

The Chimpanzee Community of German-Fort, and the Potentials for the Development of Tourism-Base Management of Gashaka-Gumti National Park, Nigeria

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ABSTRACT

The chimpanzee community of the German-Fort, Gashaka-Gumti National Park was studied with the objectives of packaging it for ecotourism development. Chimpanzee tracking was carried out in the months of June, July, and August 2007 (during the rainy season) and in January, February, and March 2008 (during the dry season). Three transects of about 3 km each were established using a Garmin GPS 72 (Global Positioning System). A total of 54 km of chimpanzee's nest transect surveys were conducted (36 km in gallery forest and 18 km in woodland forest). Eighty-three nests were counted given nest encounter rate of 2.14 nests/km. Ninety-two percent (92.8%; n=77) of the total nests counted were observed in the gallery forest, and only 7.2% (n=6) were observed in the woodland forest. A total of ten encounters (two sightings and eight vocalizations) were achieved with the animal in the site. Nine species of trees were identified to be used by the chimpanzees of this community for nesting.

Key words: Chimpanzee, conservation, tourism potential, encounters and nests

INTRODUCTION

One way in promoting sustainable chimpanzee conservation is the adoption of chimpanzee based ecotourism management of wild communities. Ecotourism involves traveling to relatively undisturbed natural areas for education, recreation, inspiration, and scientific purposes. The objectives may be for studying nature in the pristine state, admiring beautiful scenery, observing wild animals and plants, and/or appreciating unique geological formation, geomorphologic, or cultural site therein. Marguba (1996) observed that this is the type of tourism which involved traveling to National Parks and other nature reserves for relaxation, solitude, or meditation. Odewumi (2004) observed that although ecotourism is new in Nigeria, it can help to alleviate the problems of conservation and development.

The Gashaka-Gumti National Park is one of the sites that offer an excellent opportunity for the realization of the development of tourism objectives of Nigeria. It is the largest and most diverse conservation area in Nigeria. It is a well-known international research center, receiving visitors from all over the world and through out the year. The chimpanzee, the closest living relative of man, is the star of all the animals that attract people to the park. The population of chimpanzees in the park is regarded as a flagship species: high profile and charismatic species that may play a significant ecological role and often

have important cultural association (FFI, 2006), thus attracting attention all over the world. Packaging this animal for ecotourism will definitely be of great ecological and economic benefits to the park, local community and the nation.

Conservation is linked to the process of rural development. Ecotourism can help alleviate problems of conservation and development. It is capable of yielding sustainable local earnings. In both developed and developing countries, tourism covers a wide range of economic activities because of its varied sub-sectors, such as hotels, hospitality, and transportation, which could be described as interdependent. Falade (1993) observed that ecotourism is a mode of eco-development which represents a practical and effective means of attaining social and economic improvement for all countries and it is a powerful instrument for conservation of world, natural, and cultural heritage. Boo (1991) stated that the idea of ecotourism is closely related and associated with conservation. He identified three opportunities in linking ecological tourism to conservation and development as thus: increase funding for the parks through tourism, provision of new jobs for local communities, and environmental education for visitors.

The German-Fort is a historical site in the Filinga Range (very close to the village of Gashaka) that attracts visitors coming into the park. The chimpanzee community of the site was study with the objectives of determining its number, distribution, and identification of its habitat preference in order to package it for ecotourism development

MATERIALS AND METHODS

The study area

Gashaka-Gumti National Park (GGNP) lies within latitude $06^{\circ} 55'$ – $08^{\circ} 13'$ and longitude $11^{\circ} 13'$ – $12^{\circ} 11'$ in the north eastern zone of Nigeria. It is Nigeria's largest and most diverse National Park with an area of about 6400 km². The German-Fort is located very close to the Gashaka village, just about 10-15 minutes trekking from the village (a settlement of about 600 people at the edge of the park in the southern sector of Filinga Range) on the foot track leading to Serti. The Nigerian Conservation Foundation Research Station is located in this village and this is the park's main field base and range headquarters.

The region experiences two marked seasons: Dry seasons are usually from November to March, while rainy seasons come up from April to October. The average annual rainfall is about 1,800 mm. The mean minimum temperature, of about 21o C, occurs in January during the dry seasons and it coincides with the harmattan period. The mean maximum temperature, of about 33o C, is recorded on the onset of rainy seasons in early April. Vegetation in the sector is essentially guinea savanna with patches of wood land and riparian forests (gallery forests) along the streams and rivers (Akinsoji, 2003). Two major rivers, Gamgam and Gashaka, drain the area and they meet with their confluence about one kilometer from the edge of our study site. However, vegetation in the German-Fort area is composed mainly of woodland and the gallery forest. The site is a fragment forest of about 5 km sq (Ogunjemite, 2009)

