CONSERVING THE CHIMPANZEES OF UGANDA

Population and Habitat Viability Assessment for *Pan troglodytes schweinfurthii*

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III. An overview of chimpanzee conservation and management strategies[1]

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The importance of Uganda's chimpanzees

As a species, chimpanzees merit conservation because their world numbers are falling at a high rate, due both to hunting (in much of west and central Africa), and habitat loss (throughout their range). They hold special interest because of their close genetic relationship to humans, which combined with other evidence suggests that they resemble human ancestors about 5-6 million years ago. Conservation of every population is valuable because behavioral and cultural differences occur among all known populations (>20 sites), making them uniquely informative about the evolution of human behavior.

Uganda's chimpanzees are all members of the eastern subspecies, *Pan troglodytes schweinfurthii*, which occurs also in Zaire, Burundi, Rwanda, and Tanzania. Chimpanzees in Zaire are hunted and eaten, and there is little protection in most of their range; Zairean populations appear substantially threatened. Those in Burundi and Rwanda are confined to small areas of mostly threatened habitat. Two populations of Tanzanian chimpanzees are well-protected, one of about 1000 in Mahale Mountains National Park, and a smaller population in Gombe National Park (about 150). These parks are mosaics of an important chimpanzee habitat type, i.e. mixed forest, woodland, and grassland. Small numbers of Tanzanian chimpanzees occur also outside these parks, in drier country.

By contrast to these countries, Uganda has substantial numbers of well-protected chimpanzees living in a series of forest blocks, including six apparently substantial populations (Budongo-Rabongo, Bugoma, Itwara-Kibale, Ruwenzori-Semliki, Kashoya-Kitomi-Maramagambo-Kalinzu, Bwindi). Uganda appears to provide the best hope for managing a viable long-term metapopulation of forest-living *Pan troglodytes schweinfurthii.*

Relevance of conservation strategies for Uganda's chimpanzees

As a basis for discussion, we briefly discuss below eight potential strategies for conserving Uganda's chimpanzees.

[1]Pre-Conference Draft: Not for quotation.

1. Protecting habitat from destruction by humans

Chimpanzee habitats in Uganda fall into four main categories of conservation status.

A. National Parks (Bwindi, Queen Elizabeth (Maramagambo, Ishasha, Kyambura), Kibale, Ruwenzori, Semliki).
B. Forest reserves (Kasyoha-Kitomi, Kalinzu, Itwara, Bugoma, Budongo).
C. Game reserves (Toro).
D. Unprotected (e.g. village areas surrounding parts of Kibale N.P.).

Habitat protection has been generally effective in categories A, B and C, though some areas such as Bugoma F.R. warrant scrutiny. These areas undoubtedly contain the great majority of Uganda's chimpanzees (perhaps 98%), and there is no evidence of chimpanzee populations suffering from recent habitat destruction in categories A, B and C.

Chimpanzee habitats in unprotected areas, by contrast, are certainly dwindling, for example on the west side of Kibale National Park. Little is known about the chimpanzees in such zones. They probably occupy large home ranges (50-100 km^2), harvest agricultural crops extensively, and depend for cover and much food in strips of forest in valley bottoms. Currently such valley strips of forest are being removed by farmers, causing probable loss of chimpanzee populations. Total removal of such forest strips can be expected within a decade or so unless action is taken in the Kibale environs.

Protection of chimpanzee habitat does not necessarily mean that chimpanzee numbers are maintained at a constant level, even in the absence of external threats. Natural succession from more secondary and disturbed vegetation could in theory lead a protected forest to provide reduced food for chimpanzees, e.g. through fewer fig-trees. Thus, for maximal population densities, management that includes some disturbance to the natural succession may be beneficial.

2. Protecting habitat from natural destruction

Fire and other natural processes appear not to threaten chimpanzee habitats in Uganda. Apparently, there is no need to manage with respect to protecting habitats from natural processes.

3. Protecting populations from being hunted

There is no known deliberate hunting of chimpanzees for trade or meat in Uganda. However, hunters set bush-meat snares in much, perhaps most, of the total chimpanzee range in Uganda. One result is that many individuals have life-long wounds from snares, ranging from loss of knuckles to crippling or loss of hands or feet. From a humane point of view, this is a problem that requires action. From the conservation point of view, the question is how many individuals die from being snared.

The rate of death from snaring is unknown, but an estimate can be obtained form Kanyawara data. From 1988 to 1996, we have nine years of data on a total of 67 individuals from the Kanyawara community. "Snareable" individuals were considered to be those 6 years old or more, since younger chimpanzees are carried by their mothers or walk behind them. In 300 "snareable-chimpanzee-years" we recorded 11 new snares, i.e. a net rate of 3.7% probability of a new snare per year per snareable chimpanzee. During the 9 observation years, no individuals were known to be killed by a snare or snare wound. There were five deaths with attributable causes (3 old age; 1 killed by chimpanzees; 1 respiratory disease) whereas four individuals disappeared from unknown causes (Julian, young adult male; Marion, prime mother; Ruhara, juvenile male (7 years); Omugu, infant female (3 years)). On the worst-case assumption that all four died from snare wounds (even though Omugu was too young to be in the category of "snareable" chimpanzees) the maximum death rate from snares would be 4 deaths in 300 chimpanzee-years, i.e. 1.3% per year. The number of births (19) substantially exceeded the number of deaths during this period (9). These data indicate a low death rate from snaring.

