

TRAGEDY OF THE COMMONS: STRESS AND SURVIVAL OF THE LAGWA (NIGERIA) MONKEYS

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Abstract: Lagwa (Nigeria) has one of the three known populations of Sclater's guenon (*Cercopithecus sclateri* Pocock, 1904) protected by local people as sacred objects.

This ecological survey highlights man-monkey relationship in terms of competition for food and space. *C.sclateri* population in Lagwa was 155-180 shared among 17 social groups. The population structure showed on estimated young: adult ratio of 1.6:1, suggesting a fairly stable population. The monkeys were mainly frugivorous, utilizing at least 15 wild and cultivated plant species. In addition they raided residential homes for stored food items. The monkeys are threatened by degradation and shrinking of their habitat under growing urban pressure. It is feared their current protection status may collapse in the future as man-monkey competition intensifies. This study proposes mapping out a protected core area of at least 20 ha in their present habitat as part of an *in-situ* conservation plan.

Keywords: Lagwa, Sclater's guenon, *Cercopithecus sclateri*, *in-situ* conservation.

1.0 INTRODUCTION

The Lagwa monkey or Sclater's guenon (*Cercopithecus sclateri*) was first described by Reginald Innes Pocock in 1904 and named after Philip Sclater. This guenon is highly colourful with complicated facial pattern, details of which are provided by other works (Kingdom, 1980; Nowak, 1999).

Until the sighting of the monkeys in Oguta in Southeast Nigeria in 1988 (Oates and Anadu, 1989), the species was thought to be extinct. The species, which is endemic to southern Nigeria, is now known to occur in several isolated populations between the Niger and Cross River in southern Nigeria which falls within the Guinean Forests of the West Africa Biodiversity hot spot. Baker and Olubode (2008) confirmed its presence in 27 formerly unknown sites, ranging from the eastern Niger Delta in Bayesa State east to the

Cross River, and north to Enugu and Ebonyi States. The most northerly known populations occur in southern Anambra- Enugu States and central Ebonyi State.

These guenons have managed to thrive because they are highly adaptable and have continued to survive even in highly degraded habitats within their natural range. With the exception of a few Sclater's guenon held in captivity at the Centre for Education, Rehabilitation and Conservation of Primates and Nature (CERCOPAN) in Cross River State, the species does not occur in any of the officially protected game reserves. The only protection they have meanwhile is from local communities who consider the monkeys to have sacred status. One of the three populations of this species known to be protected in this way is Lagwa, Mbaise in Imo State, Nigeria.

Man and monkey have co-existed in Lagwa for centuries. To some extent, the competition between man and monkey for food and living space in Lagwa reminds one of the concept of the *tragedy of the commons*. In economics, the tragedy of the commons is the depletion of shared resources by individuals, acting independently and rationally according to each one's self-interest, despite their understanding that depleting the common resource is contrary to the group's long-term best interests. Previous studies (Oates and Anadu, 1987; Baker *et al*; 2009) in Lagwa were mostly distribution surveys of this species. The present study highlights the human-wildlife interactions, especially competition for food resources. This study therefore includes aspects of population structure, habitat status, feeding habits and behavior.

2.0 STUDY AREA

The study area ($05^{\circ} 26.58^{\text{I}}$ N., $07^{\circ} 13.89^{\text{I}}$ E) is Lagwa in Aboh Mbaise Local Government Area (LGA) of Imo State, Nigeria. The term Lagwa generally refers to the Lagwa and Umunokwu communities. The area falls within the rainforest zone of southeastern Nigeria. This Igbo community neither hunts nor harms the monkeys in any way, due to a friendly relationship, claimed to have been initiated by the monkeys centuries ago.

Lagwa town, as is generally the case with Mbaise, is densely populated with a population density of over 1,000 persons/km² (FOS, 2010), making it one of the most densely populated places in sub-Saharan Africa. Land resources are under intense human pressure and land is rarely left fallow for more than 3 years. Virtually all mammalian wildlife have been extirpated with the exception of a few rodents, notably, rats (*Rattus spp*), various squirrels (Sciuridae) and giant rat (*Cricetomys gambianus*).

About 450 ha of scanty forest together with some bush and farms are available for the monkeys. The households in Lagwa are however highly endowed with assorted fruits trees.

