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Nest Building Behaviour of Chimpanzee (Pan Troglodytes Blumenbach 1799) At Filinga Range of Gashaka Gumti National Park, Nigeria

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ABSTRACT

This study examined the nest building behaviour of Chimpanzee (Pan Troglodyte vellerosus) in Filinga Range of Gashaka Gumti National Park, Nigeria. The standing crop nest count method was used in data collection and the data obtained were analyzed using descriptive statistics. Results obtained showed chimpanzees in the study area preferred the galley forest for nesting with Detarium sencalense, Vitex dominia, and Tephosia vogelli being the preferred tree species used for nesting. The vertical fork position (52.6%) was also preferred for nesting. Moreover, they showed a high degree of nesting at slopes ranging from angles of class interval 21°≤35° (21) and tree height class of 21 -30 for both rainy (11) and dry season (13). The need for effective monitoring and management strategies to ensure adequate conservation of these primate species is also recommended.

Keywords: *Chimpanzee, Nest Building, Behavior, Gashaka Gumti National Park, Nigeria*

1. INTRODUCTION

Chimpanzees (Pan Troglodyte vellerosus) are among the widely studied primate species in African [1] [2] [3] [4]. Chimpanzees (Chimps) like human are the only primate's species known to manufacture a number of different tools both in captivity and in the wild. These tools vary in number and quality [5]. Chimps exhibit tool use, hunting, territorial aggression and cultural differences abilities which are inexplicable by ecological variables [5] [6]. Traditionally, nest building has seldom been treated separately from tool use [7] [8]. However, this separation has been disputed [9] [5] although some of the argument appears arbitrary. Consequently, nest building is reported to be the most pervasive form of object manipulation among the Pongidae. Nest building differs from other form of tool use in several ways as it is common among the Pongidae species while at the same time is absent in all other simian primates. It occurs daily and is performed by all adult male and female Chimps with similar frequencies, and is characterized by combination of specific combinations of different objects [5].

Nest building shows variation both between and within species. Gorillas build their nest close to or at the forest floor, orangutans, bonobos and chimps build their nest almost exclusively within trees [10] [9] [11]. Furthermore, this species-specific preference in nesting sites persist in areas where chimps and Gorilla are sympatric strongly indicating that their preference may not be related to environmental condition. Another species-specific difference in nesting behavior is the addition of twigs and leaves to improve the nest quality. This is usually reported for Chimps and bonobos [11], but absent in mountain gorillas [10].

Nest building is comparatively uniform among one species and variation is attributed to ecological difference such as seasonality, predator availability and available vegetation. In Gombe, chimps are reported to have used oil palm leaves for its nest building and the habit reflects variation in seasonal material [12] suggesting that culture might also be responsible for the variation in nest building behavior [13]. This study is therefore aimed at examining the nest building behaviour of Chimpanzee (Pan Troglodyte vellerosus) at Filinga Range of Gashaka Gumti National Park (GGNP) in Nigeria and the ecological factors that influences its nest building behavior.

2. MATERIAL AND METHOD

2.1 Study Area

Gashaka Gumti National Park is the largest and most diverse of all the National Parks in Nigeria covering an area of 6.371km^2 [14]. It is located between latitudes 6°58′ and 8°3′ North longitudes 11°13′ North longitudes 11°13′ and 12°11′ East. The park also shares its boundary with faro National Park and Tchabal Mabo in the neighboring Republic of Cameroon.

The name Gashaka Gumti is derived from two of the oldest historic settlements in the area, Gashaka village in Taraba State and Gumti Village in Adamawa State. The park was established by Decree No.36 of 26th August, 1991 with five ranges. This study was conducted in the Filinga Range of the Gashaka Gumti National Park.

The climatic characteristic of Gashaka Gumti National Park is similar to Guinea Savanna Zone, which is an intermediate between the humid wet climate of the forest zone and hot dry climate of the Sudan and Sahel Savannah. It has an average annual rainfall figure of 2100mm and a mean monthly temperature of 32. The relative humidity is 15.7%. The wet season extends from April to October thus influencing the vegetation of the study area. The park has five distinct ecological zones ranging from scrub savanna to Sudan, Guinea savannas; fringing lowland rainforest to montane forest and grassland habitats. The gradation of these ecosystems depends on the attitude and the North – South spread [14].