However, the rate of acquiring snares (3.7%) per year and wounds was high. Out of 55 "snareable" individuals recorded from 1988 to 1996, 18 show damage that is probably the result of a snare (Table III-1).

There is some evidence of a sex difference in vulnerability to snares. Thus from all known snareable individuals, males have had more apparent snare-wounds (9/19 snareable individuals, i.e. 47%) than females (9/36 snareable individuals, i.e. 25%). A similar difference is seen if only newly observed snares are considered (1988-96: males 32%, females 11%). Behavioral differences between males and females responsible for this could include the longer travel of males, and the fact that they are more likely to be in the front of the line. The Kanyawara data suggests that if there is an effect of snares on mortality, it is stronger on males than on females.

Snares are currently being discovered at a higher rate in Kanyawara than at any other time during the observation period (1988-1996). Furthermore the rate of new snares on chimpanzees during 1996 (7.3% per snareable individual) was higher than in any other observation year. Kanyawara was formerly part of a forest reserve, but is now in Kibale National Park. National Parks methods for preventing snaring thus appear less effective than those of the Forest Department. This emphasizes that new strategies may be needed for reducing the setting of snares in chimpanzee habitats within National Parks.

4. Protecting populations from disease

Protection from natural disease epidemics is probably not warranted on conservation grounds alone, because there is no evidence of populations being eliminated, or even severely reduced, by diseases. However, on humane grounds it would clearly be desirable to protect from serious diseases. Unfortunately no way is known to monitor use health status of unhabituated chimpanzees. Even with habituated chimpanzees, monitoring is difficult because managers are normally restricted to non-invasive sampling, i.e. direct observation and collection of urine and dung. Intervention in the case of observed disease outbreaks, e.g. by injections or feeding drugs,

has not been achieved in Uganda. Chimpanzees have been successfully darted with immobilizing drugs in Gombe (Tanzania), but the only such attempt in Uganda caused the death of the chimpanzee (adult male Mkono, who fell from a tree in Budongo ca. 1970). Thus intervention appears costly and risky.

Attempts to protect chimpanzees from human diseases are worth considering. Most populations of Ugandan chimpanzees are fringed by agriculture, and at least occasionally visit fields for food. Fields are reservoirs of humans pathogens, including parasites from human feces. Horizontal transmission of parasites from humans to chimpanzees is therefore to be expected, and preliminary evidence suggests it occurs in Kanyawara (L. Basse, pers comm). However the effort required to protect crop-raiding chimpanzees from picking up human parasites would be substantial.

5. Managing genetic diversity

Genetic variation among Ugandan chimpanzees was described by Goldberg (1996), based on the fast-evolving mitochondrial D-loop gene analyzed from hairs collected in Budongo, Bugoma, Kibale, Ruwenzori, and Semliki. There was no evidence of significant genetic differentiation between populations. However, Ruwenzori chimpanzees had the largest number of rare haplotypes, indicating that Ruwenzori may have acted as an important source population for Uganda when populations recovered following the last ice age (10-12,000 years ago). Thus, the Ruwenzori population has the greatest known genetic significance of any Ugandan population.

Genetic variation within populations was uniformly high, indicating no evidence of inbreeding threat in the studied populations.

6. Introduction into suitable habitats with few or no chimpanzees

Orangutan conservation strategies include introductions of captive individuals into both empty and occupied forests. For chimpanzees, however, this strategy appears not to be viable.

First, no empty habitats are currently known in Uganda capable of supporting a chimpanzee population within the historical range of the species. It is possible that some of the larger islands in Lake Victoria would permit self-sustaining populations, given the experience with Rubondo Island in Tanzania, where a population of chimpanzees was released in the 1960's and has become well established. However there appear to be no suitable islands within Uganda: all large forested islands are also peopled by farmers whose interests would be threatened by the chimpanzees. Because hunting and disease appear not to be important threats to entire populations, it seems unlikely that Ugandan chimpanzee habitats will lose their chimpanzees except as a result of habitat loss.

Second, introductions into occupied forests are not merited on conservation grounds: natural reproduction can be expected to maintain population density unless there is excess mortality from hunting or habitat loss, in which case introductions are not wise. However on humanitarian grounds, reintroductions of captive individuals are desirable. Unfortunately they

are unlikely to be successful. Social groups will often be hostile to immigrants, except to young females. In the only attempted introduction in Uganda, a young female (Bahati, ca. 4 years) rescued from captivity was introduced to the Kanyawara community in 1994. Through much effort she was provided with physical training and knowledge of local foods, and she was socially accepted. However when the fruit supply became poor, she returned to human habitation in search of hand-outs (L. Naughton and A. Treves, pers comm).

A reintroduction strategy is therefore not recommended as a major tool of chimpanzee conservation.

