

POLY-SPECIFIC ASSOCIATION OF THE OLIVE BABOON (*Papio anubis*) GROUP WITHIN HOME RANGE IN GASHAKA GUMTI NATIONAL PARK

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Abstract

The study of poly-specific association of the olive baboon (*Papio anubis*) group within their home range in Gashaka Gumti National Park (GGNP) was carried out for a period of one year (both seasons). A single animal group consisting of 30 individuals was studied using the constant animal group follow method carried out for consecutive fifteen days each month. The animal species frequently observed with the olive baboons were the black and white colobus monkey *Colobus polykomos*, putty nosed monkey *Cercopithecus nictitans*, squirrel-*Protoxerus stangeri*, mona monkey *Cercopithecus mona*, human being *Homo sapien*, chimpanzee *Pan troglodytes*, and red river hog *Potamochoerus porcus* with poly specific association percentage of 32.7, 19.4, 17.1, 13.8 13.8 1.6 and 1.6 percent respectively. Baboon relationship with aforementioned species was of mutual tolerance except with the chimpanzee and human being that prey on them for meat. The activity budget for the baboon group was 51.2 percent and 48.8 percent for dry and wet seasons respectively, while the total time budget with respect to habitat types was most significant in forest habitats (81.0%) and least in shrub land (8.0%). In all habitat types, the time for feeding activity was the higher (41.1%) while time budgeted for vocal was the least (1.2%). The results obtained will be useful in developing management strategies towards ecological requirement for their sustainable utilization.

Key words: Olive baboon, poly-specific, national park, ecology, utilization.

1. Introduction

Studies of social behaviour have always been an important area of interest in primate biology, because of the diversity of social behaviour shown by primates and its importance in their overall adaptation. It also provides background understanding for evolutionary development of the unique human social behaviour (Erikson, 1983). Not only do individual primate species have different patterns of social organization, but also social structure may differ substantially within a particular species (Yoshiba, 1988). While the factors, which determine social organization, are yet to be fully understood, it has been suggested that ecological factors may be of considerable importance.

The most aggressive males are usually the dominant males in baboons. Competition for females is seldomly observed as receptive females appear to play a role in the selection of male partners. Variation between poly-specific troops in social organization and behaviour may therefore depend on the nature of the relationship established between receptive troop leaders. Saayman (1971) found that in baboons, adult males and cycling females were proportionately more in grooming than other classes of baboons. Adult males groomed only adult female consorts when their sexual skins were maximally swollen or in mid cycle.

Females with flat sexual skins in the later part of menstrual cycle groomed other cycling females and non-consorting adult females at high levels.

Grooming is therefore an important social behaviour in non-human primates and it occurs in a variety of content. Its necessary to consider these events immediately when proceeding and following an episode of grooming in order to fully understand the importance. Wrangham (1981) reported that in verves monkeys during a period of water shortage, both the adult males and females obtained their water by different methods, females drank water found in tree holes within their normal home range, while males invaded the territories of neighbouring groups. Dunbar and Dunbar (1988) observed that the time female baboon devoted to feeding depended on the age of her infants. The rate of increase in feeding is influenced both by environmental factors affecting the nutritional quality of herbage and by the infants on feeding activities. Whenever the demand for feeding time was so high social time will be minimal. When females seem to give up social time they seek to preserve those social relative that are most important to their long-term reproductive interest.

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Male monkeys were accepted into the new group and they had social dominance status; the reciprocal affiliative relationship was established between each of the male and alpha female status independent of male preference for another female (Gomendio, 1989).

The degree to which primate populations are threatened with extinction can be predicted to some extent from a limited set of intrinsic and extrinsic circumstances or vulnerability factors. Habitat destruction and hunting are major threats to the large body-sized species and these affect the ecological specialization and small geographical range of the animals these affect the y understoeful in developing. Heavy logging has produced large declines in the abundance of most species while intensive agriculture resulting in the elimination of most natural forests is obviously incompatible with the survival of the forest primates.

