at the Melbourne meeting.

Golden Lion Tamarin spaces is remaining relatively stable with Adelaide the main breeding colony, Auckland looking to include Lion Tamarins some time after 1996, Melbourne keeping single sex groups, Perth increasing spaces to two breeding pairs and offspring, Wellington keeping a non-breeding group and Sydney having spaces available as a part of a total of 20 spaces.

The Red-handed Tamarin is only represented by 2 males in Perth and are being phased out there. No other insitution has expressed interest.

Pygmy Marmoset is presently held only at Perth Zoo, but Wellington expressed interest in displaying it with Golden Lion Tamarin. Interest in keeping this species as an educational tool (mixed exhibit/smallest monkey).

Black Lion Tamarin is presently not in the region. It is a species classified a 'C' critical, and will require captive expansion. Adelaide has expressed interest in working with this species and several other institutions have expressed support. Timetable for inclusion depends on availability. No indication is available at this stage.

REFERENCES

TAXON Advisory Group (Primates) Workshop Report, Dubbo 1991
TAXON Advisory Group (Primates) Workshop Report, Melbourne 1991
CBSG Global Captive Action Plan for Primates, Discussion Edition 1991

Appendix 2: Squirrel Monkey Report - Peter West

Compiled By Peter West
Auckland Zoo

Australasia hold 36 Squirrel Monkeys in 4 major zoos and 2 private zoos. Many of these animals are hybrids although Melbourne Zoo's are thought to be of the *bolivainan* subspecies, arrangements are being made to karyotype them.

There is a strong regional interest in keeping a pure subspecies population with 7 zoos wishing to be involved. At present I am awaiting responses from several possible sources on the availability of a good size founder population of a known subspecies (particular interest expressed for *bolivainan*, so the region can support Melbourne, who have a good group, but all subspecies to be considered).

The initial indications from ISIS and members of C.B.S.G. suggest that obtaining a viable population of a known subspecies will be very difficult or even impossible.

Recommendations:

- Animals within the region not be transferred out until known subspecies stock can be obtained.

  We will then keep the option of managing them as a hybrid population, still achieving the majority of our aims with this *Cebid*.

- Karyotype Squirrel Monkeys with a high probability of being a pure subspecies as soon as possible.

- If the region have to go with hybrids and Melbourne's are confirmed *bolivainan* they should work with other zoos with this sub species.

Anyone who has any ideas on possible locations for a founder population of a subspecies of Squirrel Monkey please contact me.

Appendix 3: Capuchin Report - Peter West

Compiled By Peter West
Auckland Zoo

Capuchin monkeys are held by five major zoos and several private zoo's within the region.

The majority of animals are hybrid between both subspecies and species, with a good number of these having a high resemblance to *Cebus apella apella*.

Because of their low conservation status, that only 2, possibly 3 zoos wish to hold this species for display, and the difficulty in placing surplus animals it is felt that pure subspecies stock should not be obtained for the region and that zoos wishing to keep capuchins should work together at a very low level.

Perth Zoo has a group of White Fronted Capuchins, *Cebus albifrons pleei* and should work with other zoos that hold this subspecies or relocate them where they can be of some value.

Appendix 4: Spider Monkey Report - Peter West

Compiled By Peter West
Auckland Zoo

Amanda Howie, of Orana Park, is working on the regional plan for *Ateles geoffroyi vellerosus*, so animals that are thought to be of this subspecies are not included in this report.

Within the region there are 5 major zoos and several private zoos that hold 37 possible *Ateles geoffroyi geoffroyi.* There are a further 36 animals that can not be included in a management plan, e.g. they are sterilized, hybrids, old age, held in collections not wishing to co-operate.

With confirmed Karyotyping we will be in a more realistic position to decide on a management strategy for the subspecies.

To date there are no known areas of natural habitat that are protected for this subspecies.

The region holds 25% of the global captive population (according to the 1991 ISIS report), so there is a responsibility to maintain this subspecies as viable as possible.

Once the zoo's wishing to be involved have shown commitment and a S.M.P. established with Karyotyped animals, I feel this subspecies will need a very low level of management.

Recommendations

- Karyotype *Ateles* whenever possible. i.e. if an animal has to be restrained, take samples.
- Until Karyotyping can be completed, work with visual identification of animals.
- Known hybrids should be placed in a non-breeding situation e.g. sterilisation, single sex groups.
- Known pure subspecies that are not in our regional plan should be relocated where they will be of value i.e. to other collections working with that subspecies.
- All transfers or imported animals going into breeding situations should be checked for subspecies status.
- Taronga Zoo - wish to display a group of 5 old females, which with natural attrition will lead to this species being phased out of their collection. They also wish to transfer 2 young females into a breeding situation, possibly Wellington Zoo or Ti Point Zoo.
- Melbourne Zoo - hold a presently a mixed group and allow natural attrition or transfer as non-breeding group, possibly to Adelaide Zoo. Then use resources for known *Ateles geoffroyi geoffroyi.*
- Adelaide Zoo - have spaces for 6 animals in non-breeding group, possibly Melbourne or Wellington hybrids.

- Wellington Zoo - transfer hybrid stock to non-breeding situation, possibly Adelaide or Puaki Zoo. Keep 2 females (M21 & M22) and any others that are probably *A.g.g.*, get females 840034 and 870016 from Taronga and a male, preferably unrelated to animals in the region, otherwise Auckland could provide.

- Auckland Zoo - introduce new genes, probably an unrelated male.

- Ti Point Zoo - have 2.2.0 animals on loan from Auckland and have a long term commitment to this subspecies. They would be interested in obtaining the 2 females from Taronga.

Appendix 5: Macaque Report - Reg Gates

RE: SPECIES OF SULAWESI MACAQUE FOR REGION

FROM: REG GATES, SECTION KEEPER, PRIMATES, PERTH ZOO.

January 23 92.

Most authorities agree that there are seven species of Macaca extant on Sulawesi, although Groves (1980) considered some to be subspecies. For this report they will be identified as:

M. nigra
M. nigrescens
M. hecki
M. tonkeana
M. ochreata
M. maura
M. brunnescens

SUMMARY OF IN SITU THREAT STATUS.

