

## Original Research Article

### **Assessment of Population Abundance, Density and Habitat Preference of Sclater's Guenon (*Cercopithecus sclateri* Pocock 1904) in Aboh-Mbaise Communal Forest, Imo State, Nigeria**

#### **ABSTRACT**

**Aims:** Assessment of the population abundance, density and habitat preference of sclater's guenon (*Cercopithecus sclateri*) in Aboh-Mbaise communal forest was carried out to determine the population abundance, density and habitat requirements of the species in the study area.

**Study design:** The point count sampling method was used for collecting data on population size.

**Place and duration of study:** The study was carried out in Lagwa community forest, Aboh-Mbaise Local Government Area, Imo State, between December 2019 and November 2021

**Methodology:** Eight transects, each measuring 2.5km were laid on a land area of 28,500km<sup>2</sup>. Trees were enumerated and measured using the point-centered quarter method.

**Results:** Results of this study indicated that they were 738 individuals of the monkeys, 392 in dry and 346 in the wet seasons. The Population density was 0.04±0.01 individuals/km<sup>2</sup>, with troop sizes of 4.09±0.83 and 3.68±0.75 for dry and wet seasons. The monkeys were sighted mostly in secondary forest, sacred groves, and economic trees. Most of the trees encountered fell within the dbh class of 21cm - 30cm. Three hundred and four (304) plant species were utilized by the monkeys for cover in both seasons and included *Dacryodes edulis*, *Elaeis guinensis*, *Magnifera indica*, *Treculia africana* and *Pterocarpus erinaceous*.

**Conclusion:** The findings of this research is a prelude to understanding the population dynamics and habitat structure of the sclater's guenon in the study area. Massive sensitization of the locals, regeneration of the remaining fragmented habitat and establishment of a wildlife sanctuary can contribute to the conservation of the species and its habitat.

**Keywords:** Population, dynamics, habitat, selectivity, guenon

#### **1. INTRODUCTION**

The Sclater's guenon (*Cercopithecus sclateri*) is an endangered primate that is endemic to Nigeria, classified as endangered by the International Union for the Conservation of Nature (IUCN, 2019) and listed on Appendix II of the Convention on International Trade in Endangered Species (CITES), the species was originally thought to be nearly extinct until the late 1980s. The Sclater's guenon is restricted to the rainforest zone between the Niger and Cross Rivers in southern Nigeria. Its extent of occurrence is 28,500km<sup>2</sup> (Lynne and Olusegun, 2007). Much of the remaining forest throughout the species' range comprises small, often degraded forest fragments within a largely agricultural landscape; swampy areas difficult to farm; or strips of forest along waterways.

Three populations of *C. sclateri* survive in mostly deforested communities where the local human population regards this monkey as sacred. Although they are not hunted in these sites, the monkeys' sacred status does not necessarily guarantee their long term survival. The population of this Species is dwindling largely due to an extremely small range, high human population in parts of Nigeria where this species are found, habitat fragmentation and loss and hunting. This species is endemic to the forests in the floodplain between the Niger River and the Cross River in Southeast Nigeria (Scholte, 2011). The species does not occur in any officially protected areas, but three populations of the species are known to be protected by local people who consider the monkeys' sacred status.

Anthropogenic disturbance occasioned by habitat destruction, hunting, conversion of land to agricultural use and establishment of non-native plantations are the major threats to the survival of the Sclater's guenon, a situation which has led to the species occurring only in small and isolated patches of forests. The communal forest of Aboh-Mbaise is an important habitat for this species largely because the species is associated with shrines and sacred groves of trees in the area. Also, due to taboos associated with killing or eating the monkeys, the species is protected in this area (Lynne *et al.*, 2009).

Presently, the consequences of human-guenon conflict is very evident in the area as the guenons participate in agricultural damage, thereby causing some of the indigenous people to contemplate disregarding the taboos associated with these monkeys. This species is endemic to the forests in the floodplain between the Niger River and the Cross River in Southeast Nigeria. The Species cannot be found in any of the protected areas in Nigeria, the obvious reason why no study has been carried out on the species.