Primates, particularly the baboon is significant components of bush-meat trade in Nigeria (Melle, 2002). Therefore, the study of baboon will lead to a better understanding of its ecological requirement and management strategies for sustainable cropping. Furthermore, understanding of their poly-specific association is based on human social behaviour with other species in the natural range. In Gashaka Gumti National Park (GGNP) there is a unique complement of habitats created by the presence of an intricate vegetation mosaic and diverse range of topography, altitude and climate that inhabit the largest population of primates in Nigeria, sub Sahara Africa (Dunn, 1993).

Olive baboon has a cross wide distribution in GGNP with group density of 0.5 group per kilometer square (Gawaisa, 1997), and an estimated population of 200,000 individual (Gawaisa, 1997; and Dunn, 1999). The baboon population is a major agricultural pest to the inhabitants of enclaves in this National Park.

2. Materials and Methods

The study of poly-specific association of the olive baboon group (*Papio anubis*) was undertaken for one year, from January to December 2004 in Gashaka range, Kwano area of Gashaka Gumti National Park, Taraba State, Nigeria. A single animal group consisting of 30 individuals was used. The study was carried out using a constant animal group-follow method (Volker, 2000), from 6.00 am to 6.00 pm daily consecutively for fifteen days each month. Data collection was based on a single individual in the group chosen and observation collected while the entire animal group was scanned in a sequence of fifteen minutes during which the activity of each individual in the group was recorded. Field materials used were check-sheet, pair of binocular, field notebooks, global positioning system (GPS) and camping equipment.

3. Study Area

Gashaka-Gumti National Park is located between latitudes 06°55'2" - 08°13'2" N and longitudes 011°13'2" - 012°11'2" E in a mountainous region of northeastern Nigeria adjacent to the international boundary with Cameroon. It is the largest National Park in Nigeria covering an estimated area of 6,600 km², climatically, it is more arid in the Northern Gumti range than in the Southern Gashaka range which has a mosaic vegetation cover dominated by rain and mountain forest.

The forests of Gashaka Gumti National Park are especially valuable since forests cover where else in the region is so scarce representing less than one percent of Taraba State and even less in Adamawa State (Chapman, 1993). The mountainous region of the Park is important component of the catchments area of Taraba River, which ultimately flows into the River Benue, Nigeria's second largest River. The conservation of the forest covering the steep slopes of the Park is vital to prevent soil erosion and consequent sedimentation effects downstream. Protection of this watershed is the primary function of GGNP (Barnwell, 1991) Fig. 1 shows the location of the park and its ranges.

4. Results

Fig. 2 shows the poly specific association of the olive baboon group with other animals sharing home range. Chimpanzee *Pan troglodytes* and red river-hog *Potamochoerus porcus* had the least (1.6%) association with the group. The others observed in the range in descending order were the Black and white colobus monkeys *Colobus polykomos* (32.7%), Putty nosed monkey *Cercopithecus nictitans* (19.4%); squirrel *Protoxerus stangeri* (17.1%); Mona monkey *Cercopithecus mona* (13.8%) and lastly with human being (13.8%).

Fig. 3 depicts the activity budget of baboon with season, which indicated similar pattern over the two seasons. Feeding time (foraging) took the highest (41%) while aggression (vocal) took the least (1.2%). The activity budget and habitat types in Fig. 4 show that activity time was most significant in forested area (81.0%) and least in shrubland (8.0%).

5. Discussion and Conclusion

The terrestrial habitat of the olive baboon group in Gashaka home range brought them into daily contact with other animal species. The animal species that were frequently observed in this range are the black and white colobus monkey, putty nosed monkey, squirrel, mona monkey, human-beings, chimpanzee and red river-hog with poly-specific percentage association of 32.7, 19.4, 17.1, 13.8, 13.8, 1.6 and 1.6 percent respectively.

