

established for the phenomenon.

### Discussion

Struhsaker and Leland (1980) noted the unusual frequency of affiliation of *P. badius* and *C. angolensis* groups in Magombera, having recorded far less frequent associations among *P. b. tephrosceles* and *Colobus guereza* in Kibale Forest, Uganda. Of 10 encounters in 1977 with *P. badius* in Magombera, 77 % were in association with *C. angolensis* and 44 % with *C. mitis*. Rodgers *et al.* (1979) saw *P. badius* with *C. angolensis* in 50 % of their 20 encounters with *P. badius* and with *C. mitis* in 20 % of their encounters. The frequencies of polyspecific association reported by Rodgers *et al.* are exactly the same as for this study.

Rodgers *et al.* (1979) also observed an overlap in diet of the two colobus species. Both species ate the fruit of *Treculia africana*, and leaves and unripe fruit of *Erythrophleum sauveolens*. *C. angolensis* also ate unripe fruit of *Tetrapleura tetraptera*, and the leaves of *Voacanga lutescens* (also reported by Struhsaker & Leland, 1980), *Cissus populnea* and *Acacia* sp.

As in my study, Rodgers *et al.* (1979) also saw *P. badius* eat young leaves of *T. tetraptera*, *Albezia gummifera*, *Parkia filicoidea*, and *Dialium holtzii*. In addition, they observed *P. badius* feeding on *Saba florida* flowers, *Ochna* sp. leaves, *T. africana* fruit, *E. sauveolens* leaf, petiole and unripe fruit, and *Xylopiya parvifolia* leaves.

Struhsaker and Leland (1980) saw two *P. b. gordonorum* eat *Ochna* sp. young leaves, one individual eating the basal petiole of mature leaves of *P. filicoidea*, and one feeding on fruit of *T. africana*.

Detailed field studies of other forms of *P. badius* have revealed marked differences in social behaviour. More information on the behavioural ecology of *P. b. gordonorum* would assist in determining the reasons for these differences and contribute knowledge on how best to conserve them and their habitat.

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## ACTIVITY BUDGETS OF ANGOLAN COLOBUS *COLOBUS ANGOLENSIS* IN A NATURALISTIC ZOO HABITAT

### Abstract

This brief study at Zoo Atlanta measured the activity patterns of one male and two female Angolan colobus *Colobus angolensis* in a new, naturalistic outdoor exhibit, for comparison with published activity budgets of wild congeners. This provided animal managers with a simple, quantitative index of the effectiveness of this exhibit in promoting species-typical behaviour in these three colobus. Fifty-six hours of data were collected by instantaneous scans at 1 min intervals. The monkeys spent the highest percentage of intervals sitting (52%), followed by feeding (23%) and lying (14%). Maintenance, locomotion, and social behaviour each occurred in fewer than 5% of intervals. Although the study involved only three subjects, and can only be considered suggestive, their activity budgets were similar to those reported for wild *Colobus guereza* and *Colobus polykomos*.

### Introduction

One criterion proposed in evaluations of the psychological well-being of confined primates is the expression of behaviour patterns typical of wild members of the species (Novak & Drewson, 1989). A comparison of the similarity between the activity budgets of wild and captive animals can provide animal managers with a method to assess the effectiveness of zoo exhibit design in promoting psychological well-being.

Here we describe the behaviour patterns of three captive Angolan black-and-white colobus *Colobus angolensis palliatus* after their introduction to a new, naturalistic outdoor enclosure. The purpose of the study was to assess the degree to which the animals exhibited behaviour typical of wild *Colobus* spp. While there have been several brief studies on the ecology of free-ranging *C. angolensis* (Groves, 1973; Moreno-Black & Maples, 1977; Moreno-Black & Bent, 1982; Thomas, 1991; Maisels *et al.*, 1994), a literature search revealed nothing on their activity budgets in the wild or their behaviour in captivity. Instead, studies on wild populations of the closely-related *Colobus guereza* and *Colobus polykomos* were used for comparison with these *C. a. palliatus*.

### Methods

#### Subjects

One male and two female *C. angolensis*, all captive-born and housed together at Lowry Park Zoo, Tampa, Florida, USA, were observed after their transfer to Zoo Atlanta in Georgia. The male (half-

sib) was born 14 February 1992; the non-contracepted, female, full-siblings were born 19 September 1990 and 2 May 1992. The monkeys were introduced to the new, netted exhibit (2,460 m<sup>3</sup>) on 20 May 1995, and occupied it from approximately 1000-1700 h daily. In addition to fabricated trees and vines, live trees, shrubs, and bamboo were established in the exhibit (Table 1).

Table 1: Plants growing in the *Colobus angolensis* exhibit at Zoo Atlanta.

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Leatherleaf viburnum ( <i>Viburnum rhytidophyllum</i> )
Golden bamboo ( <i>Phyllostachys aurea</i> )
Southern magnolia ( <i>Magnolia grandiflora</i> )
Laurel oak ( <i>Quercus laurifolia</i> )
Dwarf bamboo ( <i>Pleioblastus pygmaeus</i> )
Windmill palm ( <i>Trachycarpus fortunei</i> )
Wintergreen barberry ( <i>Berberis julianae</i> )
Bridalwreath spiraea ( <i>Spiraea x Varhouteii</i> )
Hume holly #2 ( <i>Ilex x Attenuata hume</i> #2)

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Each morning, 3 cups of Leafeater Biscuit (Marion Zoological, 13700B Watertower Circle, Plymouth, MN 55441, USA) and 408 g of mixed whole or chunked vegetables (50% yellow vegetable [*e.g.*, sweet potato, winter squash, carrots], 45% green, leafy vegetables and legumes [*e.g.*, green beans, bok choy, collards, broccoli], 5% seasonal [*e.g.*, radish, cucumber]) were scattered on the ground throughout the enclosure (there were no feeding platforms). At night, the *C. angolensis* were housed indoors, where they received another three

Table 2: Ethogram for *C. angolensis* in an exhibit at Zoo Atlanta.

**Lie:** Colobus reclines (prone or supine).

**Sit:** Colobus sits.

**Locomotion:** Colobus walks, runs, climbs, swings or leaps.

**Feed:** Colobus forages, chews food or holds food.

**Maintenance:** Colobus urinates, defecates, scratches or self-grooms.

**Affiliative:** One colobus grooms or plays with another, or one colobus touches another gently; one colobus is groomed or touched by another.

**Agonistic:** One colobus bites, slaps, pushes or pulls another colobus, or is bitten, slapped, pushed or pulled by another.

**Locomotion Interaction:** One colobus approaches (moves within 1 m of another), supplants (individual leaves less than 5 s after another individual approaches) or chases another. One colobus moves away from another, or is approached by or chased by another.

**Vocalise:** Colobus vocalises.

**Other:** Colobus engages in any behavior except those listed above.

**Note:** Behaviours were not mutually exclusive. For example, both Locomotion and Feed were recorded if the colobus was chewing food and walking. However, Lie and Sit were never

recorded with another behavior.

cups of biscuits, 771 g of mixed vegetables and 318 g of mixed whole or chunked fruit (apples or pears, oranges, bananas and grapes).

### Procedure

The study was conducted during 56 h in July 1995. During 1 h observations balanced across hours on exhibit, each animal's behaviour (see ethogram, table 2) and location (arboreal/terrestrial) were recorded during instantaneous scans at 1 min intervals.

### Results

Overall activity budgets are shown in Figure 1. The monkeys were most frequently observed sitting (52%), primarily (86%) off the ground (Fig. 2). Sitting was the predominant behaviour during all hours of the day (Fig. 3), particularly from 1500 to 1700 h, prior to the time they were brought indoors each evening.

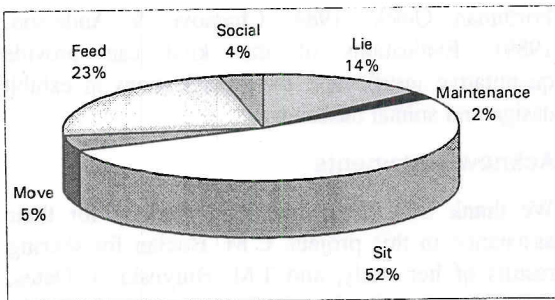


Figure 1. Activity budgets of three *Colobus angolensis* at Zoo Atlanta.

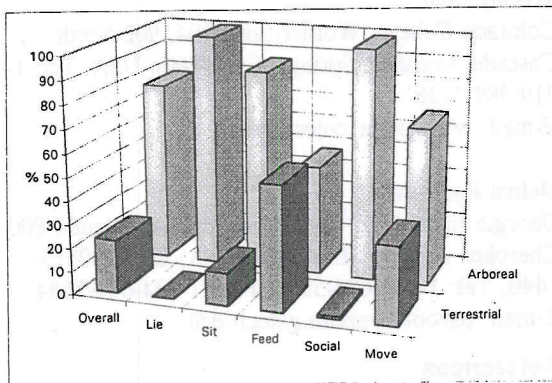


Figure 2. Arboreal and terrestrial distribution of behaviours of three captive *Colobus angolensis* at Zoo Atlanta.

