

Preliminary results on movements of a radio-collared elephant in Lobeke National Park, south-east Cameroon

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Abstract

To better understand the movement and distribution patterns of forest elephants in the south-east Cameroon forest region, the WWF Jengi project in the area launched an elephant telemetry programme. Preliminary results from a radio-collared elephant have indicated that elephants spent more time in the surrounding forest areas of the national park that constituted logging concessions and professional hunting zones than in the forest itself. Initial results confirm the need to step up protection efforts in the form of anti-poaching patrols that will fight against poaching and the ivory trade that are common within logging concessionaires. Future work on monitoring radio-collared elephants will also help determine important animal corridors and migratory routes, especially within a trans-boundary conservation programme involving contiguous protected areas in Cameroon, Congo-Brazzaville and Central African Republic.

Résumé

Afin de mieux comprendre les déplacements et le schéma de distribution des éléphants de forêt dans la région sud-est du Cameroun, le projet Jengi du WWF dans la région a lancé un programme de télémétrie pour les éléphants. Les résultats préliminaires provenant d'un seul éléphant équipé indiquent que les éléphants passent plus de temps dans les zones forestières qui entourent le parc national et qui constituaient des concessions d'exploitation forestière et des zones de chasse professionnelle, que dans le parc lui-même. Les premiers résultats confirment la nécessité d'intensifier les efforts de protection sous forme de patrouilles anti-braconnage qui devraient lutter contre le braconnage et le trafic d'ivoire qui sont fréquents au sein des concessions. Le futur travail avec des éléphants équipés de colliers-radio va aussi aider à déterminer les corridors et les voies de migration importants pour les éléphants, spécialement dans le cadre d'un programme de conservation transfrontière qui implique des aires protégées contigües au Cameroun, au Congo-Brazzaville et en République Centrafricaine.

Introduction

Conserving and managing the African elephant is a complex undertaking, requiring skills and strategies that deal with populations in both protected and unprotected areas throughout their range. Dublin et al. (1997) indicated that the increase in proximity of human populations and subsequent expansion of their activities into elephant ranges is increasingly calling wildlife authorities to consider not only the welfare of the species and its habitat but also the problems that arise between elephants and their human neighbours competing for limited resources.

The multitude of problems confronting this mega species has led international conservation organi-

zations and leading specialists to focus on defining various conservation strategies such as establishing more protected areas to fight against diminishing species populations. Measures taken also include increased use of methods such as radio collaring elephants to monitor movement and distribution. While successful conservation and management of elephant populations in the wild strongly relies on sound scientific, ecologically based information, the long-term survival of the species throughout its range in tropical Africa can be secured only by combining solutions that reconcile ecological, economic and cultural values. There is no doubt of the role elephants play as pace setters within their ecological range,



A forest elephant (*Loxodonta africana cyclotis*) in Lobeke National Park, Cameroon.

changing the physiognomy of forest structures. They also help propagate certain tree species by passing seeds through their digestive system where enzymatic reactions help stimulate germination of the ingested seeds.

Local economic and cultural values

Elephants play an important role in the life of forest people inhabiting tropical forests. Elephants are hunted for meat but more importantly for their ivory, which brings many households a high income. Elephant tusks not only have economic value because they are used to manufacture various ivory products such as jewellery and carvings, they also are symbols of power, especially within the elitist class in Cameroonian society. Baka forest pygmies also have a strong sociocultural affiliation with elephants; these animals occupy a special place in pygmy life. An elephant is killed during Jengi, a widely celebrated pygmy festival that symbolizes the people's attachment to the forest.

Species population status

The south-east forest region harbours a significant population of elephants although no data exist for the entire region. Over the past 10 years, much research

has been carried out that focuses on the status and distribution of elephant populations in protected areas of Boumba Bek, Nki and Lobeke National Parks. Population densities in Lobeke range from 2.5 elephants km⁻² as reported by WCS (1996) to 4.6 elephants km⁻² reported by Stromayer and Ekobo in 1991. But overall population density for elephants within protected areas could be estimated at 2.17 km⁻² (Ekobo 1995). Lobeke National Park and the surrounding forest area cover an area of more than 500,000 ha with the park itself being 220,000 ha.