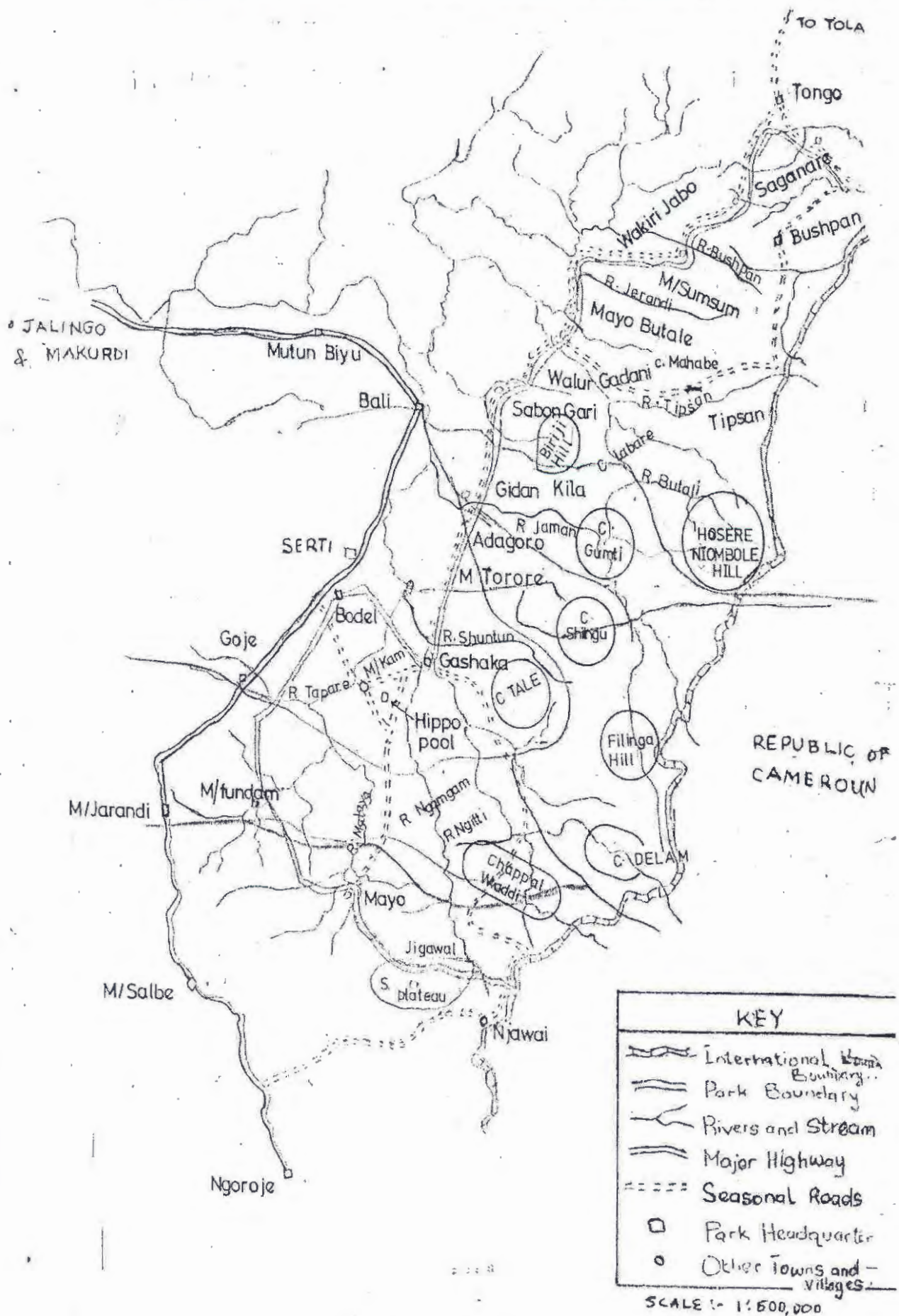


Fig. 1: Map of Gaslaka Gunti National Park Showing Ranges within the Park.