Foraging and Feeding (23%) was the most frequent active behaviour exhibited by these *C. angolensis* (Fig. 1). With respect to the arboreal/terrestrial distribution of this activity, the monkeys fed slightly more frequently on the ground (53% vs 47%), which is where the provisioned food was scattered. Most arboreal foraging was on leaves

and bark of exhibit trees, shrubs and bamboo (Fig. 2). There was a post-release feeding peak from 1000 to 1100 h. The percentage of intervals spent Feeding was fractionally lowest between 1200 and 1300 h; thereafter, it remained fairly constant.

The third most-frequent behaviour observed was Lying (14%). They were always off the ground when recumbent (Fig. 2), either on fabricated rocks or large, artificial branches. The monkeys often lay for long periods between 1100 h (the end of the primary feeding peak) and 1500 h. The percentage of intervals spent Lying was marginally highest between 1200 and 1300 h (Fig. 3).

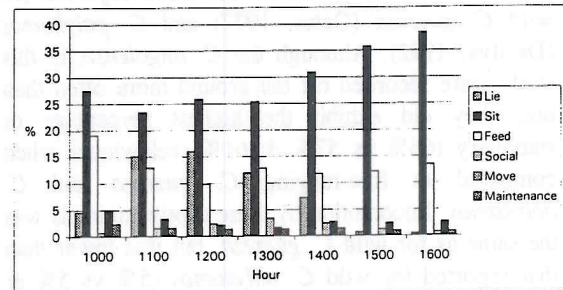


Figure 3. Distribution of behaviours of three captive *Colobus angolensis* at Zoo Atlanta.

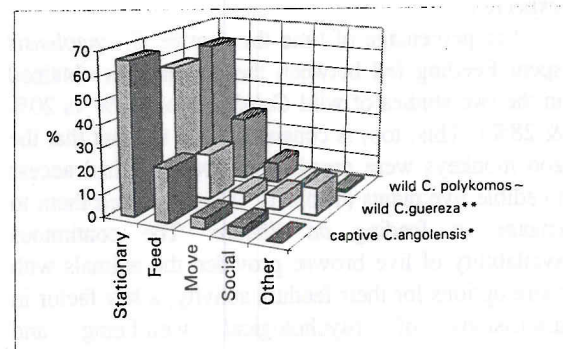


Figure 4. Comparison of activity budgets of captive and wild *Colobus* spp (\* - this study; \*\* - Oates, 1977; ~ - Dasilva, 1992).

Maintenance was recorded during fewer than 5% of intervals (Fig. 1) and decreased slightly over the course of the day (Fig. 3).

Locomotion was the second-most active behaviour, though it also occurred in fewer than 5% of the samples (Fig. 1). The animals most often engaged in arboreal locomotion (67%). The Zoo Atlanta *C. angolensis* typically galloped along the flexible, fabricated vines in the exhibit; they often lost their balance, but usually caught themselves before a fall; only about 8% of locomotion in this study consisted of leaping, either quadrupedally or with forelimbs leading. After 1100 h, Locomotion remained fairly constant (Fig. 3).

Social interactions (Affiliative, Locomotion interaction, and Agonism) were also relatively rare

(<5%, Fig. 1); the majority of these (84%) were sedentary affiliation (primarily grooming). Locomotion interaction accounted for only 16% of Social interactions, and contact aggression was never observed. The majority of social interactions occurred while off the ground (Fig. 2). Social interactions were most common from 1300 to 1400 h, least frequent between 1000 and 1100 h (Fig. 3). Vocalisations were never recorded, but were heard during pilot observations.

## Discussion

Figure 4 compares activity budgets of the *C. angolensis* at Zoo Atlanta with those reported for wild *C. guereza* (Oates, 1977) and *C. polykomos* (Dasilva, 1992). Although the *C. angolensis* in this study were recorded off the ground more often than not, they did exhibit the highest percentage of stationary (66% vs 57% & 61%) behaviours when compared to free-ranging *C. guereza* and *C. polykomos*. Locomotion by these captive animals was the same as for wild *C. guereza*, but was lower than that reported for wild *C. polykomos* (5% vs 5% & 9%). Given the much smaller volume of space and the more concentrated resources available to the captive *C. angolensis*, less locomotion might be expected.

The percentage of time the captive *C. angolensis* spent Feeding fell between the percentages obtained in the two studies of wild *Colobus* spp. (23% vs 20% & 28%). This, too, is consistent with the fact that the zoo monkeys were provisioned, but also had access to edible live plants (Table 1). These enabled them to engage in feeding *ad libitum*. The continuous availability of live browse provided the animals with more options for their feeding activity, a key factor in discussions of psychological well-being and appropriate enrichment.

Struhsaker (1975) remarked on the common galloping gait of wild *Colobus* spp., and Morbeck (1977) reported that they also frequently leap from branch to branch, quadrupedally or forelimbs first, when moving among trees. Both forms of locomotor behaviour were exhibited by these animals in the confines of the exhibit.

The Zoo Atlanta animals engaged infrequently in social interactions. No clearly-defined dominance hierarchy was evident; the male supplanted and was supplanted by the females, but supplants between the females occurred rarely. Colobines appear to have more subtle dominance hierarchies than cercopithecines (Struhsaker & Leland, 1987). Aggressive behaviours were never recorded during this brief study, and wild *Colobus* spp. also rarely display aggression (Oates, 1994).

Finally, although each species of *Colobus* spp. has a distinctive, loud roaring call (Oates & Trocco, 1983), only fully adult males roar; vocalisations are

thought to regulate troop spacing (Marler, 1969). As Zoo Atlanta had only a single group with one young male, it is not surprising that no loud calls were heard.

We suggest that, despite the many differences in environments and methodologies that exist between field and zoo studies, attempts to apply knowledge of the behavioural ecology of a species in the wild to zoo exhibit design and husbandry increase the likelihood that confined animals will exhibit normal patterns of behaviour. Short studies such as this one, conducted by an undergraduate intern, are a way for animal managers to assess the "success" of the exhibit design. In this instance, while the design overall appears to be quite effective, it is clear that the absence of arboreal feeding stations (especially in a species that typically rests, feeds and travels at heights between 21-30 m; Bocian, pers. comm., July 24, 1996) and the once-daily provisioning schedule, are elements of design and husbandry which detract from the animals' ability to exhibit optimal species-typical behaviour patterns (Markowitz, 1982; Forthman Quick, 1984; Chamove & Anderson, 1989). Evaluations of this kind can provide quantitative justification for modifications in exhibit design and animal husbandry.

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## NOTES

### CHIMPANZEE *PAN TROGLODYTES* NEST-MAKING BEHAVIOUR IN GUINEA.

Reporting on a recent primate survey of Guinea-Bissau, Gippoliti and Dell'Omo (1995, 1996) noted that they had found chimpanzees *Pan troglodytes* nesting in the canopies of oil palms *Eleais guineensis palmae* and reported that "such nesting behaviour has never before been observed in any chimpanzee population studied so far" (Gippoliti & Dell'Omo, 1996). We would like to add a record for Guinea.

During a biological survey of the Kounounkan Massif, Fourecariah Province, eight chimpanzee nests were noted in the crowns of oil palms located between the villages of San San Kouri and Gabi. Like those seen by Gippoliti and Dell'Omo (1996), the palms' fronds were folded back towards the centre of the crown. As noted by Gippoliti and Dell'Omo, it is difficult to age such structures, and we could not tell if they were of recent origin. Chimpanzees were recorded from the region, however (Barnett *et al.*, 1994; Prangley & Barnett, 1994).

A review of chimpanzee nesting behaviour by Baldwin *et al.* (1981) does not mention this form of nest building. It is possible that this behaviour is restricted to those marginal chimpanzee populations in West Africa as, so far, all records of this behaviour are from populations living in forest-savannah mosaic and not lowland forest with continuous canopy cover.

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### GABON'S VILLAGE HUNTING: ASSESSING ITS IMPACT

From 1988 to 1991, I conducted a study of the impact of village hunting and trapping on wildlife populations near Makokou in north-eastern Gabon. The province in which the study was located has the lowest human population density in the nation, the largest surface area of Gabon's nine provinces, and has never been commercially logged.