7. Promoting public interest in conserving chimpanzees: eco-tourism

National Ugandan newspapers bear witness to substantial public interest in the status of wildlife conservation and in the humane treatment of wild and captive species. This is particularly true for chimpanzees, evidenced by the thousands of visitors per year to see chimpanzees at the Entebbe Wildlife Education Center, and the crusading journalism of Ndirakira Amooti and the New Vision, the national newspaper for with Amooti writes. Even so, however, there are conflicts between chimpanzee and human interests that threaten the good standing in which chimpanzees are often held. Promoting the interests of chimpanzees by showing that they can provide economic benefits is therefore of major significance.

The principal conflicts are over land use. Conservationists seek to maintain gazetted lands as protected areas; farmers seek extra land, and already have to be forcibly prevented from cutting in some areas. Conservationists hope that chimpanzees visiting fields will not be harmed; farmers protecting their crops seek redress from crop damage (which is generally minimal from chimpanzees). Extreme conflicts occur occasionally. In Ruteete village, west of Kibale N.P., four well-documented predatory attacks by a chimpanzee on children have occurred from 1994-1996, leading to two deaths. (These were probably the acts of a single “rogue” chimpanzee, since all were by a single adult male withing a small geographical range of 3-4 sq km where chimpanzees are rarely found). Conflicts over land use will surely intensify as Uganda’s rural population and agricultural needs grow.

Fortunately, chimpanzee habitats are mostly in gazetted areas where promotion of eco-tourism is already a key management strategy employed by the relevant authority (i.e. the Forest Department (for Forest Reserves) or the Uganda Wildlife Authority (for National Parks)). In theory, the benefits of eco-tourism are that gazetted habitats will be maintained at a steady profit for the managing authority and for the country, and that these profits will ultimately serve to ameliorate conflicts (e.g. by revenues returned to local people through Park Management Advisory Committees). These benefits depend on sufficient visitors coming, and the facility being sufficiently well maintained, that profits are sustained without damage to the habitat or population.

Uganda is now in an experimental stage with regard to chimpanzee-focused eco-tourism. Since 1991 facilities with semi-habituated chimpanzees have been developed in Kyambura (Queen Elizabeth NP), Kanyanchu (Kibale NP), and Kaniyo-Pabidi (Budongo FR). All appear to

be developing well and are attracting sufficient visitors to merit the investment in these facilities. At present they provide important adjunct experiences for tourists whose main interest in Uganda is seeing gorillas in Bwindi or Mgahinga, i.e. they are often viewed as "fillers" on a gorilla-focused circuit of western Uganda. As the chimpanzees become more habituated and tourists are better serviced, chimpanzee-viewing should become a primary goal of more tourists. Dissemination of research data on Uganda's chimpanzees can be expected to enlarge the constituency of tourists with special interests in visiting these populations.

As a conservation strategy, chimpanzee-focused eco-tourism has several benefits and appears to have a large potential future. As with gorilla-focused eco-tourism, it is important to manage human-ape contact so as to minimize stress to the apes, to reduce disease transmission in each direction, and to avoid aggression. Given these caveats, eco-tourism has great potential for linking the conservation of chimpanzees to local and national interests and thus for ameliorating human-chimpanzee conflicts.

8. Developing a nationally coherent management plan

Uganda's chimpanzees are currently managed by two major authorities, the Uganda Wildlife Authority (responsible for national parks and game reserves) and the Forest Department (responsible for forest reserves), located in two different ministries (Tourism Wildlife and Antiquities; and Environmental Protection, respectively). In some respects it may be advantageous for managers to unite closely.

Examples of how this might help range from issues of how to manage conflict between chimpanzees and farmers, to the development of an integrated tourism facility. For instance, it might help tourism companies if they could evaluate the opportunities at different chimpanzee eco-tourism sites through a single channel, such as knowing which is the best site for viewing chimpanzees at a given time of year. Ultimately, therefore, a mechanism for facilitating close inter-departmental cooperation ins likely to assist chimpanzee conservation.

Concluding Discussion and Summary

This paper discusses eight strategies available of conserving and managing Uganda's chimpanzees. We conclude that the critical overall factor is the amount of habitat, most of which is officially protected. Uganda has the advantage of a cultural disinterest in hunting primates, a managerial system that appreciates the merits of conservation, and a history of effective forest management. Losses in the past century appear to have been rather minor, even during the war-torn years of the 1970's and 1980's. The maintenance of habitats at current levels depends on support for existing national habitat conservation strategies. With respect to chimpanzees, special support for habitat protection can come from financial benefits (via eco-tourism), research (producing information that enlarges the constituency of interest), and monitoring (guarding against habitat loss, hunting or disease), as well as by vocal advocacy.

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Table III-1. Snare damage in the Kanyawara community

The table shows the number of individuals with permanent wounds known (N=9) or suspected (N=9) to be result of snares. “Crippling” refers to the damage that reduces the efficiency of ordinary locomotion or feeding.

Lost hand	4
Crippled hand	4
Lame hand	5
Lame finger	2
Crippled feet	2
Crippled toes	1