Methods

Chimpanzee tracking was carried out after Ogunjemite, Agbelusi, Afolayan and Onadeko (2006) in the months of May, June, and July 2007 (during the rainy season) and in January, February and March 2008 (during the dry season). Chimpanzees' tracking involved walking on predetermined transect made up of existing trails within the forest searching for signs of chimpanzee activities (the most important of which is its nests). Three transects of about 3 km each were established using Garmin GPS 72 (Global Positioning System). All transects used were stratified and varied proportionately to reflect habitat gradient thus six km of transect lines were established in the gallery forest and three km in the woodland forest. Transects were walked ones in a month. Information collected from the transect line included the number of nests within 30m strip (15m on each sides of the transect lines), location of nests, habitat types, and evidences of chimpanzee feeding. Age class of chimpanzees' nest was determined using an adaptation of Tutin and Fernandez (1984) thus:

Fresh nest – Vegetation green and not wilted

Recent – vegetation wilted and changing colour

Old – Vegetation dead but still intact

Decayed – nest beginning to disintegrate

Nesting trees were identified to species level and nest height. The nesting tree height was measured using the Haga Altimeter. Tree Diameter at Breast Height (DBH) was measured using a tape measure. Aspect of the slope of nesting sites was determined using a GPS. Relative elevations were taken at two points along the slopes. The distance between the points were measured by pacing and angle of slope calculated from the values. The physical features (streams, rivers, rock boulders, cliff, and gully) were noted and recorded. Direct sighting of the chimpanzees was pursued and vocalizations were recorded. Signs of human activities, especially hunting, were recorded. These include, sounds of gun fire, poachers tent/camp, snares and traps, wood gathering, and bush burning

Data analysis

The data collected were summarized on monthly and seasonal bases and average values were computed. Chimpanzee density in the site was computed using a modification of Tutin and Fernandez (1984) equation by substituting 91 days nest-disintegration day obtained by Adanu (1999) as follows:

$$Density = \frac{NC}{A} \times \frac{1}{NDD}$$

Where NC = No. of nest counted, A = Area sampled and NDD = Nest disintegration days

RESULTS

A total of 54 km of chimpanzee's nest transect surveys were conducted (36 km in gallery forest and 18 km in woodland forest) in the German-Fort Chimpanzee Community. Eighty-three nests were counted (Table 1), given nest encounter rate of 2.14 nests/km (2 nests/km in the gallery forest and 0.33 nest/km in the woodland forest). 92.8% (n=77) of the total nests counted were observed in the gallery forest, and only 7.2% (n=6) were observed in the woodland forest. No newly or freshly

built nests were observed in the woodland forest during the dry season. A density of 0.34 chimps/ km was calculated for the site.

Ten encounters (two sightings and eight vocalizations) were achieved with the animal in the site (Table 2). These are two adult chimpanzees at sunset in July 2007 (rainy season) and six individuals at about noon in February 2008. At least one vocalization was heard in each of the enumerations. However, they ceased to make vocalizations each time they detected the presence of human in their community for the rest of that day.

Eight species of trees were identified to be used by the chimpanzees of this community for nesting (Table 3). These are *Craibia atlantica*, *Khaya senegansensis*, *Vitex doniana*, *Trichilia* sp, *Lecaniodiscus cupanioides*, *Celtis integrifolia*, *Afzelia africana*, *Napoleonaea* sp and *Anogeissus leiocarpus*. Rainy season nesting tree species are *Craibia atlantica*, *Lecaniodiscus cupanioides*, *Khaya senegansensis*, *Celtis integrifolia*, *Anogeissus leiocarpus*, *Vitex doniana* and *Napoleonaea* sp while dry season species are *Khaya senegansensis*, *Celtis integrifolia*, *Trichilia* sp, *Afzelia africana* and *Craibia atlantica*. *Khaya senegansensis* and *Craibia atlantica* were the only species common to both seasons. *Khaya senegansensis* is the most frequently used species in the dry season while *Craibia atlantica* is the most frequently used in rainy season. Height at which nests were built were relatively higher in the dry season than in the rainy season. The girth size of nesting trees appear to be larger for trees used in dry season than those used in the rainy season.

DISCUSSION

Chimpanzees are generally wary of human and will tend to avoid contact with man. Therefore, most surveys on wild and unhabituated populations generally employ nest counts. Given that nest encounter rate is 2.14 nests/km is to say that chimpanzees are fairly well distributed within the community. Estimates from most sites of similar characteristics within and outside the region are often smaller (Ogunjemite, et al., 2006; Ogunjemite & Ashimi, 2008). Chimpanzees occur at low density, which is typical of most large bodied mammals.

It is difficult to compute an estimate of individual chimpanzees in the German-Fort community because the range boundary of the group is not well defined. There are other chimpanzees' communities very close to the site. For instance, the Jankasa/Majarandi community is just about 7 km north east of the site, while the Mayo Kam community is also about 9-10 km south (Ogunjemite and Ashimi, 2008). Moreover, the fusion-fission property of the chimpanzees makes it difficult to predict the extent and limit of the range of groups. In fact, the absence of the study group from the site immediately after the burning and their re-appearance as soon as conditions were improving suggests that they may be a part of a larger group.

The fact that chimpanzees were encountered in the German-Fort Forest in both dry and wet seasons proves that the community could be developed for tourism. Also, that direct sightings were achieved is an indication that the animals might not be threatened in the site, and that habituation work will be easy to make them available to the tourists. Six animals were recorded in one of the sightings, which points to the fact that the social live of the community might be secured thus ensuring the continuity of the community at the site.