To understand the complex issues regarding hunting and the responses of wildlife, I collected a diverse array of data on both the human and animal populations. I chose one village on each of the three main local roads as study sites. Data on subsistence and income-generating activities were gathered by questionnaire, and game harvested by villagers was recorded. I compared the numbers and distribution of mammals in forest sites exposed to three different levels of hunting pressure by conducting wildlife surveys on a series of 5 km long transects: two near each village study site, two in intermediate zones several miles from each village, and four in remote non-hunted areas over 100 km from Makokou.

Villagers are more dependent than ever on the sale of crops, bushmeat and other forest products for income. The economy of Gabon has been in decline since 1986 when the price of oil, the major source of national revenue, decreased greatly. Unemployment has increased, causing economic problems for village families who regularly received money and material goods from working relatives. Of 90 village households sampled, 68% sold bushmeat and 46% sold fish regularly.

My survey identified four main factors that have altered the attitudes and resource use of rural residents. These are:

- permanent settlement along roads in contrast to a former semi-nomadic lifestyle;
- the replacement of traditional weapons (spears, crossbows, nets) and techniques with shotguns and cable snares;
- the abandonment of traditional beliefs such

as food prohibitions, which helped regulate use of natural resources;

- participation in the modern cash economy.

Because many village men must hunt and trap for both subsistence and commercial purposes, there is intense pressure on local wildlife populations. This has the greatest impact on larger-bodied animals. But even populations of some small mammals may be highly disturbed by village activities (Table 1). I saw four to 10 times as many small carnivores (genets, mongooses, palm civets) at non-village sites, and six times as many prosimians (galagos, potto, angwantibo). These differences may be influenced by availability of food sources and habitat types at the different sites, but I believe that hunting is also involved. Although not all local people eat small carnivores, the skins of these species are very valuable.

Table 1. Differences in abundance of selected species between hunted and non-hunted sites near Makokou, north-eastern Gabon.

Species	Hunted sites (No/10 km)	Non-hunted sites (No/10 km)	% Reduction
Chevrotain	0.2	0.9	78%
Yellow-backed duiker	0.0	0.3	100%
Chimpanzee	0.3	3.6	92%
Bush pig	3.6	17.0	79%
Sitatunga	0.05	0.3	83%
Gorilla	0.0	2.4	100%

Animal populations within 2 km of villages and roads showed the greatest reductions. However, there was a difference between primates, which are killed mainly during day hunts, and ungulates, which are exposed to day and night hunting and trapping. While I observed only the three smallest and most common monkey species on the first 2 km of village transects, I saw the larger-bodied monkeys and occasionally chimpanzees between 3 km and 5 km. Most sightings of the larger species of duikers, however, occurred in the last 1 km on transects, suggesting that ungulates experience more severe hunting pressure than primates.

These data indicate that hunters select larger-bodied prey, and that even small non-target species may be affected by hunting. Permanent settlement has resulted in fixed hunting zones around villages which are systematically exploited until large game has been severely depleted or eliminated. When this occurs, hunting pressure intensifies on smaller species whose populations are eventually reduced, and the hunting zone expands farther into the forest.

There are still extensive areas of uninhabited forest in Gabon with intact animal and plant communities. These populations serve as reservoirs

for recruitment and replacement of hunted species and contribute to animal population regulation and forest regeneration. However, we should not think that this abundance of resources and relatively small human population means that there is little need for resource management and conservation in this country. The results of this study show that village hunters in a region with low human population density are seriously impacting wildlife. What is happening where human population density is higher?

Hunting and gun ownership are largely uncontrolled in Gabon, and there is a great need for professional supervision of commercial logging which has accelerated in recent years. Large-scale commercial hunting is already a problem in some areas where logging roads provide access to remote animal populations. But with improved resource management, and training of wildlife and forestry personnel, Gabon can remain a major sanctuary for the African tropical forest biological community.

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#### PROTOCOL FOR COLLECTION AND EXAMINATION OF FAECAL SAMPLES FROM THE MOUNTAIN GORILLA *GORILLA GORILLA* *GORILLA BERENGEI*

The aim of this protocol is to help ensure a standard approach to collection and processing of faecal samples from gorilla *Gorilla gorilla*. It is recommended that the protocol be followed in all routine and research studies on mountain gorillas, whether in Rwanda, Uganda or Zaire. In Rwanda, the method described has proven to be simple, inexpensive, hygienic, reliable, and easily taught to local people.

##### Equipment for Collection of Faeces

1. Plastic 35 mm camera film pots (available free of charge from photographic shops in Nairobi and elsewhere). Clear (silver) pots for silverback samples, and black pots for samples from all other animals. Do not re-use film pots.
2. Adhesive labels for pots; apply to the body of the pot, not on the lid.
3. Wooden spatulae for dissecting faeces, picking up samples and transferring samples to pots. Do not use twigs from the forest. Instead use:
  - a) Wooden tongue depressors (break in half in

field, use two halves like knife and fork to open faeces, select sample, *etc.*

or

- b) Specially prepared bamboo spatulae; utilise the thin strips of bamboo that remain unused after bamboo stems have been cut and trimmed. Bamboo is cut into pieces that fit in a film pot. They are heat-treated in boiling water and dried in the sun or an oven.

The advantages of the bamboo spatulae are that they are cheap, can be made by local people from local materials, and can be easily and hygienically disposed of after use.

4. Labelled plastic bags to transport pots and spatulae (inside the pots) back to the laboratory. Bags can also be used to collect whole faecal masses.
5. When bacteriology is also to be carried out, use medium swabs.

##### Collection of Faeces

1. Before touching faeces, observe and describe their size, shape and appearance (smell, consistency—score of 1–3, colour—light brown, middle brown, dark brown, plus other combinations as appropriate). If possible, take colour photos if faeces have abnormalities such as presence of mucus and blood.
2. Use spatulae carefully to handle faeces. Assess the amount of drying on surface. Record presence of fly larvae, beetle larvae or other invertebrates (faeces need to be turned over).
3. Open the faeces using spatulae. Check colour, smell, consistency; record fibre (vegetation) content (score of 1–3), presence/absence of invertebrates, *etc.*
4. Fill pot about half full with faeces taken from within the faecal mass. Samples from the edge are more likely to be contaminated (*e.g.*, with environmental nematodes). Remove samples with spatulae, place sample hygienically in an appropriate (silver or black) pot and label pot. Swabs for bacteriology can also be taken at this time—again from the centre of the faeces.
5. If the whole faecal mass is to be collected (*e.g.*, for weighing, food analysis), it should be picked up using a plastic bag which is then inverted, tied and labelled.

##### Transportation and Storage of Faecal Samples

1. In the forest, transport samples in plastic bags as above, in a well insulated container or wrapped in paper.
2. If samples have to be transported by road, try to carry on ice or in a cool place at the back of the vehicle.

3. Either examine samples or store at 4°C (domestic fridge temperature). Record period of storage as this may influence results.

### Examination of Faecal Samples

1. Give samples a reference number and include it on all laboratory sheets and containers.
2. Follow a standard parasitological procedure:
  - a) Macroscopic appearance—colour, odour, and consistency
  - b) Low magnification—plant material, animal material and other observations.
  - c) High magnification—at least two wet preparations in saline.
  - d) Smear for *Cryptosporidium*.
3. Other procedures as necessary (e.g., bacteriology).

### General

Where appropriate, store samples or preparations for future reference or submission elsewhere. Keep records of all samples examined, even if material investigation is incomplete or results are apparently negative. The aim of examination is not just to detect parasites or abnormalities, but also to build up a database on the normal appearance and normal variation within mountain gorilla faeces. A standardised approach to collection, transportation, storage and examination is therefore essential. Field and laboratory records should be duplicated at an early stage and copies deposited in a safe place outside Central and Eastern Africa.

NB: This protocol forms part of a manuscript that is being submitted for publication. It should not be reproduced without permission of the author and the Morris Animal Foundation.

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## NEWS

### TAXON ADVISORY GROUPS

#### What is a Taxon Advisory Group (TAG)?



Established by the American Zoo and Aquarium Association (AZA) in 1990, TAGs examine the conservation needs of entire taxa, or groups of related species. Examples of some basic taxonomic groupings for which AZA

TAGs exist are: amphibians, felids, hornbills and antelopes. The following TAGs exist for primates: gibbons, great apes, New World monkeys, Old World monkeys and prosimians. Each TAG consists of AZA Species Survival Plan (SSP) coordinators, studbook keepers and other individuals with special expertise in one or more of the species covered by the TAG. Currently, AZA administers over 40 TAGs covering groups of invertebrates, fish, birds, mammals, reptiles and amphibians.

#### What do TAGs do?

Serving as committees of expert advisors, TAGs assist in the selection of appropriate species for AZA conservation programs and provide a forum for discussing husbandry, veterinary, ethical and other issues that apply to entire taxa. Through a process called 'regional collection planning,' they recommend species for new AZA studbooks, SSPs and other zoo- and aquarium-based programs, establish priorities for management, research and conservation, and recruit qualified individuals to carry out these activities.