1. Groves,C. Speciation in Macaca: The view from Sulawesi (1980)

   'It is the situation of M.n.nigra which probably needs watching most closely. It's habitat within Minahasa is reduced to a few isolated pockets; not only have coconut plantations replaced most of the natural vegetation, but an additional problem exists in that the indigenous population is largely Christian, and lacking the Moslem food taboos, eats anything that moves, including monkeys.'

2. Sugardjito,J., et.al. Population survey of Macaques in Northern Sulawesi (1989).

   'We believe that M.nigra is particularly vulnerable. If it is indeed a separate species..... as we believe it to be from our own ecological observation, it is in a precarious position.'

3. Roland Wirth, IUCN-SSC. Pers. comm.

   'Macaca nigra has recently been of much concern. One recent estimate has been of just 3,000 animals surviving in the wild. This, of course, is (quite fortunately) the most common of the Sulawesi Macaques in captivity,..... This is a taxon in need of captive breeding and attempts for a co-ordinated breeding programme are being discussed.'
   He also suggested that Dr Sugardjito be contacted regarding the status of M.Hecki. Unfortuanely his reply did not provide any additional information.

4. GLOBAL CAPTIVE ACTION PLAN FOR PRIMATES, IUCN,1991.

   a. No recommendations for captive programmes:
      M.nigrescens, M.ochreata, M.tonkeana, M.hecki.

   b. Threat Status: ENDANGERED.
      M.maura, M.nigra, M.hecki.

p2. Recommendation to Primate T.A.G.

c. CAPTIVE PRIORITIES:
M.nigra - 90%/100 years I
M.maura - 90%/100 years II
M.brunnescens - Nucleus II

CAPTIVE POPULATION:

ISIS and IZY lists indicate a substantial number (>100) of M.nigra, followed by M.tonkeana. Numbers for the other five species are negligible.
Within the region only Perth holds 3.2.0 M.nigra and 2.1.0 M.tonkeana.

HELD IN S.E. ASIAN ZOOS:

M.nigra - Jakarta, Surabaya, Hong Kong, Singapore.
M.maura - Surabaya.
M.hecki - Jakarta
M.ochreata - Jakarta
M.brunnescens - Jakarta
M.tonkeana - Jakarta

Based on the information available for Sulawesi Macaques regarding conservation status and availability of captive stock, I recommend that the region assign priority to Macaca nigra.

1A

Now to Indonesian macaques: Macaca nigra (the Celebes crested ape) has recently been of much concern. One recent estimate has been of just some 3,000 animals surviving in the wild. This, of course, is (quite fortunately) the most common of the Sulawesi macaques in captivity, though there may be a problem of tracing back the lineage and relationship of many captive animals. But in any case, this is a taxon in need of captive breeding and attempts for a coordinated breeding programme are being discussed. The fact that such disturbingly low population figures for M. nigra have surfaced is one reason why, for example, the Jersey Wildlife Preservation Trust has recently built a large enclosure for Celebes crested apes and is now paying more attention to the species.

Another one, which may even be more threatened is Heck's macaque Macaca hecki. When Michael Riffel and I met Dr. Sugardjito in Jakarta least year, he told us that hecki may well be extinct in less than five years. Because

he had little time and we had other topics to discuss at that time, we didn't ask details and, therefore, I can't tell on what facts Dr. Sugardjito bases his pessimistic statement. The only M. hecki in captivity which I am aware of are some five animals (breeding) in Jakarta zoo. You may like to contact Dr. Sugardjito (presently c/o WWF - US, 1250-24th Street, N. W., Washington, DC 20037, U. S. A. / Fax + 202 - 293 92 11), though I don't know if he is a reliable correspondent. If Dr. Sugardjito's assessment of the M. hecki situation is anywhere near correct that this animal is clearly in much more trouble than M. nigra (not least because there are numerous nigra in captivity and several zoo people have recently become aware of how important their groups of this species are.

Finally you may also like to assess how feasible it would be to become involved with one of the two Macaca pagensis subspecies from the Mentawais. The two are highly distinct from each other by the way. Bukkitinggi Zoo in Sumatra (a fairly awful place, by the way) has both now, so I understand, and is certainly breeding one form. The person to discuss this would be Dr. Richard Tenaza (University of the Pacific, 3601 Pacific Avenue, Stockton, California 95211, U. S. A.). As you surely know, Richard is the leading expert on Mentawai primates. Richard has recently succeeded in convincing one US-zoo (I think, Fort Worth) to give major financial support to primate conservation in the Mentawais. If you contact him I am sure he will try to get Perth zoo's support as well. While I agree that the unique and endangered primates of the Mentawais need all possible support which they can get, I want also point to the fact, that support for a few 'high-profile' projects should not submerge everything else. So while on the one hand I would, of course, be delighted if many more zoos would support Richard's clearly urgent project, I am also concerned that some main projects in Indonesia (i. e. Mentawais / Ujung Kulon and the Javan rhino / Bali mynah) may receive all attention and everything else in this biological megadiversity country is forgotten.

M. t. tonkeana has an extremely wide distribution in the least populated and most inaccessible parts of Sulawesi. It does not therefore seem to be in any particular danger at the moment. (The same may hold for *M. ochreata*.)

M. t. heckl and *M. n. nigrescens* live in areas which are at present fairly inaccessible as they are mountainous—extremely precipitous, in fact—and thickly forested. But the rapidly increasing population of indigenous peoples, together with the influx of transmigrants, is steadily eroding the forests. Particularly worrying today is shifting cultivation. This has been practiced since time immemorial in mountainous country in Sulawesi, and is the most reasonable type of agriculture in such a habitat, so long as populations are low. But the ever-larger populations nowadays have meant a shortening of the shifting cycle, with consequent soil erosion, meaning that the forest will take much longer to re-establish itself, or not at all. The problem is much more acute in the Gorontalo region, where hill erosion is sometimes very serious, than in the mountains near Palu, where the human population is still low, and where shifting cultivators can be seen to have employed soil conservation practices such as the crossways laying of felled tree-trunks. The Forestry Department at Gorontalo is well aware of the problem, but unless the whole human population can be enticed down to the lowlands and valleys, there is little enough that can be done.

A further problem is forestry itself. It is probable that selective logging is less detrimental to macaques than to much other wildlife, but the scandal of uncontrolled timber-cutting, which goes on even in wildlife reserves in Indonesia, is bound to have its effect even on macaques.