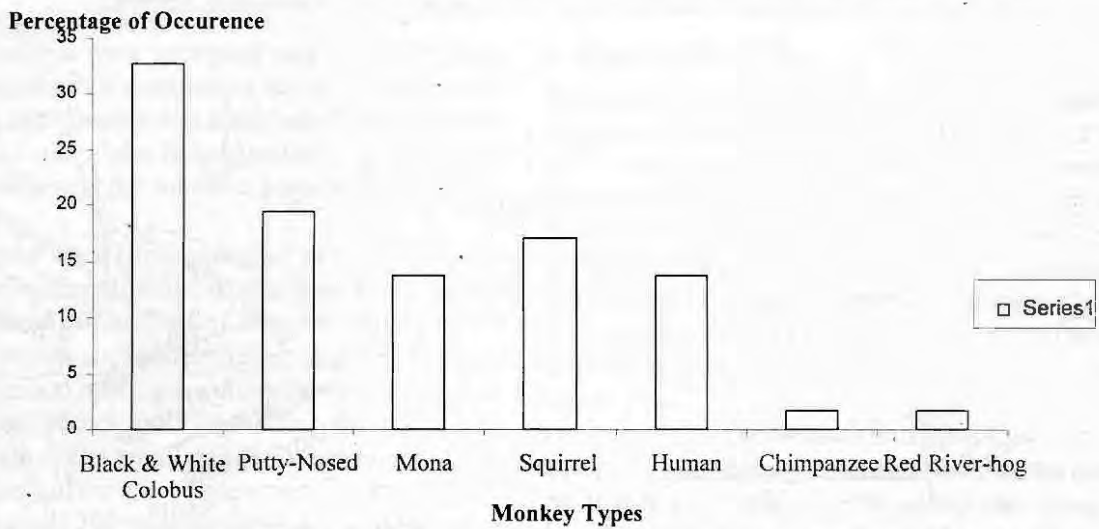


Fig. 2: Polyspecific Association of the Olive Baboon Group with Other Animals and Humans