In addition, TAGs examine animal management techniques based on scientific studies, and assist SSP coordinators in developing animal care and husbandry guidelines. Purposely organised along the same lines as the specialist groups of the IUCN-The World Conservation Union's Species Survival Commission (SSC) and BirdLife International's Taxonomic Specialist Groups, AZA TAGs also promote cooperation and sharing of information between AZA and other regional and international conservation programs.

#### The Regional Collection Plan

One of the most serious challenges facing zoological professionals today is how to determine which species are most in need of zoo- or aquarium-based conservation programs and how to use the limited exhibition and holding space most efficiently. In the past, personal preferences, the spirit of competition among zoos, and availability often determined which species were acquired and became the focus of scientifically managed captive breeding programs. Today, however, there is a growing appreciation of the need for an organised, broad-based collection planning process that better serves the conservation mission of the North American zoo and aquarium community.

One of the TAGs' primary responsibilities is to evaluate the present North American captive carrying capacity for a given taxonomic group and recommend how this space should be allocated. This strategic planning process results in the development of Regional Collection Plans (RCPs). In developing these plans, TAGs take into account



both the limited amount of enclosure space available and the need to maintain animals in populations large enough to ensure their long-term genetic viability and demographic stability. They consider the potential of selected species to contribute to conservation action through education, scientific research, fund raising to support field conservation, and captive breeding for reintroduction. The goal of this careful planning process is that each species and individual animal held at AZA zoos and aquariums will eventually be part of a cooperative population management program and have a defined conservation purpose.

### Planning Criteria

A number of criteria are involved in the regional collection planning process and, depending on the particular taxon in question, various factors will carry different weights. For example, in the case of amphibians and invertebrates, groups which encompass thousands of species, collection planning often takes a short-term, project-orientated approach. In such cases, research potential may carry a greater weight in the selection of species than factors such as public appeal and ability to assist in long-term fund raising. The selection criteria, therefore, are flexible to allow each TAG to work most efficiently. The following criteria are often used as a starting point:

- current and anticipated captive space available;
- current captive population size and composition;
- ability to be maintained and successfully bred in captivity;
- status in the wild;
- sufficient number of founders (individual wild blood lines) available;
- usefulness of the taxon to save habitat and other taxa (*i.e.*, is the taxon a so-called "flagship", "keystone" or "umbrella" species?);
- research potential;
- educational potential;
- public appeal and ability to assist in fund raising to support field conservation;
- uniqueness of the taxa in terms of phylogeny, adaptive strategy, interactions and coevolution with other taxa, ecological approach to survival, cultural appeal or scientific significance;
- ability to survive in human altered ecosystems that are now ubiquitous;
- probability of successful reintroduction to the wild, if appropriate and necessary.

[adapted from AZA Conservation and Science Office flier, June 1995]

### LES CLAIRIÈRES DE LA FORÊT DU PARC NATIONAL D'ODZALA—UN IMPORTANT BIOTOPE POUR LES GORILLES DE PLAINE

Les informations les plus intéressantes de l'année écoulée proviennent sans doute du Parc National d'Odzala (PNO) dans le nord-Congo (Fig. 1). Des recensements réalisés par Magdalena Bermejo et Germain Ilera, indiquant des fortes densités de *Gorilla gorilla gorilles* dans la zone du nord. Des recensements plus poussés du nord du PNO, jusqu'à présent très peu exploré, au cours de l'année 1995, ont confirmé une abondance exceptionnelle de gorilles, particulièrement dans et autour des nombreuses clairières de part et d'autre de la haute Mamblili. Ces clairières sont similaires à celles décrites par Mike Fay et Claudia Olejniczak dans le Parc National de Nouabalé-Ndoki au nord-est du Congo et semblent être maintenues par les visites régulières d'éléphants, buffles, bongos, potamochères, hylochères, gorilles, etc. Certaines ont des sols saturés en permanence, d'autres possèdent des sols périodiquement secs. Certaines révèlent des sols riches en sels minéraux et semblent être utilisées comme salines. Leur taille varie considérablement allant de 30 à 40 m de diamètre à plusieurs centaines de mètres. Les gorilles semblent être des visiteurs fréquents de la plupart de ces clairières, attirés apparemment par une variété de monocotylédons qu'ils se nourrissent. Comme à Nouabalé-Ndoki, ils ne manifestent aucune hésitation à patauger dans l'eau et la boue pour se nourrir. Non seulement les gorilles semblent visiter les clairières tous les jours, mais, ils ne semblent pas être particulièrement nerveux quand ils sont exposés en zone ouverte, même lorsqu'ils sentent la présence d'un observateur. Les conditions de visibilité sont, donc, idéales, permettant des périodes d'observation prolongées.

Grâce à des images SPOT, images radar, photos aériennes, images vidéo géoréférencées de haute résolution (prises à partir du Cessna 182 de WCS) ainsi que des prospections au sol, ECOFAC a localisé plus de 50 de ces clairières et cartographié actuellement les plus importantes d'entre elles en terme des visites par gorilles, superficie, végétation, etc. Malheureusement, au moins la moitié d'entre elles sont juste en dehors des limites actuelles du PNO. Dans une de ces clairières plus de 120 éléphants furent vus récemment au cours d'un après-midi d'observation. Dans une autre, également en dehors des limites du parc, un survol effectué par WCS a permis d'identifier une grande clairière à peu près à 40 km au sud ouest de Ouesso où au moins 20 éléphants avaient été récemment abattus, confirmant notre impression que le

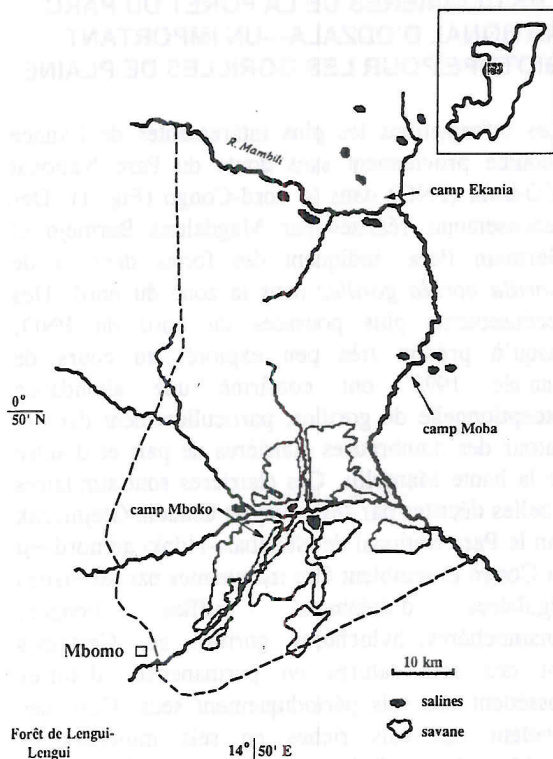


Figure 1. Carte de Parc National d'Odzala, Congo.

braconnage pour l'ivoire dans le nord du Congo est à nouveau en augmentation.

Du fait de l'importance écologique extraordinaire de ces clairières en terme de végétation, et de variété et nombre d'animaux les visitant, un projet de modification des limites du parc sera proposé afin que ces clairières soient intégrées dans l'aire protégée. La réhabilitation de la route Ouessou-Souanké (direction est-ouest, parallèle à l'actuelle limite nord du parc) présente actuellement une menace très sérieuse pour la faune du nord du parc. La chasse commerciale au Congo, et dans les pays voisins du Cameroun et RCA (pour l'ivoire mais aussi pour la viande de gibier), s'avère complètement incontrôlée et l'ouverture de cet axe après des années de relative isolation va certainement entrainer une augmentation du braconnage dans cette zone.

Il est essentiel qu'ECOFAC établisse une présence permanente dans cette zone critique. Malgré de fortes contraintes logistiques, ECOFAC tente d'atteindre cet objectif par un programme de prospections/patrouilles, l'implantation d'un camp de recherche, et le développement d'activités touristiques.

### Développement du Tourisme

Dans l'esprit de la plupart des gens, le Congo n'est pas immédiatement perçu comme une destination touristique. Toutefois, ECOFAC pense qu'Odzala propose des prestations si extraordinaires que

l'écotourisme offre une réelle opportunité pour contribuer au développement économique des communautés locales, et ce malgré les considérables contraintes inhérentes au Congo—le Congo est un des pays les plus chers en Afrique, et Odzala se situe à 2 journées de véhicules 4x4 de la capitale.