Conservation threats

Poaching

The biggest threat to elephant populations in the entire south-east region is poaching, mainly carried out to furnish the ivory trade. There is a paucity of existing data on elephants killed in the region, although recent and ongoing monitoring studies in Lobeke National Park and surrounding forest areas show at least five elephants are killed every month in the region. Five major logging companies operate in the forest areas surrounding Lobeke. The effect on elephant populations is negative, as most of the poachers work for these companies and the logging trucks provide easy transport for both meat and ivory to distant towns and cities, notably Bertoua, Yaoundé and Douala. Existing laws are loosely and arbitrarily implemented, a situation that the government should address seriously, because elephant hunting in the area is increasing. The amount of arms is also proliferating, made easy by the porous borders with neighbouring Congo-Brazzaville and Central African Republic (CAR). The wide circulation of arms can also be attributed to political instability in neighbouring states. For example, a modern AK47 rifle can be bought for less than CFA 150,000 (USD 200) in the black markets of south-east Cameroon.

Elephant hunting and trade in ivory is a delicate and undercover business in the region as some influential members of the society actively encourage the trade. Muslim traders (who own most of the stores

in the area) are widely known to be major intermediaries and buyers of ivory from the region. They also sponsor small hunting groups who are paid monthly according to the amount of ivory they poach and bring in.

Logging

As mentioned above, logging companies provide ready transport to market for the ivory trade and also harbour most of the elephant poachers, who work for them. The poachers know the forest areas where the elephants are concentrated, finding them especially when carrying out forest inventory reconnaissance and prospecting missions before logging begins in an area. Logging destroys forest cover and habitats, although forest elephants may favour disturbed or secondary forest (Ekobo 1995).

Human encroachment

Although human encroachment does not pose a serious problem at the moment, increased opening of forestland through logging activities attracts a significant population of mostly non-indigents who settle in logged areas to hunt and embark on agriculture. The human population density in the area is low, less than 1 person km⁻², which favours conservation of natural resources. However, the nomadic lifestyle of the Baka pygmies and the lifestyle of non-indigents, which includes establishing temporary settlements and subsistence farming, sometimes deep inside the forest, has at times led these groups to intrude into elephant ranges. This has been confirmed over the past two years with serious elephant-human conflicts that have led to loss of both human and elephant life (pers. obs.). Present Cameroonian laws do not prohibit citizens from settling in certain areas.

Transborder conservation issues

Lobeke National Park is contiguous with forest areas and protected areas of Congo-Brazzaville and with Nouabale National Park in the Republic of Congo-Brazzaville and Dzanga-Sangha Dense Forest Reserve in CAR. These three protected areas constitute the Sangha Tri-national Park, which covers more than 7750 km² of core protected area and proposed multiple-use zones of about 21,000 km². The

entire region is widely known for its rich biodiversity in both wildlife and timber species that has attracted many logging companies, hunters and poachers.

One of the unique biological features of the area is the significant population of forest elephants of great ecological importance. Elephant research has been conducted over the past decade in nearby CAR, notably research on identifying and monitoring species populations. This study has led to conservation biologists working in Dzanga-Sangha being able to identify and recognize more than 1000 elephants (Turkalo and Fay 1995; Turkalo 1996). Elephants are also known to range seasonally within the three protected areas.

The present study of radio collaring and monitoring movements of forest elephants is part of a broader research programme that spans the three countries, executed site by project site, that will provide more insights on elephant movement and distribution. This study will help identify major migratory routes and important biological corridors for elephants across their range. Three elephants have been collared in neighbouring Nouabale Ndoki National Park. A number of elephants have been observed crossing the Sangha River. For example, in November 1998, I personally observed four elephants crossing the Sangha River into Lobeke from Nouabale Ndoki.

