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WHITE-NAPED MANGABEY, A CRITICALLY ENDANGERED SPECIES, IN JEOPARDY IN ABIDJAN ZOO, CÔTE D'IVOIRE

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Introduction

The white-naped mangabey (*Cercocebus atys lunulatus*), occurs primarily in the Upper Guinean Rainforest of the eastern part of Côte d'Ivoire and western Ghana. Recently, it was also detected in a small area in the south-west of Burkina Faso (Galat and Galat-Luong, 2006). It occurs in primary and secondary forests, gallery forests and mosaic zones (Kingdon, 1997). Its conservation status was not known prior to surveys conducted by Oates *et al.* (1997, 2000) and McGraw (1998) in the late 1990s in eastern Côte d'Ivoire and in Ghana. During these surveys *C. a. lunulatus* was rarely encountered and it was therefore categorized as critically endangered by IUCN (Butynski *et al.*, 2000) and subsequently listed among the 25 most endangered primate species (Mittermeier *et al.*, 2002, 2005).

Recently surveys to gather data about its current distribution and status in Côte d'Ivoire have been conducted (Koné, 2004). Within its historical range (Figure 1), this species has been reported in only a few remaining forest patches in Côte d'Ivoire: Marahoué National Park (Struhsaker and Bakarr, 1999), Dassiéko Forest Reserve (Koné, 2004; Gonedelé Bi *et al.*, 2006), Niégré Forest reserve (Gonedelé Bi *et al.*, 2006), Yaya Forest Reserve (Oates *et al.*, 1997; Gonedelé Bi, pers. obs.), Azagny (Gonedelé Bi, pers. obs.), Comoé National Park (Bousquet, 1992; Fischer *et al.*, 2002) and a forest east of the Ehy Lagoon (Koné, 2004; Koné *et al.*, 2006); in Ghana: Krokosua Hills Forest Reserve (Abedi-Lartey and Amponsah, 1999), Ankasa Resource Reserve, Dadieso and Yoyo Forest Reserve (Magnuson, 2002) and in Burkina Faso: extreme northern edge of the AGEREF (Associations de Gestion des Ressources Naturelles et de la Faune)/ Comoé-Léraba Reserve (Galat and Galat-Luong, 2006). Although reported from all these forests, during recent extensive surveys in Côte d'Ivoire and Burkina Faso only very few individuals have been directly observed in three of them (Figure 1), namely Dassiéko Forest Reserve (Gonedelé Bi *et al.*, 2006), Ehy Forest (Koné *et al.*, 2006) and the AGEREF/Comoé-Léraba Reserve (Galat and Galat-Luong, 2006). This suggests that the population size of the mangabey is already heavily reduced and ongoing severe poaching may affect its survival chances in the near future (Galat and Galat-Luong, 2006). Although it was recently found in more forest patches than during the surveys in the late 1990s, its general status has not improved and it has been suggested that it is still justifiable to include it in the list of the 25 most threatened species (Galat and Galat-Luong, 2006).