Le parc propose essentiellement 4 types d'attraction:

- les mosaïques savane/forêt dans le sud du parc (promenades à pied)
- 3 ou 4 jours de voyage en remontant la rivière Mambili avec une pirogue motorisée
- visite des plus spectaculaires et accessibles clairières le long de la Mambili
- tourisme de vision gorilles ("à la Virunga").

Cette dernière activité devient possible grâce au travail réalisé par Magdalena Bermejo et Germain Ilera, qui, au cours 2.5 années ont réalisé des progrès remarquables en vue de l'habituation de trois familles de gorilles à Lengui-Lengui et Lossi, une zone de forêt localisée à environ 30 km au sud-ouest du parc. Cette forêt ne possède pas de clairières comme celles décrites dans le nord du parc. Ici, l'habitat dominant est la forêt à Marantacées, caractérisée par un sous-bois extrêmement dense, apprécié par les gorilles (à l'exaspération éternelle de ceux qui essaient de les pister!). Malgré cette végétation dense, il est actuellement possible d'approcher à quelques mètres les familles de gorilles sans trop les déranger.

Plusieurs jeunes et sub-adultes sont extrêmement curieux et grimpent dans les arbres pour mieux voir les observateurs. D'excellentes observations sont aussi possibles lorsque toute la groupe, y compris le mâle à dos argenté, se nourrit dans les arbres chargés de fruits.

ECOFAC espère obtenir un financement pour Bermejo et Ilera pour les 2 années à venir afin de compléter le processus d'habituation, compléter la formation de l'équipe de pisteurs et de guides, et démarrer un programme de développement du tourisme, géré, à long-terme, par la communauté locale.

Particulièrement important, pour le succès de cette opération pilote, est le fait que le droit foncier traditionnel de la forêt de Lengui-Lengui et Lossi (situés hors de l'aire protégée) et reconnu par les communautés locales et par le gouvernement. Les habitants de Lengui-Lengui, les propriétaires de cette forêt, sont prêts à autoriser l'exploitation de "leur" forêt pour le tourisme de vision aux gorilles en échange de revenus économique que cette activité doit générer. Il y a encore un très long chemin à parcourir mais peut-être avons nous gravi la première marche vers un réel exemple de conservation par les hommes, pour les hommes.

Pour plus d'information, écrire à: Jean-Marc Froment, Magdalena Bermejo, Germain Ilera, Parc

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## L'INTERVENTION DE L'UNION EUROPÉENNE DANS LE PARC NATIONAL DES VIRUNGA

L'arrivée massive au Kivu de réfugiés Rwandais en juillet 1994, dont près de 800,000 au nord de Goma, a entraîné des pressions énormes sur l'environnement, en particulier sur le Parc National des Virunga. Dans le cadre de l'aide d'urgence accordée par l'Union Européenne au Zaïre, la Communauté a entamé dès mai 1995 un Programme Spécial de Réhabilitation des pays voisins du Rwanda (P.S.R.R.). Deux volets de ce programme s'adressent spécialement au P.N. Virunga. L'un,

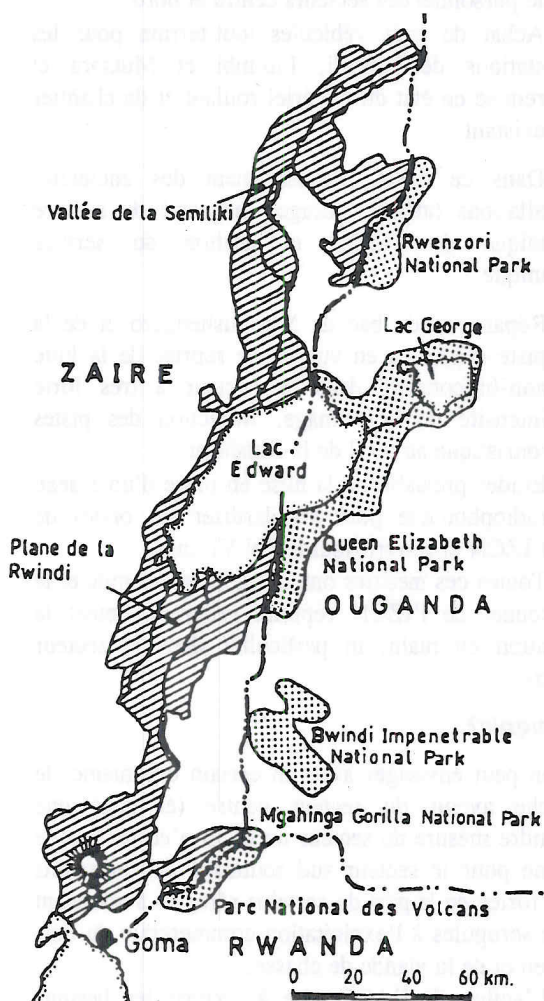


Figure 1. Le Parc National des Virunga et les aires protégées contiguës en Ouganda et Rwanda.

intitulé "Protection de la couverture boisée dans le Parc National des Virunga" est pris en charge par une ONG Belge, émanation de la Faculté Universitaire des Sciences Agronomiques de Gembloux, l'"Aide au Développement Gembloux" (A.D.G.). L'autre volet, intitulé "Lutte antibraconnage", est pris en charge par une ONG

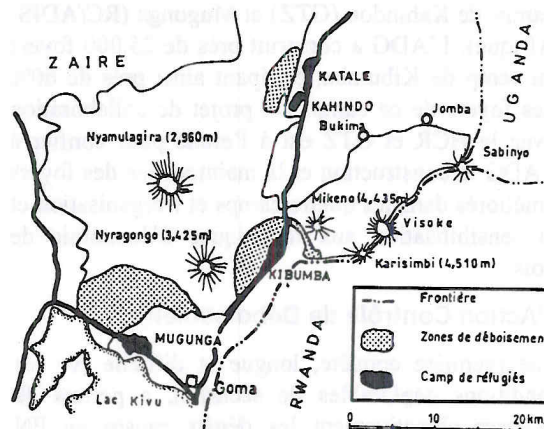


Figure 2. Secteur sud du Parc National des Virunga: localisation des camps de réfugiés.

Belge, auparavant active au P.N. de l'Akagera (Rwanda), le "Centre International de Formation des Cadres de Développement" (C.I.F.C.D.). Un troisième volet, centré sur la réhabilitation de l'environnement de Bukavu, sort du cadre de cet article.

Un coordinateur, basé à Goma, s'efforce d'harmoniser les réalisations du P.S.R.R. avec celles des Nations Unies (U.N.H.C.R., P.N.U.D.), de la Coopération Allemande (G.T.Z.) et des ONG locales et internationales travaillant sur place. On peut, à la fin 95, dresser un premier bilan des résultats obtenus par le P.S.R.R. dans le P.N. Virunga.

### Le Volet "Protection de la Couverture Boisée"

L'U.N.H.C.R. et les nombreuses ONG satellites se sont concentrés dans un premier temps sur les tâches prioritaires, à savoir couvrir les besoins nutritifs, sanitaires et de logement des réfugiés. Ce n'est que progressivement que l'U.N.H.C.R. a pris conscience des déboisements désastreux exercés par les réfugiés dans le Parc National des Virunga, site du Patrimoine Mondial depuis 1979. Dès mai 1995, la Coordination de l'Environnement du H.C.R. conçoit un "plan qui s'inscrit dans une stratégie globale comportant trois orientations principales":

- la promotion des techniques d'économie de bois;
- la fourniture de bois de feu en provenance de forêts (ou de plantations) gérées de manière durable;
- une action éducative et répressive en vue de réduire les prélèvements illicites dans le P.N. Virunga.

L'A.D.G. a repris cette stratégie à son compte et, en parfaite collaboration avec l'U.N.H.C.R. et la G.T.Z., a mis en oeuvre trois types d'action:

### L'Action Foyers Améliorés

Deux actions "foyers améliorés" avaient auparavant été menées, avec des succès variables, dans les camps de Kahindou (GTZ) et Mugunga (RC/ADIS-Afrique). L'ADG a construit près de 25,000 foyers au camp de Kibumba, équipant ainsi près de 60% des foyers de ce camp. Un projet de collaboration avec le HCR et GTZ est à l'étude pour confier à l'ADG la construction et la maintenance des foyers améliorés dans les quatre camps et l'organisation et la sensibilisation aux techniques d'économie de bois.

### L'Action Contrôle de Déboisement

Une première enquête, longue et difficile (vu les conditions déplorable de sécurité), a permis de recenser objectivement les dégâts causés au PN Virunga: 7,800 ha ont été touchés par le déboisement dont 1,800 ha sont d'ores et déjà rasés.

Plus de 10% du secteur sud du parc sont fréquentés par les réfugiés pour couper du bois. Deux fois par semaine, 80,000 personnes pénètrent ainsi à l'intérieur du parc. A côté des réfugiés récoltant du bois pour leur propre usage (bois de feu et sticks pour la construction des "bunkers"), existent des réfugiés exploitant systématiquement le bois de feu à des fins purement commerciales, à destination de Goma et des villages riverains.