The species is known to occur in captivity only at the Centre for Education, Rehabilitation, and Conservation of Primates and Nature (CERCOPAN) in Cross River State, Nigeria (Oates *et al.*, 2008).

The Sclater's monkey is found in moist tropical forests and marshy eroded forests, low mountain habitats along the Nigeria coast. Even though the species' natural habitat is pri-

mary and secondary growth forest just like most of the other species of guenon, it is said to be surviving in extremely dissipated habitats (Nowak, 1999). The species preferred habitat is in Igbo villages and their sacred tree groves, which are mostly surrounded by non-native tree plantations and agricultural areas.

In one community called Lagwa in Imo State, all the patches of forest which the monkeys previously inhabited have been destroyed, leaving the animals to roam and live in villages, where food from gardens and farms is stolen by the animals (Stewart, 1996). Closely related species appear to prefer the lower levels of the canopy and sometimes come to the ground. (Fleagle, 1999).

Small populations numbering eleven have been confirmed to exist in states such as Akwa Ibom, Enugu, Imo, Abia and Cross River State. The localities known for this species include Utuma, Stubbs creek, Akpugoeze, Osomari, Lagwa, Blue River, Enyong creek/Ikpa River (Baker and Tooze, 2003). Some authors have however, speculated that the Sclater's monkey may be a hybrid between the red-eared guenon, which occurs on the eastern side of the Cross river in Nigeria and Cameroon, and white-throated guenon which occurs on the western side of the Niger delta in Nigeria. Several authors, however, agree that the Sclater's monkey deserves full specific status.

The study therefore evaluates the population abundance, density, and habitat preference of sclater's guenons in the area of study, and serve as a baseline study for the species, further revealing information on the population density, troop size, nutrition, threats to its population, behavior and interaction with other animals.

## **2. METHODOLOGY**

### **2.1 Study area.**

The study was carried out in Lagwa community forest of Aboh-Mbaise Local Government Area in Imo State (Figure 1). The land area of Aboh-Mbaise is about 184km<sup>2</sup>, and lies

between latitude 6°50'E and 7°25'E N and longitude 4°45'N and 7°15'N. Its annual rainfall is about 2,297mm. Aboh-Mbaise have a population according to the 2006 census of 195,652.

Lagwa is one of the twelve council wards and the largest traditional community in Aboh-Mbaise Local government area. Others include Amuzu, Enyiogugu, Ibeku, Lorji, Mbutu, Nguru Ahiato, Nguru Nweke, Nguru Nwankwo, Umuhu, Uvuru I, Uvuru II. Comprising eight communities such as Umunikwu, Umuabazu, Umunoke, Umunokere, Eziudo, Obo, Okwuato and Umuosi, the community has been in existence since the 15<sup>th</sup> century alongside the monkeys. Lagwa and Aboh-Mbaise people are mostly farmers and traders as well, cultivating and domesticating the popular non timber forest product species called Okazi (*Netum africana*). The popularity of this community in the world is due to the presence of the Sclater's guenon in the area (Lynne *et al.*, 2014).