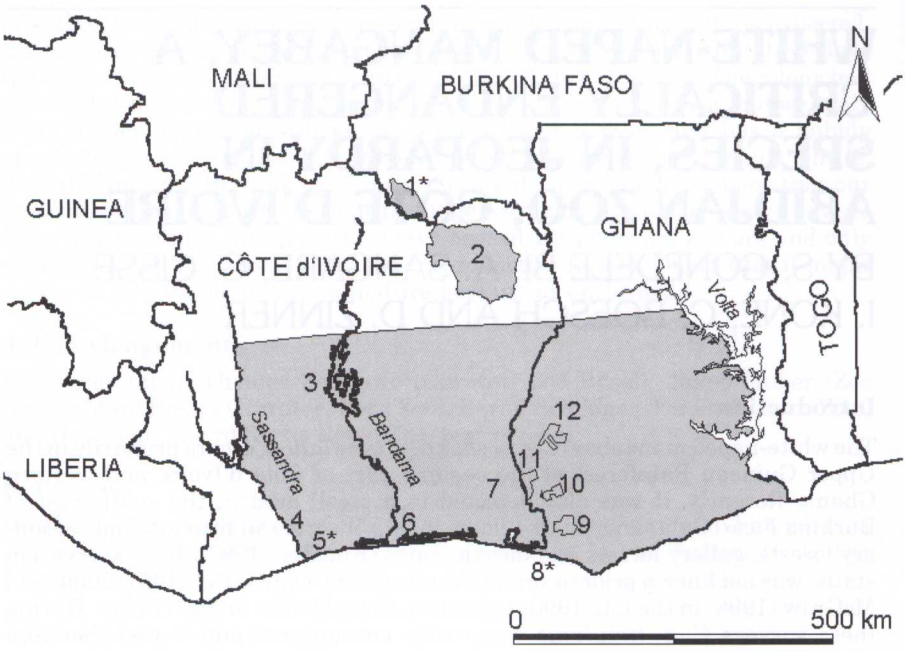


Figure 1. Possible range of *Cercocebus atys lunulatus* (based on Kingdon, 1997). Protected forest areas where it has been observed or suspected: (1*) Comoé-Léraba Reserve, (2) Comoé NP, (3) Marahoué NP, (4) Niégré FR, (5*) Dassiéko FR, (6) Azagny NP, (7) Yaya Forest, (8*) Ehy Forest, (9) Ankasa RR, (10) Yoyo FR, (11) Dadieso FR, (12) Krokosua Hills FR.
(*) Forests of Côte d'Ivoire and Burkina Faso where it has been recently sighted (2004–2006).

Côte d'Ivoire is inhabited by many endangered species, which are now severely threatened in their natural habitat, including several primate taxa (IUCN, 2006). In relation to the preservation of these taxa, zoos in the countries of origin might play a particular and more prominent role. Conservation education and captive breeding of endangered species are fields where zoos can and do actively participate, in particular if they have to accept animals confiscated by governmental authorities. However, to fulfil such a role, minimum standards of husbandry are required. If such standards are not maintained, the keeping of endangered animals in such zoos will only worsen the situation of the species concerned. Here we report on a complete failure of Abidjan Zoo in preserving a population of *C. a. lunulatus*.

Abidjan Zoo

The zoo was created by a French citizen named Ivan Cholet in 1955. In 1972 it was nationalized by the government of Côte d'Ivoire. The zoo is situated in the

district of Adjamé-Abobo and is bordered by a forest fragment that has been encroached upon by urbanization. Once outside the town, it now lies within city limits, encircled by buildings erected in recent years. Of a total area of 18 hectares allotted to the zoo, it effectively occupies only six hectares. Once one of the best and most stunning zoos of West Africa, Abidjan Zoo has suffered by a lack of attention and funding. Since its creation, only a very few enclosures have been renovated or newly constructed. The enclosing wall and its fence are now in very poor condition and close to collapsing.

Table 1. Primate taxa and number of individuals kept in Abidjan Zoo in June 2007.

Common name	Scientific name	No.	IUCN Status*
White-naped mangabey	*Cercocebus atys lunulatus*	1	CR
Stampfli's putty-nosed monkey	*Cercopithecus nictitans stampflii*	1	CR
Chimpanzee	*Pan troglodytes verus*	5	EN
Diana monkey	*Cercopithecus diana diana*	0	EN
Sooty mangabey	*Cercocebus atys atys*	17	LR/lc
Eastern lesser spot-nosed monkey	*Cercopithecus petaurista petaurista*	2	LR/lc
Western lesser spot-nosed monkey	*Cercopithecus petaurista buettikoferi*	1	LR/lc
Campbell's monkey	*Cercopithecus campbelli campbelli*	1	LR/lc
Lowe's monkey	*Cercopithecus campbelli lowei*	2	LR/lc
Green monkey	*Chlorocebus aethiops sabaeus*	14	LR/lc
Patas monkey	*Erythrocebus patas*	4	LR/lc
Olive baboon	*Papio anubis*	4	LR/lc

* CR = Critically Endangered; EN = Endangered; LR/lc = Low Risk – Least Concern.

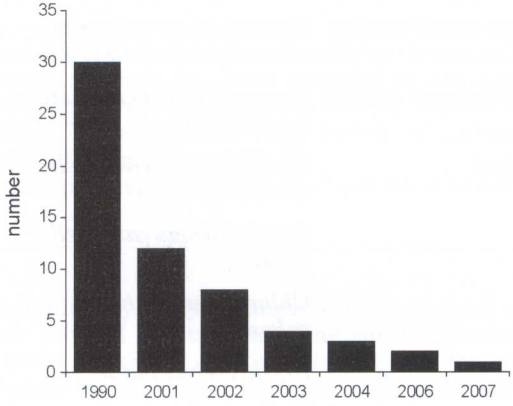
Primates of the zoo

In total, 11 primate taxa are found in the zoo (Table 1). All of them belong to the Cercopithecidae and Hominidae families. Among these taxa, *C. a. lunulatus* is classified as Critically Endangered, and three other taxa, *Cercopithecus d. diana*, *Cercopithecus nictitans* and *Pan troglodytes verus* are classified as

Endangered (IUCN, 2006). The number of primates in the zoo has largely decreased in recent years, mainly due to diseases or injuries. In 2002 the two lone female Diana monkeys died, and in June 2006 the zoo acquired a juvenile Diana monkey, which died seven months later. From a total of twelve baboons in 2002 only two survived in 2006, while two other individuals were acquired in July 2006. The chimpanzees have also been affected by loss of individuals – from eleven individuals in 2000, only two survived until 2003. One more was acquired in 2004, and another two (a three-year-old and a one-year-old) in 2006.