Le braconnage s'est considérablement développé dans le secteur sud et les populations d'éléphants, de gorilles, de buffles et d'antilopes ont considérablement souffert dans la zone entre le Mikeno, le Karisimbi et le Visoke. L'étage des bambous est en passe d'être détruit par les réfugiés (disparu à 50%) menaçant un des habitats du gorille de montagne.

Les actions envisagées dans un proche avenir vont dans deux sens:

- la fourniture de bois de feu à partir des forêts naturelles hors du PN Virunga et l'utilisation de techniques améliorées de carbonisation; on pourra ainsi couvrir les besoins normaux des quatre camps et procéder aux opérations visant les activités commerciales;
- reboisement des zones tampons et mise en place éventuelle d'un projet de reboisement et d'appui à la gestion des ressources naturelles (financement à l'étude par l'Union Européenne).

### L'Action Sensibilisation des Populations

Alors que les deux actions précédentes s'adressent aux réfugiés, celle-ci vise surtout les populations locales. Parmi les actions en cours ou envisagées, on citera surtout:

- le soutien au reboisement;
- l'éducation environnementale dans les écoles primaires;
- la réalisation de micro-projets sur base d'une enquête sociologique auprès des villages en bordure du PN Virunga.

### Le Volet "Lutte Anti-braconnage"

Dès l'arrivée des réfugiés, de nombreuses armes de guerre provenant du Rwanda furent détenues par des militaires et par des civils environnant le secteur centre du PN Virunga. De nombreux animaux ont été abattus au sud de la Rutshuru. Les spectaculaires concentrations d'hippopotames de la Rutshuru, abattus à l'arme automatique, ont payé un lourd tribut.

Les gardes, impayés depuis de longs mois, ne disposaient plus d'équipement approprié.

Des mai 1995, le volet "lutte anti-braconnage" a agi à plusieurs niveaux:

- Relance de la lutte anti-braconnage par la fourniture de primes, de soins médicaux, de rations de patrouille et de tenues de brousse pour le personnel des secteurs centre et nord.
- Achat de trois véhicules tout-terrain pour les stations de Rwindi, Lulimbi et Mutsora et remise en état du matériel roulant et de chantier existant.

Dans ce cadre, aménagement des anciennes installations (atelier, garage, magasin) du service technique de l'IZCN et gestion du service technique.

- Réparation du bac de Nyamushengero et de la piste d'Ishasha en vue d'une reprise de la lutte anti-braconnage dans ce secteur à très forte intensité de braconnage. Réfection des pistes touristique au nord de la Rutshuru.
- Etudes préalables à la mise en place d'un réseau radiophonique pour standardiser les ondes de l'IZCN et couvrir tout le PN Virunga.

Toutes ces mesures ont eu un impact rapide et le personnel de l'IZCN reprend progressivement la situation en main, in particulier dans le secteur centre.

### L'Avenir?

Si on peut envisager avec un certain optimisme, le proche avenir du secteur centre (et dans une moindre mesure du secteur nord), il n'en est pas de même pour le secteur sud soumis à des pressions très fortes de la part de certains réfugiés s'adonnant sans scrupules à l'exploitation commerciale du bois de feu et de la viande de chasse.

L'action de l'ADG vise à couvrir les besoins minimaux en bois de feu des réfugiés et à entamer des actions compensatoires (reboisements, micro-

projets, ...) au profit de la population Zaïroise locale. L'IZCN, malgré l'appui matériel de la GTZ et du PAM, est incapable d'arrêter l'exploitation commerciale du bois et de la viande de chasse. Sans mesures radicales, il faut s'attendre à une évolution catastrophique des habitats et espèces propres au secteur sud. Des mesures nécessaires, on retiendra essentiellement:

- la suppression du camp de Kibumba et l'évacuation des réfugiés dans un secteur moins sensible ou;
- l'élargissement du mandat du Contingent Zaïrois de Sécurité dans les camps par l'adjonction d'un contingent supplémentaire de 150 hommes sous la tutelle des Nations Unies.

Si rien n'est fait en ce sens, il faut s'attendre à ce que le PN Virunga, un des plus précieux joyaux de la conservation à l'échelle mondiale, soit rapidement amputé d'un secteur abritant des richesses biologiques uniques et d'une valeur inestimable.

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[from *Canopée*, No. 7]

### MOUNTAIN GORILLAS—A 1995 UPDATE

In January, 1995, we were back in Rwanda with a new temporary base for the Volcano Veterinary Centre in the capital, Kigali. The previous year had seen turmoil in Rwanda with the outbreak of fighting on 6 April, following the death of the President, and the massacres that ensued. We, ourselves, had been evacuated from Rwanda via Zaire, Burundi and Kenya. When we first returned to Rwanda in August 1994, after the cessation of hostilities, we found that the Centre had been badly damaged and looted. The military and political situation made working from our former base at Kinigi, on the edge of the Volcanoes National Park, impossible. We therefore set up a centre of operations in Kigali, from which we gradually redeveloped the veterinary service for the gorillas.

In February and March 1995, we embarked upon a number of interesting cases. First we were called to the Virunga National Park, Zaire, to investigate and help a young gorilla that had been caught in a snare, and was still carrying the wire on its limb. The animal was successfully immobilised, the snare was removed and an uneventful recovery followed. Then an adult female gorilla in one of the habituated groups (Sabinyo) in the Volcanoes

National Park, Rwanda, required attention because of signs of ill health. Following detailed monitoring of this animal for over a week, at the end of which her infant died, a decision was made to immobilise her in order to carry out diagnostic investigations. Blood and other samples were taken which confirmed that she had severe internal disorders. She recovered successfully from the immobilisation and returned to the wild, but 12 d later was found dead. A *post-mortem* examination confirmed severe pathology affecting many body systems.

In March, four gorillas were found dead in Bwindi-Impenetrable Forest National Park, Uganda. *Post-mortem* examinations were carried out in collaboration with Dr Liz Macfie. These revealed that the animals had been killed by spears and, possibly, arrows. Findings from one female suggested that she may have had a youngster, but the latter was never located or confirmed.

At the end of June 1995, we left the project and prepared to hand over to my successor, Dr Jonathan Sleeman. As an interim measure, cover was provided by Dr Jim Foster, the Project Co-ordinator, and help was given as required by Dr Macfie, who was based in Uganda. About this time, two interventions (immobilisations) were necessary in the Susa group in Rwanda. These were performed by Dr Macfie.

In July, the remains of a gorilla were found in Zaire at the edge of the Virunga National Park. The animal was a silverback, believed to be Salama. A full *post-mortem* examination was not possible because of severe decomposition. However, death due to shooting could not be ruled out. Later in August another dead gorilla was found in Zaire. This was Luwawa, a silverback. A *post-mortem* examination revealed that he had died of a single gunshot wound.

In August, two gorillas, members of the Rugabo group, were found dead in Zaire. *Post-mortem* examinations were carried out by Dr Sleeman, who was able to confirm that these animals had been shot.

An intervention was necessary in September, when a possible snare was seen on a 5 wk old infant in Beetsme's group in Rwanda. Dr Sleeman immobilised the mother and examined the infant. The "snare" proved to be hair wrapped around two digits and cutting deeply into the tissues. In October, a young male, Gwiza, in Shinda's group in Rwanda was noted to have diarrhoea. Dr Sleeman observed the animal and judged that it showed signs of abdominal pain. Samples were taken for laboratory examination but the gorilla recovered without treatment.

In November there were reports that two animals had snares on their arms. These animals were Nyagakangaga, a juvenile male, and Impanga,

a juvenile female. The snare on Nyagakangaga was removed by the trackers without immobilisation. However, Dr Sleeman immobilised Impanga and was able to remove the snare. She made an apparently uneventful recovery. On a previous occasion, she lost her left foot from a snare.

Finally, in December, Nyabushizi, a juvenile male in Susa group, was found to have a snare on his hand. Dr Macfie, assisted by Dr Gladys Kalema, visited from Uganda and immobilised the animal. The snare was removed, but the gorilla subsequently lost his hand.

As can be seen from the above, 1995 was a busy year for the Volcano Veterinary Centre, now renamed the Mountain Gorilla Veterinary Centre. While it is difficult to relate veterinary cases in one year to another, the number of snares removed during 1995, coupled with the apparent increase in snares placed in the forest, suggest that the aftermath of the war in 1994, and the ensuing social unrest, probably contributed to more poaching in the area.