UNDER PEER REVIEW

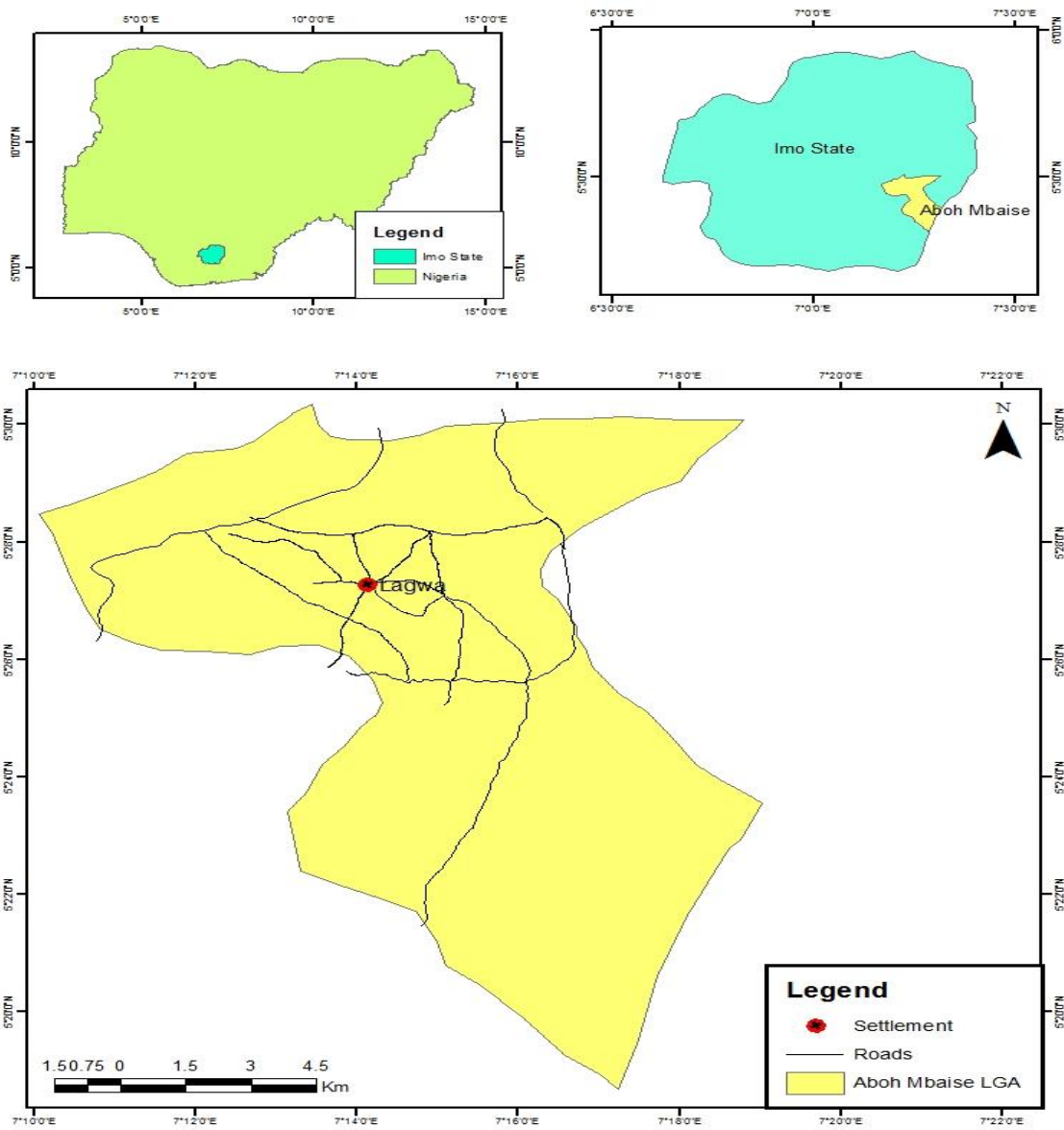


Figure 1: Map of Aboh-Mbaise showing Council Wards (Source: Imo State Forestry Commission (Owerri))

## 2.2 Determination of the population status of the Sclater's guenon.

The point counts method of survey was used for this study. On arrival in each point, five (5) minutes was allowed for the animals to settle, while ten (10) minutes which is the minimum time required for less mobile and visible species was used to sample guenons in each points in each of the eight communities in the study area, with between five to ten minutes spent moving from one point to another. Sampling points were taken in each of the eight

communities, with the distance between points and radius from the point of detection of the species measured (Bibby *et al.*, 2000).