3.0 MATERIALS AND METHODS

Garmin-etrex GPS was used to establish the co-ordinates of the study area as well as estimate the area as well as estimate the area of the study site. Field binoculars were used in sighting and detailed observations of the monkeys. Video camera and telescopic camera were used to record key events.

Estimation of the monkey population was by the line transect method (Brugiere and Fleury, 2000). The transects were at a fixed distance of 100m. The number of monkeys (or groups) were counted over the distance censused along each transect. While the entire study lasted twelve months (December, 2011 – November 2012), the population census took a shorter time (3 months: June – August, 2012) because the study area was relatively small and the monkeys were easily accessible as they were not shy. In the 3-month census period, a total of 21 sweeps were made i.e. 7 sweeps per month.

In determining the population structure, classification of the monkeys was by visual estimates which placed the monkeys in three size-groups, namely, young, sub-adult and adult. The youngs were the monkeys still with their parents while the adults were the largest individuals. The sub-adults fell in-between these two limits.

Information on plant species and other resources utilized as food by the monkeys was gathered by direct field observation. Observations were done both mornings (6.00-9.00 am local time) and evenings (3.00-6.00 pm local time). Some field observations were recorded on video camera for further studies later.

Also, since the monkeys have co-existed with the human population in this town beyond any living memory, additional information was obtained from informal interviews with members of Lagwa community.

4.0 RESULTS AND DISCUSSION

4.1 Urban pressure and habitat degradation

As already described, Lagwa is densely populated. Like Mbaise generally, Lagwa has a highly enterprising populace with a strong cultural inclination for every man, who has come of age, to own a befitting house of his own. Thus, available land is under intense pressure as more land is steadily cleared for construction of new buildings.

Farm building in Lagwa ranged from 0.1ha – 0.5 ha in area, but mostly about 0.1 ha. Cultivation was mostly done every other year and the major crops were maize, cassava, yam and cocoyam. Sometimes the fallow lasted up to 4 years, depending on the land owner. However, the area has considerable tree cover from some fruit trees, especially African oil bean (*Pentaclethra macrophylla*), oil palm (*Elaeis guineensis*) and African pear (*Dacryodes edulis*). There were also a few timber trees like iroko (*Chlorophora excelsa*).

The natural habitat of *C. sclateri* is generally held to be primary rainforest and secondary growth (Nowak, 1999). Over two decades ago, Oates and Anadu (1987) observed that all the patches of forest in Lagwa were gone and that the monkeys were stealing from gardens and farms. The present study is again confirming that the monkeys are still surviving in this highly degraded habitat.

4.2 Food and feeding habits

C. sclateri is predominantly a frugivore, feeding on a wide variety of cultivated and wild fruits trees (Table 1). They also occasionally fed on young leaves of these fruit trees as well as on some insects. However, these prey insects were not identified in this study. The food sources in the wild were insufficient and the monkeys raided surrounding farms for maize and house-hold orchards for fruits. They also raided residential houses to “steal” any available foodstuffs, including fresh eggs in kitchens. Interspecific competition for wild food resources, cultivated crops and stored food items between man and monkey is intense. This was especially the case in the hungry months of the year when most of the fruit trees were off-season. With the exception of the bananas (*Musa spp.*), and to some extent the oil palm (*E. guineensis*) and paw-paw (*Carica papaya*) which were available most of the year, the other fruits trees were seasonal, available only about 5-8 months in a year.

The animals were strictly diurnal and fed only during the day. The daily home range of the social groups was about 25 ha. There were distinct predilection for ripe fruits of paw-paw (*C. papaya*) and the bananas (*Musa spp.*).

Previous works (Law, 2004; Egwali *et al.* 2005) showed a similar food spectrum and interspecific completion for food with man, but the Lagwa case bothered on the extreme. Complaints were widespread by the villagers both for the food losses and the damage to roof tops when the monkeys arrived in large numbers. The damage on roof tops was obvious in most buildings in the village.

4.3 Population structure

The estimated population size of the Lagwa Monkeys was 155-180 within 17 social groups (Table 2). The number of individuals per group was 8-14. The estimated average percentage of juveniles was 62%, sub-adults 26% and adults 12%, giving an overall young: adult ratio of 1.6:1. This suggests a fairly stable population. A perfectly stable mammalian population will be approximately 2:1 (Smith and Smith, 2001).

The difference in the upper and lower limits of the population size in the study, though high (16%), is still normal. Over or underestimation in the line transect method can be as high as 23%, depending on distance between the transects (Brugiere and Fleury, 2000).