Although *C. a. lunulatus* is classified as critically endangered, no attention has been given to this monkey *ex situ* in Abidjan Zoo. The losses of white-naped mangabeys were even more pronounced there (Figure 2). In 1990, a population of 30 white-naped mangabeys was present in the zoo. This population was reduced to 12 individuals in 2001. Four more died in 2002. Three males and five females still survived, but 2.2 more animals died in 2003. Both females and one male died after being injured by visitors with sticks. The last male of the group died in 2004 after escaping from his enclosure. He was recaptured and isolated in a separate cage but died from unknown causes. In January 2007, only two females of this highly endangered taxon remained, one of whom died one month later.

Figure 2. Decrease of the population size of *Cercocebus atys lunulatus* kept in Abidjan Zoo.



The zoo's primates are usually fed only once a day and very rarely twice when there is enough food available. The diet is mainly composed of a mixture of maize, groundnuts, rice and banana. For the chimpanzees, with the help of the Wild Chimpanzee Foundation (**www.wildchimps.org**) and generous private donors, the situation has changed and they are fed several times a day with a diversity of foods. Besides the inadequate feeding of primates, another problem encountered in the zoo is the frequent escape of the primates because of the faulty security system of the enclosures. In 2006 the zoo's oldest chimpanzee

escaped from its enclosure and was recaptured 10 km away from the zoo in an adjacent district of the town. In 2001 two Campbell's monkeys escaped into the adjacent forest fragment and never returned to the zoo.

Discussion

The keeping conditions for primates and other animals in Abidjan Zoo are worse than marginal, leading to the loss of many individuals within the last decade. In the absence of suitable enclosures to house social groups and with insufficient food supply, primates often escape from their cages looking for supplementary food. They eat leaves and other items in the zoo compound or are fed by visitors to the zoo. The consequence of being in contact with visitors is frequent injuries to the animals, because some visitors like to pick on and torment the animals. Other consequences are the possibility of visitors being hurt by the primates or coming in contact with primate faeces or urine, which can be the source of various diseases (Brack, 1987; Peeters, 2004). As a consequence of these conditions the animals show a high level of abnormal and self-destructive behaviours. Wounds and diseases occur frequently, causing high mortality. Formerly, the directors of the zoo were veterinarians. But since 2001, the successive directors have been Park rangers or biologists from universities. Veterinary services are currently not available. Professional necropsies to detect causes of death are not possible in the absence of a physician and equipment. The zoo also lacks the financial resources to call for private veterinary attention in case of need. Also, the education and knowledge of the zoo staff seem to be insufficient, in particular in relation to conservation and the status of their animals. In 2002, we informed the staff of the zoo about the status of *C. a. lunulatus* and other primates in the collection. Prior to that, their status was not known to them.

So far, we have identified several immediate causes for the loss of primates in the zoo: mismanagement on various levels (corruption), malnourishment of primates, dilapidated enclosures, the ignorance of zoo personnel and the misconduct of visitors. However, we are fully aware of the fact that the indirect causes of the zoo's decline are to be found in the economic crisis that Côte d'Ivoire has faced for many years and which has been intensified by the political instability since 2002. Several donors have suspended activities, creating a gap in current funding. These events have greatly affected the resources of the zoo, and thus impeded the development of new activities there.

The zoo has been badly affected by the reduction of its budget and, for example, the food of primates and other animals has been reduced in quality and quantity. Furthermore, the frequent changes of director seem to have had a bad effect on the management strategy, because each director has come up with his own programme but has never had enough time to implement it.

In June 2007 only one white-naped mangabey, a female, was still present in Abidjan Zoo. In the absence of sufficient protection and care, it seemed unlikely that she would survive for very long, so it made no sense to try to get a male partner to start a breeding programme. Fortunately, however, West African Primate Conservation Action (**www.wapca.org**) announced in July that they were hoping to negotiate her transfer to Accra Zoo, Ghana, where a successful captive-breeding programme for the taxon has been established in collaboration with European zoos. Recently (28/09/07) negotiations have been taking place between the Wildlife Division of Ghana and the coordinator of the Mangabey

Studbook on one hand and the director of Abidjan Zoo on the other hand: the contacts are mediated by the director of Mulhouse Zoo, France.

It is still possible to confiscate white-naped mangabeys in Côte d'Ivoire, for some have been seen being kept as pets in villages surrounding forest reserves (Gonedelé Bi *et al.*, 2006). So if keeping conditions in Abidjan could be improved, it might be possible to integrate the zoo into this programme. This would be a desirable outcome, as it would make possible the survival of *C. a. lunulatus* as a flagship species for conservation in Côte d'Ivoire.

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