Satellite data of a collared forest elephant in Lobeke

In February 2001, Dr Mike Loomis of North Carolina Zoo, USA, working in collaboration with the WWF programme office successfully collared a five-year-old forest elephant, named Desiré, after the project chief elephant tracker and field assistant, Desiré Dontego. Desiré was collared in one of the major forest clearings, Ndagaye Bai, of Lobeke. Attached around the neck of the elephant was a high-powered VHF radio collar equipped with a UHF unit that transmits data on movements to orbiting satellites. The location data are sent from these satellites to a ground station in France, where they are in turn emailed to an Internet server in North Carolina. This server then transmits the data to North Carolina Zoo as well as to several locations back in Cameroon, notably the server of the WWF programme office. Field biologists then download the data from the server in Yaoundé for further analysis. Meanwhile, researchers in North Carolina Zoo review the data at least once daily. In the field, our chief tracker equipped

with a small VHF radio tracks the elephant within a maximum radius of 5 km. The elephant has been successfully tracked at least three times from the ground.

Recent results on elephant movements

The map (fig. 1) shows Desiré's movements during the eight months since he was tagged in March 2001. The satellite readings show that he has spent about 75% of his time in surrounding forest areas north of Lobeke National Park. Between February and April, a period that coincides with the dry season, Desiré spent at least 75% of his time inside the park, especially in the forest areas surrounding Ndangaye Bai, where he was tagged. Meanwhile during the months of May through August, Desiré was found mostly in surrounding forest areas outside the park, particularly in the professional hunting zone of Faro West. Desiré visited the park only once during the month of August as he moved further northwards to professional hunting zones beyond Nsok Safari, some 30 km from the park boundary. Each dot represents a position location of the elephant, and the satellites capture at least one position each day. Daily locations of the animal are determined by a Doppler shift that represents the mean of satellite data captured per location.

Protecting the Lobeke elephant population is critical, especially in surrounding forest areas managed by professional hunters. More data may confirm the strong hypothesis of a greater concentration of elephants in areas north of the park where two major logging companies are operating. Elephants have been widely reported to prefer logged or disturbed forest characterized by an abundance of secondary growth, which provides suitable foliage for feeding (Ekobo 1995). The need is urgent for the project management to consolidate existing collaboration between these companies and sport hunting outfits, especially with regard to poaching. Long-term survival of wildlife populations, especially elephants, will depend on collaboration and support from these stakeholders in the fight against poaching. Coincidentally most poaching in Lobeke is within these particular forest areas, although sport-hunting outfits are actively carrying out anti-poaching missions in their hunting zones. Unfortunately anti-poaching activities are not sustained throughout the year, notably in the sport-hunting concessions as

sport-hunting companies in the region operate seasonally between December and July, the official sport-hunting season.

It is also too early to predict seasonal animal movements, but initial results portray elephant preference for the park during the wet season, particularly the marshes and swamps of the surrounding forest areas of Ndangaye Bai. During the wet season, Desiré spends more time in the park, presumably feeding on the many trees that fruit abundantly at that time. During the dry season from June through August, when fewer forest tree species are in fruit, Desiré covers a wider range, more than 30 km beyond the park, in search of food. More research and data are, however, required to verify this observation.

Future action

Future action should concentrate on tracking elephant groups to gather more baseline data related to group size, feeding habits and so on. The project should continue the ongoing mission to sensitize stakeholders in the region—the logging companies, sport-hunting outfits and surrounding local community—on the importance of this study and to seek their active collaboration in gathering information. Desiré was spotted on several occasions by the Faro West hunting concession while hunting with clients during the last sport-hunting season. At least two more elephants should be tagged to provide a better understanding on group size and ranging patterns. Desiré is part of a family group of four elephants that will continue to be monitored, and more elephant tagging is planned in the region to reinforce the ongoing monitoring programme.