The habitat of *M. maura* has probably been fragmented for a long time by the inroads of a human population that has always been denser than elsewhere on the island. Although it survives well on the tops and sides of limestone blocks in areas whose valleys are fully cultivated, its status needs watching and cannot be said to be secure.

It is the situation of *M. n. nigra* which probably needs watching most closely. Its habitat within Minahasa is reduced to a few isolated pockets; not only have coconut plantations replaced most of the natural vegetation, but an additional problem exists in that the indigenous population is largely Christian, and lacking the Moslem food taboos, eats anything that moves, including monkeys. For an animal protected by law (the Black or Crested Celebes Macaque; *Cynopithecus niger* is listed as No. 42 on the List of Protected Animals and Birds in Indonesia), this cannot be tolerated, nor indeed can their capture for pets in villages.

In most villages there is at least one monkey, usually young, held as a "pet" by somebody. Usually such an animal is unmercifully teased by children, sometimes neglected or treated roughly by its owners, and in these cases it ends up a pitiful, cowed wreck of an animal, which screeches in fear every time it is approached. Abused and underfed, it does not long survive capture; on many occasions I would be taken to see such an animal only to be told, "sudah mati" (it has now died). They are caught generally be means of baited cage-traps, taking advantage of the crop-raiding habits of macaques; on one occasion, to my horror, an infant was captured in my presence by terrifying a troop until its mother dropped it. The captive animal is invariably tied to a post, underneath

the houses (which among such peoples as the Bugis and Kaeli are built on stilts) or in the yard; the rope or chain is tied round the monkey's waist or, on occasion, round its neck. Most monkeys do not live long enough to grow much, but one monkey which had, against all odds, survived to maturity under such conditions, was seen in the village of Watusampung, near Donggala. It had a bicycle chain around its waist, which, apparently, had not been loosened since its capture as a youngster, and now bit deeply into its belly and spine, so that its hindlegs were paralyzed and it remained fixed in a sitting position, feebly grimacing and shuffling away on its bottom when teased, bleeding as the chain gouged further into the deep channel around its body.

Happily such spectacles were rare, and merciful death intervenes in most instances. A few cases—all too few, alas—offered a welcome contrast (see Fig. 5-11). Some monkeys were well cared-for, showed affection for their owners (who prevented children from teasing them), and had reached maturity and even considerable age because of it. One such, in Dumati, near Gorontalo, was stated by neighbors to have been in captivity for 15 years.

Even in these cases, however, the monkey is on its own, with no companionship of its own kind so that its genes are lost to the wild gene-pool. The only pet monkeys I saw which were not condemned to a solitary existence were a pair kept by a mining company in Gorontalo, and a pair housed on the common at Donggala. Whether this is any threat to the continued existence of the local wild population is doubtful, but at least in Sulawesi Utara it is illegal, as *"Cynopithecus niger"* appears on the list of protected species in Indonesia. The laws are not enforced, however, and probably are not even known to most people. It is clear that the future of wildlife conservation in Indonesia must depend on a massive campaign of public information.

It is difficult to enforce the law in remote areas, but it seems doubtful whether most people are even aware that there is such a law.

In general the following points have to be made:

1. The activities of shifting cultivators and lumber companies must be watched closely.

2. Transmigrants must be directed *away* from reserves and conservation areas.

3. Selling monkeys for food, and catching them for pets, must be stopped, as in north Sulawesi, at least, this is illegal. All species of Sulawesi macaques should be added to the list of protected animals in order to regularize the situation over the island.

4. More funds must be channeled into wildlife conservation. It is probable that the Wildlife Conservation section of the Forestry Department in Indonesia is now better organized than at any time in the past, but it is starved of money and lacks political clout. The enthusiastic, highly motivated individuals who often head the provincial sections are untrained, and not

assisted by biologically aware personnel. The existing Nature Reserves (Cagar Alam) and Game Sanctuaries (Suaka Margasatwa) are mostly too small to be effective, although there are quite a number of them, and new ones are declared each year. They have too few rangers, and there is no machinery to prosecute violators, who for example, hunt anoas in many of the reserves with impunity.

5. The activities of timber companies must be curtailed. This has been said over and over again, but it needs to be emphasized. The destructive effects on wildlife apart, huge sums of money accrue to a few individuals at little benefit to the Indonesian people as a whole.

SUMMARY

1. The history of classification of the monkeys of Sulawesi is briefly described.
2. Geological, climatic and floristic factors bearing on their taxonomy and evolution are noted.
3. Results of a field survey made over 2½ months in 1975 are reported:
   a. *Macaca maura* and *M. tonkeana* are marginally sympatric in the Maiwa region, and are valid species.
   b. *M. hecki* intergrades with *M. tonkeana*, and so is only subspecifically distinct.
   c. *M. nigrescens* appears to intergrade with *M. nigra*, so is only subspecifically distinct from it.
   d. *M. nigrescens* and *M. hecki* appear to approach each other's ranges without interbreeding, so are specifically distinct.
4. Brief remarks are made on ecology, behavior, evolution and conservation.

ACKNOWLEDGMENTS

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Appendix 6: Baboon Report - Glenn Sullivan

RECOMMENDATIONS FOR BABOON TAXA MARCH 1992 - GLENN SULLIVAN - 1992

In this report I will outline options for the region regarding the Baboon species with respect to each institutions holding capacity building and potential. The following species may only that and should be discussed further.

In brief I will describe each species in terms of:

1. Known status (wild and captive)
2. Recommended options

Mandrill (Papio Sphinx)
1. Status - Wild
IUCN categorises the Mandrill as vulnerable. Population details are very approximately with numbers between 2,000 - 5,000. This is mainly due to the difficulty in approaching this species in the wild. It is threatened by hunting, habitat encroachment, with little or no protection in proclaimed national parks.

- Captivity
At present there is no studbook for Mandrill therefore assessing the population of Mandrills is difficult. From the ISIS report there is 111.162.9 from 60 institutions from International Zoo Year book another 19 institutions claim to hold the species.

2. Recommendations
Melb. - To ascertain status of hybrid collection until certain restrict breeding. Hopefully status known by December 1992.

- Acquire new stock. Unrelated to present regional bloodlines. Maintain to holding capacity.