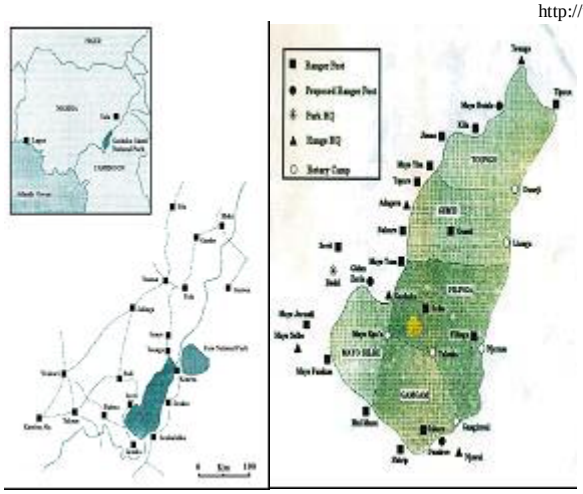

Fig 1: Location of Gashaka Gumti National Park, Principle Towns and Road Network and ranges.

2.2 Data Collection

The standing crop nest count method prescribed by [15] was used in estimating the chimp nest in the study area as it is not uncommon to only find a small number of fresh nests during a survey work, thus, many surveys are forced to use standing nest counts [16] [17] [18].

Nest monitoring was conducted during June and November 2011. A Team of extensively trained and experienced observers conducted the nest surveys along line transects. The survey team consisted of six individuals namely: a survey trainer, a transect cutter, a navigator using compass and GPS, a data scribe, and two people for nest spotting and subsequent measurement of nest distance from the transect. These teams were able to distinguish between chimpanzee nests and those made by other species due to observable differences in nest construction, nest size, and/or other accompanying sign [19] [20] [21]. Nest locations were marked along each transect to differentiate old and new nests on future surveys. The teams re-surveyed each transect fortnightly, assessing the decay stage of each nest, and recording new nests.

3. RESULTS AND DISCUSSION

3.1 Distribution of Height of Nests in Rainy and Dry Season

Figure 2 shows the frequency of distribution of nest in the German Fort of Gashaka Gumti National Park for the dry and rainy season. The result indicates that chimpanzees showed more preference for tress in height class interval of 21≤25 (31.6%). The height class interval with least preference was observed in 1≤5 and 6≤910 with a frequency of 0% and 0% respectively in the dry season. In the rainy season, the chimpanzees showed a high preference for trees in height class interval of 16≤20 (50%) followed by the height class interval of 21≤25 (33.33%) and 11≤15 (20%). The least preference height class interval was ≤4.99 (0%) and 5≤9.99 (0%) respectively.

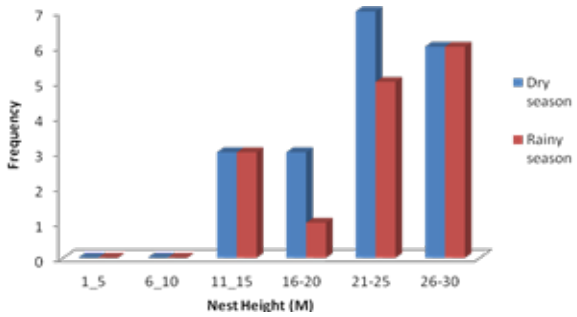

Fig 2: Seasonal height of nest

3.2 Angle Slopes of Chimps Nests

The result in Figure 3 indicates that Chimpanzees in study area showed high degree of nesting at slopes ranging from angles of class interval 31°≤35° (8) followed by 26°≤30° (7) and 21 °≥25° (6). Few chimpanzees nested at very steep slopes (46°≤60°; 3) and few of the Chimpanzees nested on almost flat lands (6°≤20°; 5).

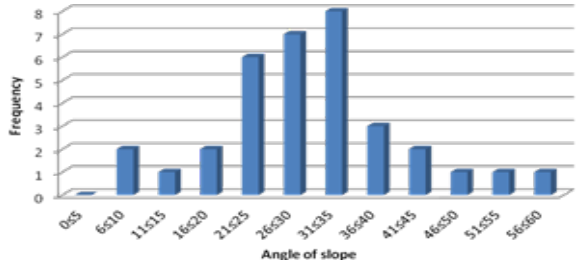

Fig 3: Angle slope of Chimpanzees nest

3.3 Preferred Nesting Environment

Figure 4 indicates the percentage of frequencies of the nesting environment preferred by chimpanzee for nesting. The result shows that majority of the nest (50%) were located in the forest gallery, followed by the dry river basin (20%). The forest ridge and the forest edge were the least preferred nesting site with a frequency of 15% for both sites respectively.

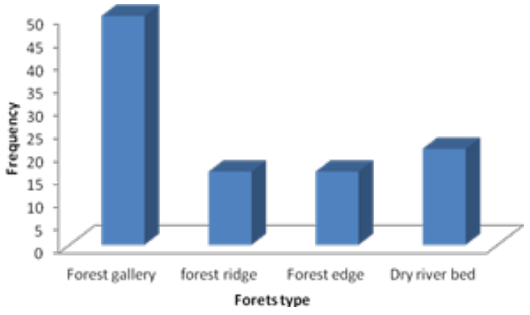

Fig 4: Chimpanzee preferred nesting site

3.4 Nesting Position of Chimpanzee Nests

The result in (Figure 5) indicates that Chimpanzees in GGNP preferred nesting mostly in branches with vertical fork (52.6%). This was followed by platform (36.8%) while the horizontal (Fork) was the least

(10.5%) nesting position on the tree branches by the Chimpanzees in German Fort.