The most significant event of 1995 from the point of view of conservation of the mountain gorilla was the resumption of deliberate killing of animals after 10 year of relative safety. In the case of the Bwindi-Impenetrable Forest, the killing was by local people using traditional methods, but the animals found dead in Zaire had been shot, probably indicative of the ready availability of firearms or other factors relating to military activity in the area. In this context, it must not be overlooked that a group of Italian expatriates visiting the gorillas had themselves been killed during the year and also that the toll of human suffering associated with the refugee camps and displaced Zairois, remained very high. The plight of the gorillas parallels the tragedy affecting human beings and the whole environment in that region of Africa.

This summary of events in 1995 indicates the need for continued vigilance if mountain gorillas are to be protected. The Mountain Gorilla Veterinary Centre, funded by the Morris Animal Foundation, continues to play a vital role in this respect. The work is, however, multi-disciplinary, as it also includes biologists from the Dian Fossey Gorilla Fund, local Rwandan, Zairois and Ugandan authorities, and other individuals and organisations. Those involved believe that the saving of the mountain gorilla is vital, not only in its own right, but because it will, in its wake, help to save the afro-montane forest environment of the Virunga Volcanoes which is so important in terms of biodiversity and human development.

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## WSPA BUSH MEAT REPORT

Due largely to the efforts of Karl Ammann, the World Society for Protection of Animals (WSPA) has published a comprehensive report about the effect of the bushmeat trade on Africa's great apes. *Slaughter of the Apes* features full colour photography and investigations by Karl Ammann.

On 22 March 1996, the African-Pacific-Caribbean (ACP)-European Union Joint Assembly in Namibia passed a WSPA resolution calling for political action to end the hunting of apes for food in Central and West Africa.

Members of European Parliaments (MEPs) and government representatives from 70 countries who voted on the resolution reportedly were appalled to learn of the scale of the slaughter and European involvement in facilitating it. European logging companies play a significant role in the bushmeat trade.

The WSPA report shows that the hunting of great apes in Africa's tropical forests is escalating out of control, due largely to logging activities. Logging roads form the foundation of the bushmeat trade, providing hunters with easy access to remote forest areas. Likewise, logging trucks transport bushmeat to major towns and cities for sale. At the same time, logging operations have dramatically increased the human population in these regions, and logging employees comprise a significant market for bushmeat themselves.

"What it boils down to," Mr. Ammann says, "is that the logging infrastructure has made the commercialisation of the bushmeat trade possible. The bushmeat trade and forest exploitation are the gravest conservation crises facing Africa since the ivory crisis. The main culprits are western-owned logging companies and ultimately the consumers buying the timber. It will not be easy to change Africa at the grassroots level; it should be a lot easier to force the logging companies to change their ways of doing business."

Among other initiatives, the report recommends the establishment of an international organisation to govern logging policies. It also calls for suspending the sale of the MACC "chevrotine" cartridge, commonly used for hunting large animals, notably great apes. According to Mr. Ammann, a moratorium is now in effect prohibiting the sale of the chevrotine cartridge. He will return to West

Africa in September to investigate the impact of the moratorium on ape hunting.

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[adapted from *Pro Bonobo*, Vol. 2, No. 1]

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## THE AFRICAN FOREST BUSHMEAT CRISIS: REPORT TO THE ASP

In April 1996, the Cameroon Ministry of Environment and Forests (MINEF) conducted a seminar on The Impact of Forest Exploitation on Wildlife. The meeting, commonly referred to as the Bushmeat Conference, was sponsored jointly by MINEF and the World Society for the Protection of Animals (WSPA), and was organised by the Yaounde based NGO Enviro-Protect. The conference took place in Bertoua, capital of the Eastern Province where logging roads have opened up thousands of square miles of new forests to exploitation and put countless primates and other wildlife at risk.

At the invitation of MINEF and at the request of ASP president Dr Joe Erwin and Conservation chairman Dr Ramon Rhine, I attended the meetings in Bertoua in order to assess the situation. This overview report on the Bushmeat Conference and the bushmeat crisis was presented at the ASP/IPS Congress in Madison, Wisconsin, in August 1996. Additional articles detailing problems, challenges and solutions are in press and being written for future editions of *African Primates*, and other journals and newsletters. While this preliminary work focuses on the great apes, it is important to note that all primates are hunted for food and represent over 20% of the bushmeat commerce.

This summary will touch on three elements: validation of the bushmeat crisis, efforts to control the commercial bushmeat trade, and actions ASP and IPS can take.

### Validation of the Bushmeat Crisis

There can no longer be any doubt—the bushmeat crisis is all too real. At least 75% of the more than eighty attendees at the Bushmeat Conference in Bertoua were Cameroon Government personnel and local leaders. From the national Director of Wildlife and Protected Areas to the Mayor of

Moloundou, speakers and participants agreed that very large numbers of primates and other endangered and protected animals are being shot, butchered and sold for meat in a commercial trade that stretches across Cameroon and throughout neighbouring countries. Consensus of experience strongly supported the scope of the crisis. Data that Karl Ammann and WSPA presented were considered a fair representation of the situation. The conclusion was accepted that continued bushmeat hunting in general, and great ape slaughter in particular, was unsustainable at present levels, and would become an irreversible wildlife disaster if permitted to continue and accelerate at the current rate. Destruction and dispersal of gorilla and chimpanzee populations is already complete in some areas, fast approaching in others. By way of perspective, each year in Cameroon more gorillas are eaten than now live in the Virunga Volcanoes, and more chimpanzees than at Gombe Stream and Mahale, or in all the zoos and laboratories of North America. The government of Cameroon wants to stop this slaughter and protect their natural heritage. Government leaders at the Bertoua Conference were clear that they cannot begin to achieve their goals without strong international support. It was agreed that while the exposure of the bushmeat crisis by Ammann and WSPA's European campaign was at first embarrassing, the high level of political and public concern that effort produced is already paying off in terms of global willingness to help Cameroon and other countries to confront the crisis directly and cut back bushmeat dependence in the long term. A major missing link in this world response is the United States.

### Efforts to Control the Commercial Bushmeat Trade

Cameroon officials at the Bushmeat Conference indicated that they can not even protect existing national parks and reserves, let alone police the massive open and exploited forests. Forestry guards are few and very ill-equipped. Local police cannot be counted on to enforce wildlife laws. The people of Cameroon, from forest dwellers to the President, eat bushmeat, and in many cases, are unaware or unconcerned about protected species. Though bushmeat, including apes and monkeys, is two to three times more costly than domestic meat, it is still preferred. Ranching of game animals, like cane rat and duiker, is being tested, but will take massive development to cut into the market share of wild-killed game. In many areas well over half the animal protein consumed is bushmeat.

In response to the plea for US support, we have established The Bushmeat Project as a department of The Biosynergy Institute, a not-for-profit

organisation in California. With support of conservationists and other professionals, we are drafting proposals and organising North American resources to support local and national bushmeat programmes that will enable Cameroon and other African forest nations to take control of the bushmeat industry and replace it with domestic commerce that is wildlife friendly and suitable to the ecosystems and cultures in the region. Efforts by other NGOs to direct new funds and talent explicitly towards the bushmeat crisis are urgently needed. This includes work from the forest logging camps to the World Bank. The Bushmeat Project will be an impartial clearing house for information and a support to collaborative organisation of any efforts that will help the people of West and Central Africa to turn crisis into opportunity, and assure that the natural and cultural heritage of the region will thrive.

#### **Actions ASP and IPS can take**

The Cameroon Bushmeat Conference report and forthcoming proposals to establish local and national bushmeat programmes will provide many more options for ASP and IPS involvement. At this time there are five action steps that we should consider:

1. Distribute this preliminary summary report on the African bushmeat crisis to the ASP and IPS membership and encourage primatologists to use the Bushmeat Project Website at <http://biosynergy.org/bushmeat/> to keep abreast of developments and to post abstracts of relevant research and project activities.
2. Make the bushmeat crisis a first priority issue on the ASP and IPS Conservation Committee agendas for the coming year. In particular, seek ways to raise funds and distribute them directly to African nationals as awards for completion of successful projects aimed at stopping the slaughter of apes and other protected and endangered animals that are eaten.
3. Urge other organisations, like the American Association of Zoos and Aquariums, to form partnerships with NGOs in Cameroon and across the forest region of Africa, building and maintaining wildlife sanctuaries and education centres to care for the orphans of the bushmeat trade and to engender positive conservation values in the local people so that they will stop eating the meat of protected animals.
4. Build liaisons with other American NGOs to help influence the World Bank to stick to its own environment and wildlife protection rules and resist the timber industry bid for 60 million dollars to build a new road into south-eastern forests that will double the forest bushmeat

problem in Cameroon with a stroke of the pen, and leave the people with little more than a long term debt. Lobby the Bank to use the money instead to help the people develop ecologically safe domestic protein products.