Perth - Hold present individuals and possibly expand on group size

- Tubal ligate female if not wanting larger group mid 1992

- Consider keeping single sex group if capacity constraints are critical.

Syd. - Continue maintaining all male group.

- Acquire loan individuals due to unrelated Topeka stock for use in breeding programme and for circulation throughout region.

- Capacity will increase with designs afoot for new exhibit.

Adel - Maintain present individuals

- Interest in kooping 1.2 group. Might consider single sex group

- Hold non breeding group

- Discontinue breeding if smaller group wanted - mid 1992.

Auck. - Holds Chacma Baboon. After phase out may consider holding breeding group single sex or non breeding group

- If breeding group wanted acquire new bloodlines due to relatedness of present regional stock.

At present Mandrills are held in four institutions with a possibility of being held in five. I believe this species can be maintained within region. Availability of further bloodlines from overseas institutions is possible with 79 zoos known to have the species in collection. I also think that management of breeding programmes is vital due to the species "prolific breeding" cycles so that surplus are manageable. As well some zoos will have to be prepared to hold single sex or non breeding groups.

Drill (Papio leucophaeus)
Status - Wild
The Drill has been classified as endangered by the IUCN. The Drills range has been reduced to the Cameroon region.

Its predicament is similar to that of its more southern relation. Population figures are unknown due to the species elusiveness.

Also the Drill has been described as having two sub species in some texts.

- Captivity
Presently there is a studbook for Drill. Population data from 1988 has a register of 22.32 in collections.

Recommendations
Due to the small population in captivity I believe it would be quite difficult to acquire enough individuals to form viable breeding groups. Most of the existing groups range from 10 to the largest being 2.4. For the interim I think that Drills in this region are not viable. Although in the future for interested institutions and as long as the captive population

continues to increase I see it possible for the region to maintain Drill as well.

Hamadryas (Papio Hamadryas)
Status - Wild
The population of the Hamadryas ranges between 10,000 and 20,000., Like its forest relatives this baboon species has had to contend with habitat encroachment and poaching. The IUCN has classified the Hamadryas as vulnerable.

- Captivity
Again there is no studbook for this species so real population numbers are very approximate. From the ISIS report there is 100.145.22 from 25 zoos. International Zoo Year Book states that 60 zoos hold the species. In the Australasian region four zoos.

Recommendations
Melb. - Maintain present individuals either breed to requirement or hold non breeding group

- Consider deletion of species to provide space for gelada

- Acquire new blood lines

Adel. - If group moved to Monarto consider spaces be used for gelada

- Hold bachelor group
- Hold Non breeding group
- Also acquire new bloodlines (work in conjunction with other Zoos importing).

Well. - Consider deleting species due to circumstances, e.g. (nutty male, aged females, 1 female reproducing. With spaces consider gelada as a replacement.

- If retaining, keep non breeding group

- Hold bachelor group

- Acquire younger animals and breed to requirement

Perth - Wish to phase out.

- If Wellington retains species move Perth females to Wellington depending on relatedness.

- Consider holding gelada in place of Hamadryas

Auck. - Possibly hold in the future.

At present within the region Hamadryas are held in four zoos, Of which Perth wishes to delete the species. At the same time Monarto and Auckland can possibly hold in the future. As well as this there is one other institution, e.g. Royal Prince Alfred Hospital Sydney presently holding Hamadryas and should be considered and approached to see what contribution can be made. In all I believe it is viable to maintain Hamadryas for the present time. If zoos in the future wish to delete Gelada can be considered as an alternative. Also Hamadryas can be kept within region if Zoos wish and also maintain Gelada at the same time.

Guinea Baboon (Papio Papio)
Adelaide Zoo is the only zoo to maintain this species. No other interest on a regional basis. I believe it should be deleted from region.

If not already done I would be interested in trying to place these animals in institutions already known to hold this species.

Chacma Baboon (Papio Ursinus)
Auckland is the only zoo to maintain this species. Again, continue to phase out I would also be interested in helping place these animals.

- Once phase out is complete consider holding hamadryas group (breeding or non breeding).

- Also consider holding gelada (breeding or non breeding)

Gelada - Status - Wild
As listed by the IUCN the Gelada is considered highly vulnerable. The species is found in the Ethiopian Highlands isolated in two national parks. Presently the species faces threat in that protection within the parks is of little value. It is likely that this species will be reclassified to Endangered by the Year 2000 if no new conservation measures are taken.

- Captivity

In 1990 a Studbook keeper was appointed. At present 14 zoos hold the species with a total of 124 individuals, 46.78.

Recommendations

- Need to ascertain which zoos are interested

- Which Zoos could initiate transaction within short period

- Which zoos to breed/non breed

I believe Gelada can be maintained in region providing appropriate management occurs and consultation with Studbook

keeper. I would be interested in helping in acquisition of stocks for region.

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Achim Johann
Regional information supplied by Melbourne Perth Adelaide and Sydney

Appendix 7: Guenon Report - Paul Davies

Paul Davies has been working on recommendations for Guenon species. Input has been sought from Dr. Miranda Stevenson, the studbook keeper for the Diana Monkey. To date, Paul has been unable to "track down" much in the way of recommendations from other regions. Paul hopes to have a more details report ready for tabling at the Currumbin Conference.

Appendix 8: Black and White Colobus report - Ernst Weiher

TO: Convenor, Primate TAG

FROM: Curator of Primates (Melbourne Zoo)

SUBJECT: Recommendations for Black and White Colobus

DATE: 14 February, 1992

As you are aware there is a considerable amount of uncertainty as to whether Perth Zoo and Melbourne Zoo have separate sub-species of Colobus or not.

Discussions with the staff at Melbourne Zoo, Reg Gates and, my own conclusion after comparing photos from Perth Zoo's animals are that the only sure-way is to karyotype both groups.

Perth Zoo and Melbourne Zoo have assumed the sub-species in their collection by information provided by the original acquisition source. The accuracy of this information is also difficult to prove.

My recommendations are:

1. To karyotype both groups to determine accurate sub-speciation

2. If Melbourne Zoo animals are of the sub-species C. quereza guereza we should discontinue with the sub-species and move toward the acquisition of the sub-species C. quereza kikugensis. The reason for this move is that there are insufficient animals of C. quereza guereza in captivity to establish a viable long-term breeding program. Only two institutions are listed in the ISIS Publication (Melbourne and one other) who hold C. quereza guereza (13 animals in total). The sub-species C. quereza kikugensis is being held by many zoos in considerable numbers (81.153.18 animals). Even if Perth and Melbourne have C.guereza guereza it would be wise to change to C. g. kikugensis.