During the study period, the social groups did congregate on two occasions of perceived collective threat. One occasion of congregation was in response to a distress call by a juvenile monkey wounded by a dog. A second occasion was when a tree was being moved down with a chainsaw. All the groups headed to the boundary with the neighbouring community and never showed up for the rest of the day.

4.4 Some behavioural peculiarities of the Lagwa monkeys

Monkeys in the wild are generally shy and it takes a long waiting by a visitor before the monkeys show up. Ordinarily, an arboreal species like *C. sclateri* will be difficult to detect. But the Lagwa monkeys were not shy but rather took interest in visitors, sometimes apparently “posing” before cameras. A likely explanation for this is that these guenons appreciated their protection status. A similarly protected guenon population in Itu, in Akwa Ibom State of Nigeria, also ranged freely in residential homes (Egwali *et al.*, 2005).

One other strange observation was the failure of the study team to locate the remains of any dead monkey. The villagers confirmed they have never seen the skeletons of a dead monkey. It is highly probable the monkeys bury their dead like humans, suggesting a case of acculturation by centuries of close interaction between man and monkey.

5.0 CONCLUSIONS

With the discovery of new populations of *S. sclateri* between late 1980s and mid-1990s, the guenons which were initially thought to be extinct were later re-classified as Endangered. They have recently been upgraded to vulnerable (Oates *et al.*, 2008).

This upgraded status may not last long considering the delicate balance of favourable and adverse ecological factors that may determine the future of the guenons.

Generally, the favourable factors which have enhanced the survival of these guenons are their stealthy demeanour, relative small size (which makes them unattractive to hunters) and versatility in food utilization. The Lagwa monkeys are further favoured by the protection arising from their sacred status. Countering these favourable factors of survival are stressful unfavourable forces such as severe interspecific competition with man for food and fibre, relentless habitat depletion, degradation and fragmentation by man, as well as a likely change in the future in human attitude towards the monkeys. Generally, traditional beliefs in human communities tend to weaken progressively with younger generations. Future generations in Lagwa may not be favourably disposed to upholding the sacred status of the guenons.

The following conservation approaches are recommended:

- (i) Mapping out a core area of at least 20 ha in the present habitat in Lagwa for conservation of the guanos
- (ii) Intensive re-afforestation of the core area with their favourite fruit trees to decrease need to invade human residential areas for food,
- (iii) Surplus monkeys, in excess of the carrying capacity of the habitat in Lagwa, can be re-located to protected forest reserves in Nigeria.
- (iv) Conservation education to make all realize that sclaters guenon is of international conservation interest since it is found only in Nigeria.

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Table 1: Cultivated and wild plant species eaten by Sclater's guenon in Lagwa

Scientific Name	Common Name	Igbo Name	⁺ Origin	[*] Relative Abundance
<i>Aningera robusta</i>	Wild Star apple	Udara nwenwe	W	1
<i>Carica papaya</i>	paw-paw	Okwuru bekee	C	3
<i>Chrysophyllum albidum</i>	African star apple	Udara	W	1
<i>Citrus sinensis</i>	Sweet Orange	Oroma	C	3
<i>Cola argentea</i>	Sweet cola	Oji	C	2
<i>Dacryodes edulis</i>	African pear	Ube	C	3
<i>Elaeis guineensis</i>	Oil palm	Nkwu	W/C	3
<i>Landolphia owariensis</i>	White rubber vine	Utu	W	1
<i>Mangifera indica</i>	Mango	–	C	1
<i>Musa paradisiaca</i>	Plantain	Unere	C	2
<i>M. sapientum</i>	Banana	Unere bekee	C	3
<i>Pentaclethra macrophylla</i>	African Oil bean	Ugba	W/C	3
<i>Persea americana</i>	Avocado pear	Ube bekee	C	1
<i>Psidium guajava</i>	Guava	–	C	1
<i>Zea mays</i>	Maize	Oka	C	3

⁺C – Cultivated, W – Wild

^{*}3 - Highly abundant, 2- Moderate, 1 – Sparse.

Table 2: Some population characteristics of Sclater's guenon in Lagwa

Criteria	Value
No. of social groups	17
Group size	8-14
Mean group size	9.6
Percentage juveniles	62
Percentage sub-adults	26
Percentage adults	12