5. Write and send official Letters of Commendation from primatological societies and conservation organisations to those who have already achieved remarkable success in confronting and dealing with the African forest bushmeat crisis:

- Mr Karl Ammann for his 8 year effort to document the expansion of the commercial bushmeat trade and his leadership in bringing public, professional and political awareness of the crisis to the level at which responsible and effective action can now be taken.

- World Society for the Protection of Animals for their 2 year campaign that has backed up Ammann's work and achieved global recognition and political resolve to stop the slaughter of the apes through directives from the highest levels of international agencies.

- The Joint Congress of the European Union and African-Pacific-Caribbean Nations (EU-APC) for recognising the terrible scope of the great ape bushmeat crisis and resolving to place sanctions on the timber industry and involved governments, demanding they take action to stop the killing of protected and endangered animals for commercial meat trade.

- The CEO of the MACC Corporation for responding to public and political pressure and suspending manufacture and sale in Congo and Cameroon of its "chevrotine" cartridge that is highly effective for shooting gorillas.

- The European Union's Forestry Stewardship Council for making bushmeat control part of the timber certification process and asking Ammann and WSPA to accompany the NGO "Société General de Sécurité" (SGS) in monitoring the audits that assess logging operations, to help assure compliance with protected species laws.

- The President, Ministers, government workers and people of Cameroon for heeding the call, convening the Bertoua Conference on the Impact of Forest Exploitation on Wildlife, and having the courage and will to declare that the bushmeat trade has become a crisis for great apes and other protected and endangered animals, and that Cameroon will take the lead in stopping the slaughter, controlling the bushmeat industry, and replacing it with domestic commerce that is wildlife-friendly and suitable to the ecosystems and cultures in the region.

These small but significant action steps on the part of ASP and IPS will signal to the American and



world conservation communities that we as primatologists are willing and able to recognise the contributions of persons and organisations in all fields to the protection and conservation of non-human primates and all wildlife threatened by the growth and impact of human commerce. It will also help to signify our own resolve to work in collaboration with anyone whose concerns are, foremost, the appreciation and well-being of the other animals struggling for survival in a shrinking natural world.

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### THREATS TO NIGERIAN FOREST

The Cross River National Park, containing 40% of Nigeria's remaining forest, is threatened with logging by WEMCO, a Hong Kong-based company. Although officially operating in the buffer zone, WEMCO has built a new pulp mill which will require more timber than can be supplied by the concession area. The company has already faced criticism for illegal logging elsewhere in Nigeria, and the Ogun State Commissioner for Agriculture and Water Resources has said that "These people seem to have no concern or respect for any rule of law or ethics of any kind". Some villagers welcome the logging operation as a source of revenue, while others fear the permanent loss of non-timber forest products such as the edible *Mimusop* oil. Now a coalition of NGOs has taken WEMCO to court to explain the proposed industrial activities in Cross River before operations begin.

[from *Arborvitae*, 3]

### IN DANGER: THE USA'S ENDANGERED SPECIES ACT

Political changes in the USA may result in a serious weakening of the existing environmental laws. One of the most ominous spectres is the fate of the Endangered Species Act (ESA), the country's pre-eminent law on wildlife and the environment.

To date, 956 native species and 560 "foreign" species are listed under the Endangered Species Act (ESA), which was adopted in 1973. In regard to the native species the Act protects habitat, prohibits "take" and regulates trade. The protection for the species found outside the USA is limited to varying degrees of import restriction.

The Act has long been criticised by people who believe their right to use natural resources is unfairly constrained by its provisions. The anti-ESA rumblings of hunters, shrimp fishermen, water and power authorities, timber companies, real estate agents, cattlemen and private property advocates, which had risen to a crescendo in recent years, have been met with sympathy by the new congressional leaders. These new legislators assumed their positions after the Republican Party won the majority of seats in the November 1994 elections.

With the full support of these new leaders, Congress enacted in April 1995 a moratorium on listing species under the ESA. Only during last-minute budget negotiations in April 1996 did the Congress finally agree that the moratorium could be waived.

The 1-year moratorium left more than 250 species ready for listing by the US Fish and Wildlife Service still on the waiting list. Among those waiting are the Pacific coho salmon *Oncorhynchus kisutch*, the Florida black bear *Ursus americanus floridanus* and dozens of species of plants.

Key among the new leaders are Alaskan Republican Congressman Don Young and Idaho Republican Senator Dirk Kempthorne. Young became Chairman of the House Committee on Resources, which has jurisdiction over the ESA, and Kempthorne took the helm of the Senate subcommittee overseeing endangered species.

Both Congressmen have since introduced legislation to "fix" those provisions of the Endangered Species Act that they believe overburden business interests.

TRAFFIC-USA and WWF-US, in co-operation with other US non-governmental groups, undertook in 1995 an analysis of the proposed legislation and, more specifically, its potential impact upon how the USA approaches the conservation of endangered and threatened wildlife species at home.

The analysis, which provided key data and information for WWF-US staff to use in testimony at congressional hearings, found that both proposed bills would weaken protection for native endangered species and their habitats within the USA, and would seriously dilute the effectiveness of the Act's provisions that relate to foreign species and international trade in wildlife.

The analysis' key findings include that Congressman Young's bill—H.R. 2275, the

Endangered Species Conservation and Management Act of 1995—would make it very difficult for the USA to fulfil its obligations under CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora. The Convention, which the USA joined in 1975, requires member countries to prohibit or regulate trade in more than 34,000 species of plants and animals.

Congressman Young's bill would severely limit the authority of federal officials to seize and impound wildlife and wildlife products exported or imported in violation of CITES, if they are not listed under the ESA. Moreover, the bill would also make it more difficult to list any species already in the CITES Appendices by first requiring a "finding" based on substantial evidence that the Convention does not provide adequate protection for the species in question.

In addition, written consent from relevant foreign governments would have to be obtained before the USA could place a foreign species on the US endangered or threatened species list, or issue a regulation for the conservation of a foreign species, including those already listed under CITES. Only an order from the US President could override lack of consent.

The bill would also prohibit the USA from taking any enforcement action based solely on a CITES Secretariat notification or resolution of the 131 Parties to CITES. This restriction would prevent the USA from acting in a timely fashion in an emergency involving illicit trade in wildlife.

The other bill—S. 1364, the Endangered Species Conservation Act of 1995—was introduced by Senator Kempthorne in October 1995 and contains similar provisions.

The analysis showed that these amendments, if approved, would not only cripple the USA's ability to implement CITES, but also make it difficult to add foreign species to the country's endangered species list.

If these bills had been in effect in 1973, the USA would have had to obtain the concurrence of China, the Soviet Union, Vietnam, Cambodia, Lao PDR, Burma (Myanmar), Thailand, Bhutan, India, Indonesia, Bangladesh and Nepal before listing the tiger.

The analysis revealed that if a country allowed hunting of any critically endangered species, the ESA could no longer provide a flat prohibition on the importation of trophies of threatened species—a change southern African countries have advocated. Instead, Young's bill would create a "rebuttable presumption" that sport hunting of a species allowed under the laws of a range state is beneficial to the survival of that species. As a result, prohibitions would not apply to hunting trophies as long as they are taken and exported in compliance

with the laws of the country in question.

Congressman Young's bill was approved in October 1995 by his committee in a 27-17 vote without significant change in the provisions affecting foreign species.

However, the Speaker of the House of Representatives has yet to bring the bill before the full House. Since then, two members of Young's committee, including New Jersey Republican Congressman Jim Saxton, who is also Chairman of the Subcommittee on Fisheries, Wildlife and Oceans, have introduced moderate bills to amend the ESA. Saxton is among those committee members who voted against Young's bill in October.

In the Senate, no action has yet been taken on the proposed bills. However, Republican Senator John Chafee of Rhode Island is a long-time friend of the environment and Chairman of the Environment and Public Works Committee, which has jurisdiction over the ESA.

Debate is likely to continue through this year, and possibly into the next. The battle still promises to be an uphill one for environmentalists, but polls show voters are worried that Republicans are too eager to roll back environmental protections and, in an election year, elected officials are leery of unpopular legislative changes. There is reason to hope the proposals to prevent the USA from meeting its international commitments under CITES can be defeated.

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### **BONOBO PROTECTION FUND ACTIVITIES IN WAMBA, ZAIRE**

Wamba is unique because it is the only research site where a large population of bonobos and humans co-exist and share extensive use of a forest. It is currently the only great ape preserve monitored and maintained by local inhabitants. Bonobos are abundant at Wamba and well-habituated. Local taboos against hunting bonobos still exist around Wamba, in contrast to most other parts of Zaire.

Research at Wamba has been in progress for 21 years, hence the identities and life histories of many bonobos are known. Five groups of bonobos have been identified and studied, and three groups