Re some of the other points:-

I feel that only one TAG meeting a year is required, this should coincide with the A.R.A.Z.P.A./ASZK Conference.

We have to work toward the recommendations we agreed on during the previous meetings, this will take time. The Convenor should, however, have the opportunity to visit the various zoos to discuss any problems. If too many problems arise the Convenor may call everyone together for additional discussions.

Re Objectives of the Primate TAG:-

We are working along the same objectives. The only problem is that institutional interests can greatly affect these objectives.

Ernst Weiher

E. WEIHER

P.T.O.

After Ernst Weiher submitted his report, additional information relating to identifying subspecies of Black and White Colobus was provided by SSP Co-ordinator Cathi Lehn. This material suggests that Melbourne's animals do not belong to the subspecies *guereza*, although this is yet to be confirmed. Perth maintains that their stocks are of the subspecies *kikuyensis*, but acknowledge that purity of stock can only be confirmed by DNA finger-printing.

Enquiries have been made as to whether ancestors of Melbourne Zoo stock have been DNA finger-printed, if not, negotiations will take place to analyse Melbourne stock.

Reports from Cathi Lehn can be forwarded on request

Amanda Embury

Appendix 9: Leaf-eating Monkey Report - Bruce Campbell

Bruce Campbell from Adelaide Zoo has only recently returned from Vietnam. Unfortunately Bruce has not had time to prepare a report. Nothing "concrete" has been settled, but it appears that a program involving both in situ and ex situ conservation of the Francois Leaf Monkey will be developed.

Further review of leaf-eating monkeys held within the region, and the need to expand population of threatened leaf monkeys needs to take place. Input from the CBSG has been sought, and hopefully recommendations can be developed without delay.

Appendix 10: Gibbon Report - Graeme Strachan

10/1/92

WHITE-CHEEKED GIBBON SURVEY

HYLOBATES CONCOLOR LEUCOGENYS

To date a survey has been conducted to acquire information and Taxon reports on white-cheeked gibbons held in Australasian Zoos and numbers that may be held in the near future. At present, this species is kept at Perth, Melbourne and Wellington Zoos. All adult breeding pairs are wild born making them genetically valuable animals. Those at Perth are known to have originally come from Laos while the breeding female at Melbourne is from Vietnam. The male at Melbourne is wild born but his country of origin is unknown.

Numbers are:

Perth Zoo: 1.1.1 including a 6yr old offspring

Melbourne Zoo: 2.1 including a 1yr old male offspring

Wellington Zoo: 1.1 - a 4yr old male from ~~Perth~~ Melbourne
- a 10yr old female from ~~Melbourne~~ Perth

All major Australasian Zoos were surveyed with regard to numbers of this species that may be held in the near future. We are still awaiting replies from Taronga and Adelaide Zoos. Melbourne and Western Plains Zoos may be able to hold more pairs of white-cheeks in spaces that are currently occupied by white-handed gibbons. Auckland Zoo is to consider holding white-cheeks.

Perth Zoo would like to import another pair of white-cheeks and would support maintaining one of the other two subspecies.

If the spaces become available for more pairs of this gibbon throughout Australasia, a successful captive breeding programme could take place. However, white-cheeks show a great deal of genetic diversity and Ron Tilson, S.S.P. gibbon co-ordinator suggests there may be five or more distinct subspecies. He has requested hair samples from individual gibbons in this region for a molecular D.N.A. study.

There are moves towards a global gibbon programme and so there may be a very real possibility of a white-cheeked gibbon re-introduction scheme arising in the years to come. Little field work on the status of this species in Vietnam and Laos has been achieved as the area still appears to politically unstable. A recent elephant survey in Vietnam shows that this country has 87 native reserves but only 10% of it's undisturbed primary forest still remains today.
Vietnam still continues to lose some 200,000ha of forest annually to slash and burn agriculture, forest fires and fuelwood collection.

Coupled with a breeding programme for white-cheeked gibbons, Australasian Zoos maybe able to provide assistance to nature reserves in this part of the world and for surveys of the status of wild stock. Perth Zoo has already provided assistance in this respect with regard to silvery gibbons in Java.

Graeme Strachan

Nominated species co-ordinator - white-cheeked gibbons

Appendix 11: Chimpanzee Report - Paul Davies

Introduction/Comments

If breeding is to continue in Australia then two problems must be addressed.

1. That space must be made available for surplus males.

2. That the region is becoming over-populated if breeding continues at the present rate.

1. is self explanatory
2. can be achieved by increasing female birth intervals, and the number of offspring any given female be allowed to have in its lifetime.

Transactions 1992-93

- Perth Zoo	1.1 animals to India
- Taronga Zoo	0.3 animals to Wellington Zoo + 0.2 Melbourne Zoo ???
- Melbourne Zoo	0.3 to Taronga Zoo ???

(Recommendations)

Sydney

Breed to own requirements, extend breeding intervals by use of contraceptives, drugs being trialed.

Melbourne

Transfer 3 females to Sydney and hold two Sydney males + maintain small bachelor group of 3 animals.

Adelaide

Vasectomise breeding male but store sperm for later use due to lack of space and facilities. Group numbers to remain static until changes take place.

Auckland

Breed to own requirements. Remove and store sperm from non-breeding male as unrelated to other stock in the region.

Wellington

New facility in operation can increase group size by introducing new stock. Breeding must be managed and bred to own requirements or to order.

Perth

Deleted from collection.

DUBBO

Provide space for upto six males.

ORANA. PARK.

Provide space for up to six males.

Appendix 12: Items from Conservation Co-ordinator

a) a letter seeking greater co-operation between International Studbook and A.S.M.P. has been drafted for Ingrid Porton, Black and White Ruffed Lemur International Studbook Keeper. (Both Sherri Huntress, Wellington and Heidi Wenk, Melbourne have since been corresponding with Ingrid Porton)

b) a letter seeking greater involvement of region in International studbook for gorillas has been sent to Dr. Kirchshofer.

c) no response yet to letter sent to Japanese authorities discussing development of co-operative breeding program for gorillas.

d) the issue of euthanasia was discussed at the last meeting of SMCC, suggested that development of euthanasia policy may be something for ARAZPA to work on rather than SMCC. Barbara Porter has developed a series of recommendations which have been circulated to SMCC members, and will be discussed at the next SMCC meeting. Barbara believes that her recommendations will be accepted.

e) A training manual (following lines of SSP Co-ordinator manual) has been developed for Species Co-ordinators. The draft will be ready for Currumbin.