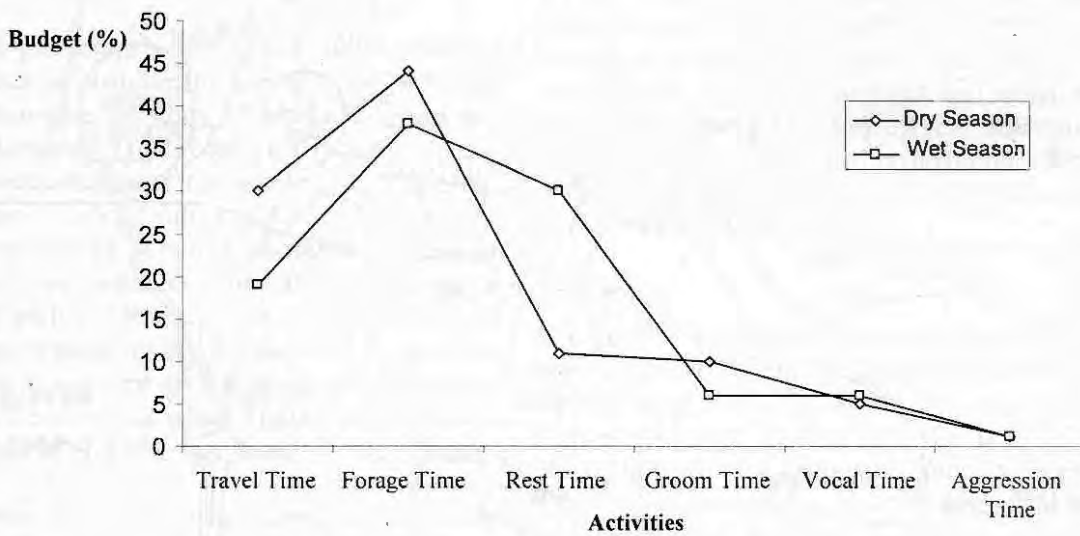


Fig. 3: Activity Budget and Seasonality

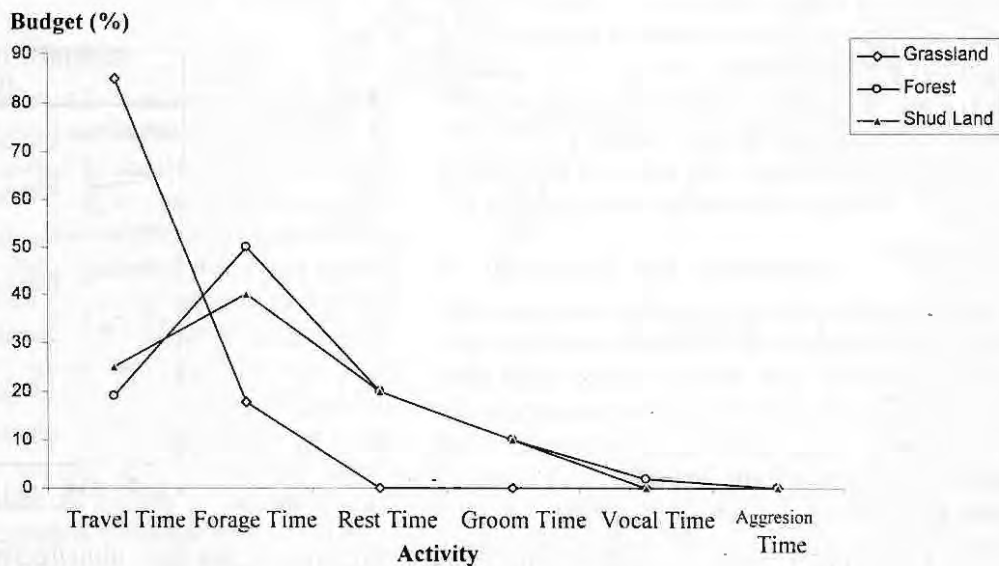


Fig. 4: Activity Budget and Habitat Type

The baboon's relationship with these species was of mutual tolerance, and most of the time the different species simply ignored each other. In this poly-species association, the primates were often observed feeding together with the olive baboon group. Throughout the study, no other baboon group was observed with the studied group either during feeding or traveling. Sporadic contact calls of dominant males were heard from different groups completely outside the feeding range, serving as a sign of territorial marking to keep other baboon groups. Seasonal changes have effect on baboon group activity. The annual activity budget comprised was 51.2 percent and 48.8 percent for dry and wet season respectively. Hence, the total time budget of baboon activity over the annual cycle comprised standing (41.1%), feeding movements (24.4%), resting (20.2%), grooming (8.0%), vocal (5.2%) and aggression (1.2%).

The black and white colobus were observed most frequently in the feeding range; this probably was due to the quiet and ingressive behavior at the feeding sites. Chimpanzees are known to be aggressive to the olive baboon this accounts for the low rate of association between them. It was once reported that chimpanzees were seen preying upon baboon at Gombe National Park in East Africa (Wrangham, 1985; and Ransom, 1991). Infants and small juveniles have been successfully snatched in such cases and adult male baboons often defended their infants, at least on three occasions males rescued their infants, which otherwise would have been killed by chimpanzees (Ransom 1991).

Group size in primates is determined by a combination of four demographic events, these are birth, death, immigration and emigration. In primates, group fission plays a particular important role in regulating group size. Units undergo fission when their size become too large that conflicts of interest occur among the members, thus giving rise to increased social fragmentation as the groups size grows (Dunbar, 1984). Demographic modeling has suggested that fission is likely to occur on average twice during a female's reproductive life. The point at which a unit actually undergoes fission is independent of its size, but depends on the level of competition among males for access to breeding females or competition with other poly-specific species in the same range (Dunbar, 1984).

This study has revealed a better understanding of the poly-specific association of olive baboon group in a protected area and will consequently assist in developing management strategies of the animals especially on their ecological requirement in Gashaka Gumti National Park and for sustainable utilization (cropping) by the policy makers and managers.

It is recommended that the population of baboon in the park be reduced by allowing some licensed safari hunters to crop those individuals (such as old males, weak individuals and spent females) among the group. The meat of the animals is acceptable for consumption by the indigenes and this will alleviate deficiency in their protein requirement. It is also suggested that the population should be dispersed to disallow conglomeration of groups in an area (range), there by reduce the carrying capacity that is the total biomass which the ecosystem can occupy.

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