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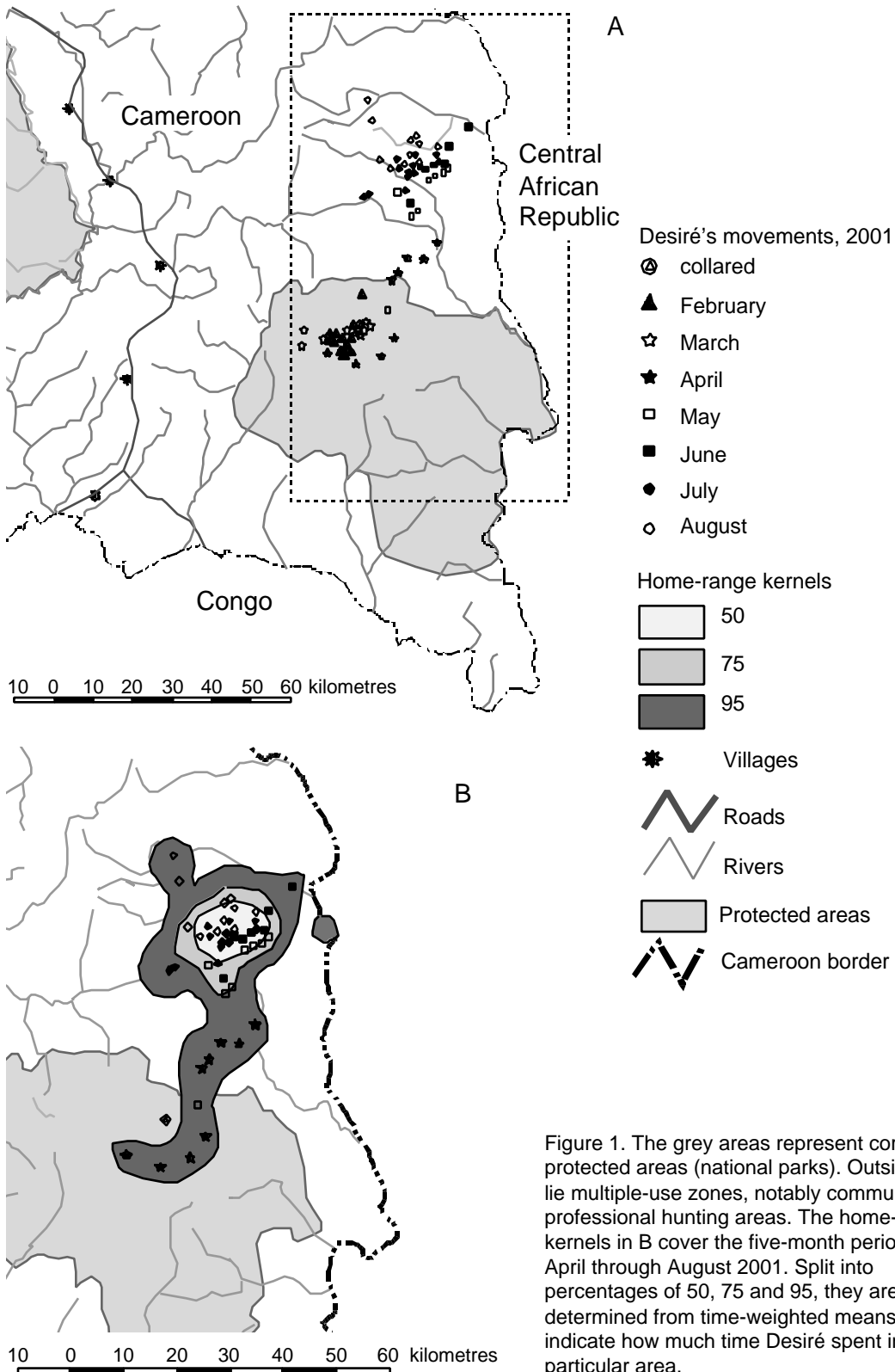


Figure 1. The grey areas represent core protected areas (national parks). Outside them lie multiple-use zones, notably community and professional hunting areas. The home-range kernels in B cover the five-month period from April through August 2001. Split into percentages of 50, 75 and 95, they are determined from time-weighted means and indicate how much time Desiré spent in a particular area.

technical coordination of our late colleague Dr Robinson Ngnegueu, who unfortunately never had the chance to appreciate results from this pioneering effort of elephant conservation in Lobeke. The entire staff of the Ministry of Forests and Environment in Yokadouma have been very supportive, realizing how much this study will help in future design and implementation of management strategies for elephants in Lobeke.

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