Appendix 13: Report on Conferences

"Understanding Chimpanzees: Diversity and Survival"
Conference held in Chicago, December 1991

Summary prepared by Debby Cox

In 1986, the inaugural meeting of Chimpanzee researchers was hosted by the Chicago Academy of Sciences. The second being held 5 years later, again hosted by the Chicago Academy of Sciences. Over 300 people registered for this symposium with 60 papers and over 20 posters being presented.

Over the past 5 years new research on Chimpanzees and Bonobos has exposed evidence of remarkable social and ecological cognition in Chimpanzees. Diverse behavioural, traditions, within and across the species revealing a variation that looks richer than first thought. There has been limited success in protecting these species, though legislation and sanctuaries (the U.S. upgraded Chimpanzees from threatened to endangered in the wild, this stopped the use of wild caught Chimpanzees in biomedical research. In the U.S.A. alone, over 2,000 Chimps are held in research institutions.)

The most startling news in regards to conservation comes from Margery Oldfield, her paper titled "The impact of poaching for live trade on the West African Chimpanzee populations". MArgery has developed a Chimpanzee breeding cycle dynamic model using the CPUE??? analysis of population extinction rates - 5 year cycles. She stated that "if 100 Chimpanzees are caught per year, they will be extinct in 100 years. Within 30-50 years the females populations will be reduced, by 70 years there will be no females left".

Another major problem facing conservation efforts is the difficulty of dealing with so many different countries:- Chimpanzees once occupied 25 African countries, they are now extinct in 4 of these, with 5 others so depleted that exterminations expected soon, and another 5 contain small dispersed remnants that the populations are severely at risk. Only 10 nations still contain 1,000 or more Chimpanzees.

Several sanctuaries have now been established to take in orphan chimpanzees confiscated from poachers.

On a brighter note, the most surprising thing at the conference was the large Japanese Researchers contingent. Jane Goodall has been studying at Gombe for 30 years, whilst Nishida has been at Mahale for 25 years. The Japanese have research stations in several African countries.

There appears to be greater genetic diversity among Chimpanzees than humans. Other areas of diversity was the stone tool use in T'wai, Tai and Bossou, so dar not seen in other populations. The total lack of insect tool use by Kibale could be associated with the high quality of food sources. The discovery of populations displaying leaf and grooming behaviour, and the variation in postures during grooming were also considered.

PRIMATE
GLOBAL CAPTIVE ACTION PLAN
(GCAP)

SEPTEMBER 1992

SECTION 13

GLOSSARY OF GLOBAL/REGIONAL PROGRAMS

GLOSSARY OF GLOBAL & REGIONAL CAPTIVE STRATEGIC PROGRAMS

CAMP A Conservation Assessment and Management Plan (CAMP):

(1) reviews the wild and captive status of each taxon in a defined broad group of taxa (e.g. an order, family, subfamily, community);
(2) assesses the degree of threat for each taxon according to the Mace/Lande categories;
(3) recommends intensive management and information collection action to mitigate threat: PHVAs, *in situ* management, conservation oriented research (surveys, taxonomy, etc.) captive breeding, genome banking.

CAMPs are developed as collaborative efforts of the Captive Breeding Specialist Group and the other Specialist Groups of the SSC and ICBP, wildlife agencies, and the Regional Captive Programs.

A CAMP provides:

(1) a resource for the development of IUCN SSC and ICBP Action Plans;
(2) a strategic guide for intensive conservation action;
(3) the first step in the Global Captive Action Plan (GCAP) process.

A CAMP considers multiple taxa.

GCAP A Global Captive Action Plan (GCAP) also considers a broad group of taxa and:

(1) recommends:
  (A) which taxa in captivity should remain there;
  (B) which taxa in captivity need not be maintained there for conservation reasons;
  (C) which taxa not yet in captivity should be there to assist conservation efforts;
(2) proposes a level of captive breeding program in terms of genetic and demographic objectives which translate into recommendations about global captive target populations;
(3) suggests how responsibilities for captive program might be distributed among the Regional Programs, i.e. this function translates into recommendations for regional captive target populations;
(4) identifies priorities for technology transfer to and for financial and other support for *in situ* conservation.

GCAPs are developed by a Working Group which consists of representatives of the Regional Programs, especially the Chairs and selected members of the Taxon Advisory Groups (TAGs), with advice and facilitation from the IUCN SSC Captive Breeding Specialist Group (CBSG). The GCAP Working Group will also normally include representatives of the range-country wildlife community and scientists who can resolve problems of systematics. A CAMP can provide a first step of the GCAP process. The GCAP is developed further in an interactive and iterative process involving the Regional Programs and their own Regional Strategic Collection Plans (RSCPs). The GCAP is a dynamic process and mechanism that enables the Regional Programs to coordinate development of their Regional Strategic Collection Plans (RSCPs) in response to the conservation needs of taxa (as identified initially by the CAMP) but also to the circumstances and interests of the regions. Hence the GCAP is a facilitation and forum for the regional programs to integrate themselves into the best global conservation effort possible.

A GCAP considers multiple taxa.

RSCP A Regional Strategic Collection Plan (RSCP) is a set of recommendations developed by a Regional Taxon Advisory Group (TAG) on the taxa in a defined broad group for which Regional Captive Propagation Programs (RCPP) should be developed. An Regional TAG will consider the recommendations of the CAMP and initial GCAP as one factor in preparing the first drafts of the RSCP. However, the RSCP also considers other factors such as the realities of Regional space and resources in the Region as well as other interests the Region may have in maintaining taxa. As stated above, the GCAPs and RSCPs are interactively and iteratively developed in an effort to maximize effectiveness in using captive space and resources for taxa in need of captive programs for their conservation. An extension of the RSCP for defined broad groups of taxa is an overall strategic collection plan for all organisms to be maintained by institutions participating in the Regional Program. The Australasian Region has already embarged on this kind of overall strategic collection plan.