The higher number that was observed in the dry season is very consistent with ecological principle of resource used such that large bodied animals will concentrate for resource use at a time of scarcity. In this case, chimpanzees tend to build larger community in dry season for a common resource (close canopy vegetation) and freely disperse when the resources are in abundance in the rainy seasons. Chimpanzees live in large groups of up to 30- 80, called communities. Large communities separates daily into smaller parties, which travel, forage, rest, and nest together (Sommer, Adanu, Faucher and Fowler 2004), thus suggesting that the studied group might be a sub group of a larger social character. However, the fact remains that the group could be habituated and managed to boost the tourism potential of the park. The attitude of waiting to look at humans before fleeing strongly suggest that the group are not threatened and may have been encountering humans for long, thus making them a good candidate for habituation.

The architectural arrangement of nests and nesting trees are added features of interest in chimpanzees' based tourism. Nesting sites and trees are carefully chosen to provide suitable comfortable materials for the night and to avoid predation risks (Fruth & Hohmann, 1993). Other than man, large pythons and leopards had been the commonly reported predators of chimpanzees (Goodall, 1986; Ogunjemite, 2004). Large snakes, like pythons, were not reported in this site, but the presences of leopards were noted. Nesting trees were, therefore, selected such as to support the weight of the animal, but able to resist additional weight of predators.

The study community is located in an area that is accessible in the park almost throughout the year. Hospitality facilities are available at the park main range office of Filinga and NCF (Nigerian Conservation Foundation) research/administrative base, very close to the village of Gashaka (only 3km distance). The site contains the relics of German Garrison of the First World War history and a place commonly visited by tourist. The main problems that the animal may face at the site are that of poaching and annual burning. Traps, poachers' tents, and remnant parts of animals' remains, such as bones of wild-pig and waterbuck, were observed in the site during our survey. Even though poaching may not be directly targeted at chimpanzees because primates are generally taboo to the generality of the inhabitants of the region (Dunn, 1999), chimpanzees may not be immune from such activities. Poaching in the park appears to be an organized enterprise which capitalizes on some of the inadequacies of the park "set-ups" in-terms of lacking in equipments, administrative bureaucracy, and seasonal operations. Traps are used for hunting and occasionally gun fires are heard. In the rainy season, patrol operations appear to be very difficult and camping equipment is often inadequate as poachers take an advantage of the situation to hide in the forest and set traps in many of the remote areas of the range. Effective management targets at anti-poaching are enough to ameliorate this. Generally, there is the need for the improvement of protection facilities of the park bearing in mind the size and difficult terrain.

CONCLUSION

The chimpanzee community of German-Fort shows high potential for tourism development of Gashaka-Gumti National Park, Nigeria. Population resides in an area that is accessible throughout the year, with animals encountered in both dry and rainy seasons and in the location of historical importance in the park. However, some of the major tasks will be to reduce poaching

to the barest minimum and getting the community habituated. Overcoming these tasks will prove that wild species could be developed for uses other than for 'bushmeat' and other traditional uses and it will go a long way to establish bases for sustainable use and reduce threats to the continued survival for the animal particularly in the Gashaka-Mambilla region and generally across its ranges in Nigeria.

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Table 1: Summary of nest count during chimpanzee tracking in the German-Fort Community

| Transects | 1st survey June 2007 | 2nd survey July 2007 | 3rd survey Aug. 2007 | 4th survey Jan. 2008 | 5th survey Feb. 2008 | 6th survey Mar. 2008 | Total |
|-----------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------|
| A Gallery forest (3 km) | 4 | 4 | 4 | 8 | 10 | 8 | 38 |
| B Gallery forest (3 km) | 5 | 8 | 7 | 7 | 7 | 5 | 39 |
| C Woodland forest (3 km) | None | 3 | 3 | None | None | None | 6 |
| | 9 | 15 | 14 | 15 | 17 | 13 | 83 |

Table 2: Summary of chimpanzees' encounters in the German-Fort Community

| Season | Types of encounter | Composition of group | Contact period | Reaction from group |
|--------|-------------------------------|----------------------|----------------|---|
| Rainy | 1 Sighting 5 Vocalizations | 2 adults | 3 minutes | <ul style="list-style-type: none"> • Waited to look at us before running in to thicket. • Once they detect that human are present, they do not call for the rest of the day |
| Dry | 1 Sighting 3 Vocalizations | 4 adult, 2 juveniles | 7 minutes | <ul style="list-style-type: none"> • Waited to look at us closely before running in to thicket. • Once they detect that human are present, they do not call for the rest of the day |

Table 3: Summary of nesting parameters across the German-Fort Community

| Seasons | No of tree species used for nesting | Height of trees (m) | Height at which nest is built (m) | Girth size of trees (cm) |
|---------|-------------------------------------|---------------------|-----------------------------------|--------------------------|
| Rainy | 7 | 8.75 | 7.1 | 40.25 |
| Dry | 5 | 11.09 | 9.48 | 83.13 |