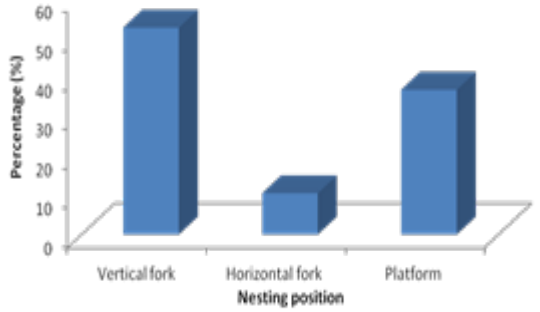

Fig 5: Chimpanzee preferred nesting position

3.5 Tree Species Preferred for Nest Building

Figure 6 showed that Vitex doniana, Cola caricefflfolia and Tephosia vogellie were the most preferred trees for nesting by the Chimpanzee with the highest frequencies of 10.5%, followed by Vitelloria pardoxa (7.9%). Some of the tree species rarely used by Chimpanzees for nesting include Khaya senegalensis (2.6%), Cola gigantean (2.6%), Khaya anthothecu (2.6%), Ceiba pentandra (2.6%) and Cola millenni (2.6%). Three (3) nested tree species recorded during this study remained unidentified.

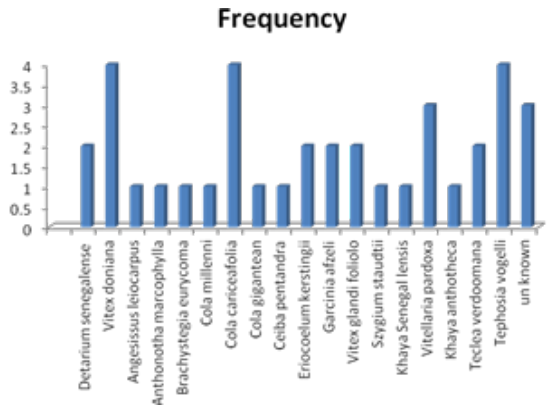

Fig 6: Trees preferred by chimpanzee for nest building

4. DISCUSSION

Chimpanzees choice of nesting site is usually influenced by the available habitat type. Indeed, studies on the nesting behavior of chimpanzees has indicated that their nests accumulate in specific areas depending on forest type and proximity to water and food resources [22] [23] [24] [25]. Moreover, chimpanzees have preferences for nesting material and for the height at which nests are constructed [26] [27].

The result presented in figure (5) indicated the distribution of Height of Nests in rainy and dry season. The nests were observed not to be randomly distributed but located in a particular area of the primate home range. Despite the variation in the nest height, nesting was mostly in trees with heights ranging from $20 \leq 29.99$m in the dry and wet season with 68.4% and 73.33% respectively. This nesting behavior could be as a means to avoid predators which is also observed in bonobos that also build their nest almost exclusively within trees [10] [9] [11].

Chimpanzee built their nests in trees with height to ensure their safety from their predators and build their nests at an angle of 60^{o} facing the East, so as to wake up as early and possibly for security. However, majority (62%) of the nest recorded in the study area were located on slopes with a range of $31^{o} \leq 35^{o}$ and preferred nesting on a vertical fork with very few nest almost on a flat surface and horizontal fork. Most of the nest found (50%) in the study area were located in the gallery forest (Figure 4). The Dry river bed harbored 20% of the nests and the forest ridge and forest edge only accounted for the remaining 30% of the nest found with 15% each respectively. This observation was at variant with other primate species that usually prefer the more forested areas of the park [22] [24] for nesting. Chimpanzees inhabiting the forest ridge and edge of the park may have been deterred from nesting in those areas as human habitation is situated near the park. As a result, human presence in these areas may have influenced the nesting behavior in the chimpanzees as they are at risk of predators [28].

5. CONCLUSION

Conserving the chimpanzee population in Gashaka Gumti National Park is crucial to the conservation action since the population in the region represents the link between the two West African subspecies of Nigeria, the Cameroon Chimpanzee (Pan troglodytes elliots) and the West African Chimpanzee (Pan troglodytes verus). The potential chimpanzee habitats still appeared to be large in the region. The level of threats to the animal had greatly reduced the population to critical levels. There are less than 400 chimpanzees remaining. Every effort counts to maintain and improve upon the remaining few, since these populations hold the key to a better perspective of taxonomic and conservation knowledge of the animal in the West African Region. There is the need to urgently address the situations threatening the animal in all fronts possible to prevent local extinction of the populations in the region.

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