An RSCP considers multiple taxa.

ICP An Institutional Collection Plan is a strategic design for the taxa that a particular zoo, aquarium, or other captive facility will maintain and propagate. Ideally, an ICP will develop its collection to contribute as much as possible to RSCPs and ultimately GCAPs.

TAG A Taxon Advisory Group is a committee which is formed within the organized Regions of the Zoo/Aquarium World and which consists of zoo professionals and other experts. A primary function of a TAG is to formulate and implement Regional Strategic Collection Plans and by extension development of the GCAP. TAGs also recommend priorities for establishment of studbooks, development of Regional Captive Propagation programs, and research priorities.

A TAG considers multiple taxa.

RCPP A Regional Captive Propagation Program (RCPP) is one of the organized collaborative programs within a Region to breed and manage a designated, usually threatened, taxon. Examples include an AAZPA SSP in North America, an EEP in Europe, a JMSP in the U.K., an ASMP in Australasia, an SSCJ in Japan, an IESBP in India, an APP inn Sub-Saharan Africa. Other Regions are initiating similar programs. RCPPs develop Regional Masterplans for propagation and management of the taxon.

An RCPP normally considers a single taxon (e.g. a species).

GASP A Global Animal Survival Plan (GASP) is a program for management and propagation of a single taxon at the international level. A GASP provides the facilitating framework for the Regional Captive Propagation Programs

(1) to adopt global goals, in part by considering CAMP and GCAP recommendations,
(2) to divide responsibility, e.g. especially target population sizes, for achieving the global goals among the Regional Programs.
(3) to arrange interactions, especially animal or germplasm exchanges, among the Regional Breeding Programs toward achieving global and regional goals.

Analogous to the RCPP, a GASP develops a global masterplan to guide propagation and management of the taxon at the international level.

A GASP normally considers a single taxon.

PHVA A Population and Habitat Viability Analysis (PHVA) is an intensive analysis of a particular taxon or one of its populations. PHVA's use computer models:

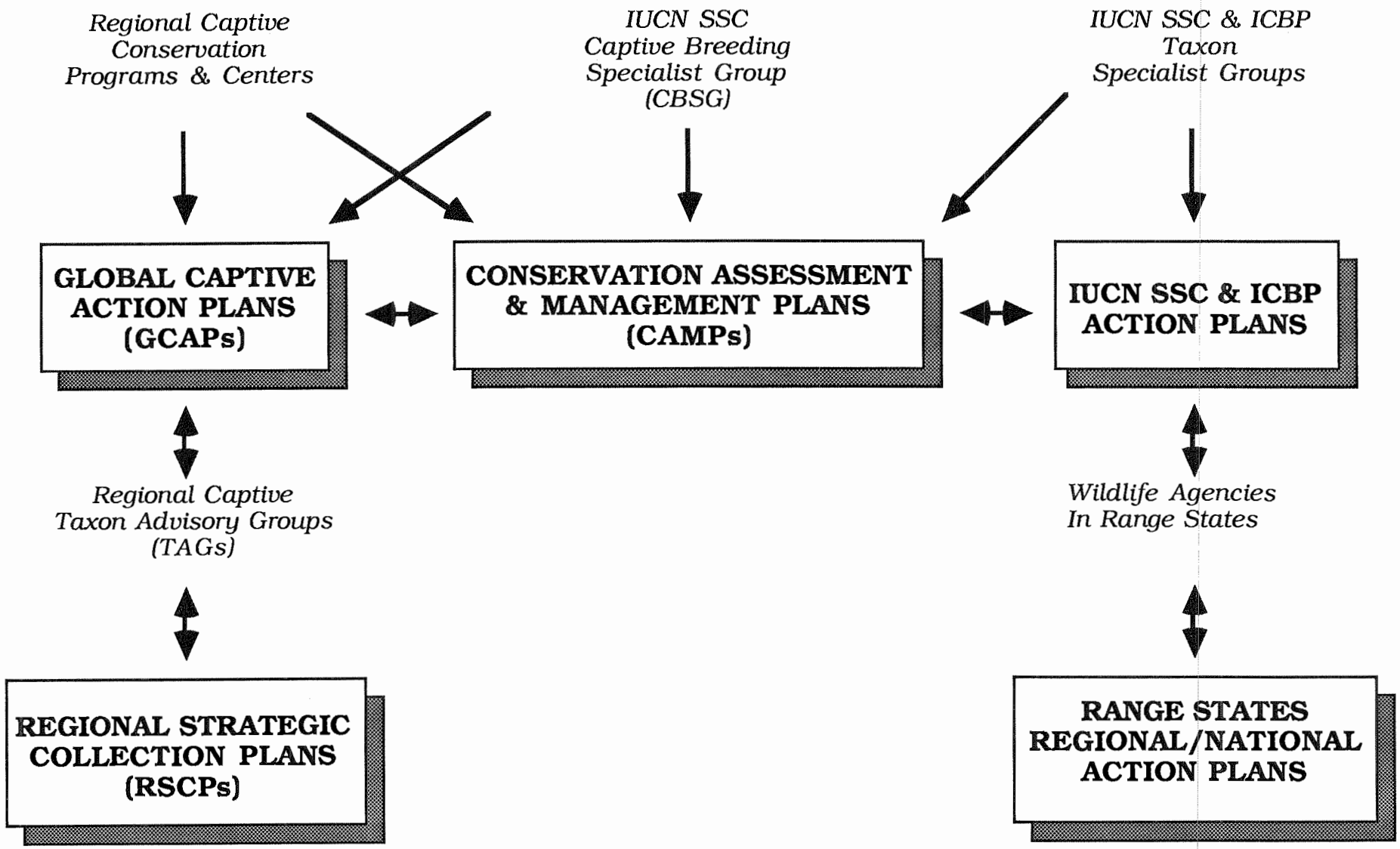
(1) to explore extinction processes that operate on small and often fragmented populations of threatened taxa

(2) to examine the probable consequences for the viability of the population of various management actions or inactions.

The models incorporate information on distributional, demographic, and genetic characteristics of the population and on conditions in the environment to simulate probable fates (especially probability of extinction and loss of genetic variation) under these circumstances. PHVAs use models to evaluate a range of scenarios for the populations under a variety of management (or non-management) regimes. As a result of the different scenarios modelled, it is possible to recommend management actions that maximize the probability of survival or recovery of the population. The management actions may include: establishment, enlargement, or more management of protected areas; poaching control; reintroduction or translocation; sustainable use programs; education efforts; captive breeding.

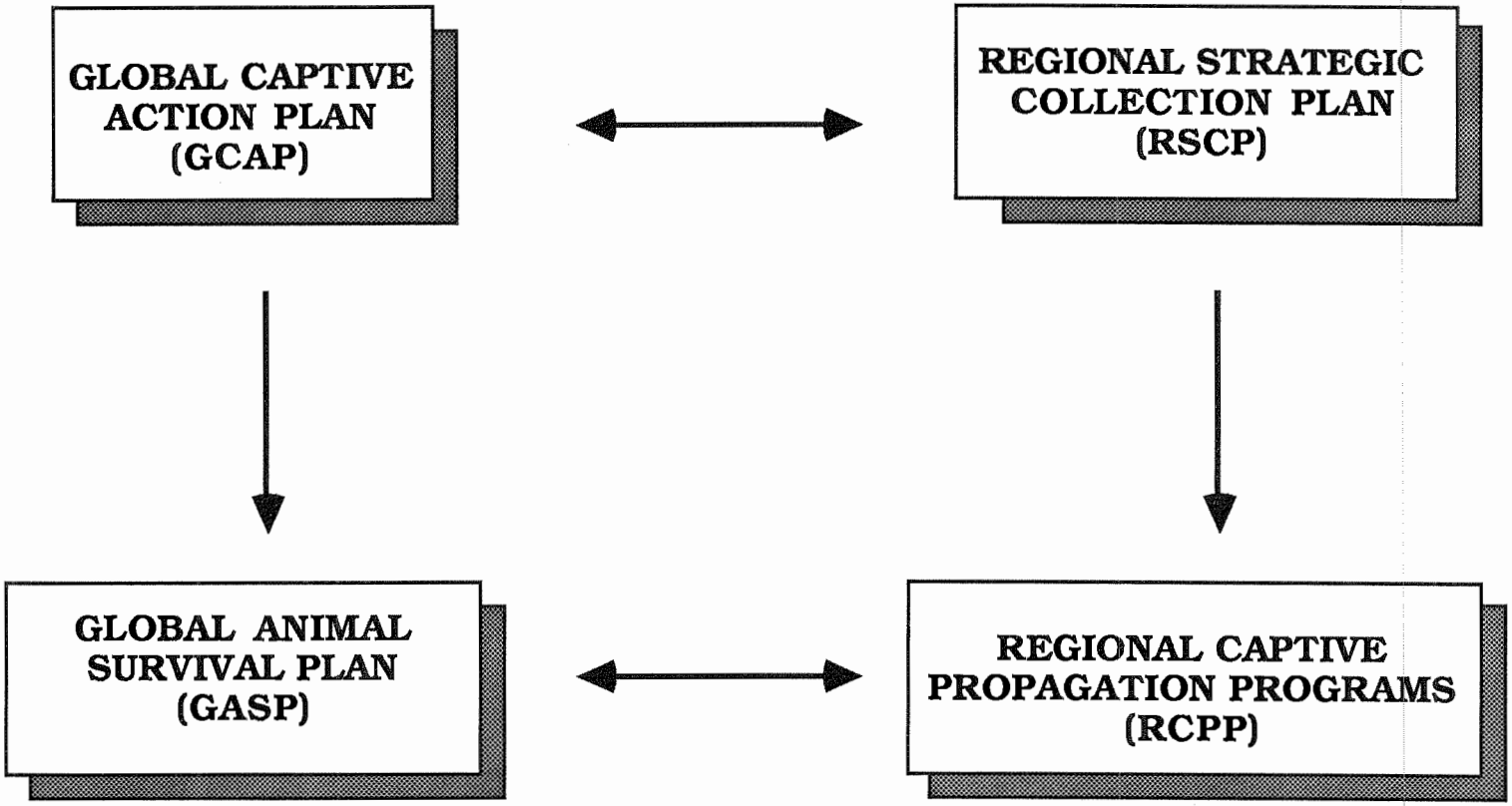
A PHVA normally considers <u>one taxon</u> at a time.

GLOBAL AND REGIONAL STRATEGIC CONSERVATION ACTION PLANS



T.J.F./CBSG
1 August 1992

GLOBAL AND REGIONAL CAPTIVE PROPAGATION PROGRAMS



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SECTION 14

CAMP\GCAP WORKSHOP PARTICIPANTS

PARTICIPANTS IN THE PRIMATE CAMP/GCAP WORKSHOP CBSG OFFICE, MINNESOTA 13-15 MARCH 1991

Russ Mittermeier	Chair, IUCN SSC Primate Specialist Group (PSG)
Ardith Eudey	PSG member; Author, PSG Action Plan for Asia
Bill Konstant	PSG member; Co-author, PSG Action Plan for Americas
John Oates	PSG member; Author, PSG Action Plan for Africa
Tom Struhsaker	PSG member specializing in Africa
Miranda Stevenson	PSG member; CBSG Primate CAMP/GCAP Group Leader
David Anderson	Co-Chair of the CBSG Madagascar Faunal Group
Anne Baker	PSG member; Chair, AAZPA New World Primate TAG
Nate Flesness	Executive Director of ISIS
Fred Koontz	Co-Chair, AAZPA Old World Monkey TAG
Jean-Marc Lernould	PSG member; Director, Mulhouse Zoo, France; EEP
Ingrid Porton	Chair, AAZPA Prosimian TAG
Frank Princee	EEP Executive Office
Dave Ruhter	Co-Chair, AAZPA Old World Monkey TAG
Christian Schmidt	Asst. Director, Zurich Zoo; EEP
Ron Tilson	PSG member; Chair, AAZPA Gibbon TAG
Wendy Turner	Co-Chair, AAZPA Old World Monkey TAG
Tom Foose	Executive Officer, IUCN SSC CBSG
Ulie Seal	Chairman, IUCN SSC CBSG
Jerry Binczik	MN Zoo Dept. of Conservation
Jan Eldridge	IUCN SSC CBSG; USFWS

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SECTION 15

REFERENCES

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