The survey with each transect length of 2.5km, and 160m between points, was carried out twice every month for eight (8) months, four (4) months each (both dry and wet seasons) in each of the communities, and every fourteen (14) days per community, between 9.00 am and 4.00 pm and with the help of trained and experienced indigenes who were used as research assistants. The assistants were trained on how to use the GPS and binoculars, the census protocol and how to record data such as time, number of animals, number of groups sighted, behavioural characteristics such as feeding habits/signs, interaction with other wildlife species, and mating. Both visual and sound observations encountered were recorded. The survey was avoided during rainy days, since raindrops in the forest creates unfavourable sound background for survey reducing the ability to observe animal movements, and potentially preventing the detection of *C. sclateri*.

### **2.3. Determination of the habitat requirements of the Sclater's guenon.**

The Point-Centred Quarter Method (PCQM) as described by Kevin (2007) was employed to determine the relative importance of the various tree species in a community. The importance value index was determined via density, size and frequency of the species. In each of the 2.5km transects, ten (10) points were randomly selected, and data collected, with the smallest random number indicating the first sampling point. At every sampling point an imaginary line was drawn perpendicular to the transect, dividing it into four equal quarters. In each of the quarters, the nearest tree to the point with diameter not below 4cm, the species and the distance from the sampling point to the trunk of the tree was also recorded. The trees were identified with the help of a taxonomists to species and family levels in the study area.

### **2.4. Data analysis techniques.**

Data obtained from was subjected to the equation below, and was used to estimate density and abundance of the Sclater's monkey.

$$D_p = NLW / A \quad (1)$$

Where: Dp: population density; number of individuals N; transect length (km) L; transect width (m) W; transect area (km<sup>2</sup>) A; (Buckland *et al.*, 2001., Edet *et al.*, 2017, Daniel *et al.*, 2016, Jacob and Nelson, 2015).

Troop size was estimated with the equation;

$$\text{ANS} / \text{Ni} \quad (2)$$

Where: ANS: number of animals sighted; number of observations Ni

The importance value index for the tree species enumerated were calculated using the equations;

$$\text{Relative density (RD)} = \text{density of a species} / \text{total density of all species} * 100 \quad (3)$$

$$\text{Relative frequency (RF)} = \text{frequency of a species} / \text{total frequency of all species} * 100$$

(4)

$$\text{Relative dominance (RDO)} = \text{dominance of a species} / \text{total dominance of all species} * 100$$

(5)

$$\text{Importance value index} = \text{RD} + \text{RF} + \text{RDO}$$

(6)

The t-test statistical analysis was used to determine whether troop sizes and troop densities differ significantly between the dry and wet seasons, and also between the different locations.

### 3. RESULTS AND DISCUSSION

#### 3.1 Seasonal population density/troop sizes of the sclater's guenon

The study revealed a population size of 738 individuals, 346 in the wet season and 392 in the dry season. The troop sizes of the monkeys was 4.09±0.83 for dry season, while observed population density was 0.04±0.01 individuals/km<sup>2</sup> (Table 1).

The investigation of sclater's guenon population indicated a mean population size of 738 individuals, 392 individuals during the dry season, and 346 individuals during the wet season. However the troop sizes for dry and wet seasons were 16 and 14 respectively.

Though the total population of the guenons seemed high, they was a low population density of the Sclater's monkey in the study area, which was at variance with its population

*Table 1: Dry season summary population data of Sclater's monkeys in the study area.*

Location	Troop Size	Density (Troops/km <sup>2</sup> )
DT <sub>1</sub>	7.29	0.070
DT <sub>2</sub>	6.01	0.058
DT <sub>3</sub>	2.08	0.020
DT <sub>4</sub>	4.59	0.044
DT <sub>5</sub>	0.00	0.000
DT <sub>6</sub>	2.67	0.026
DT <sub>7</sub>	4.92	0.047
DT <sub>8</sub>	5.13	0.049
<b>MEAN± S.E</b>	<b>4.09 ± 0.83</b>	<b>0.039 ± 0.008</b>

DT (Dry Season Transect),

The troop sizes of the monkeys for the wet season was 3.68±0.75, with its density as 0.035 ± 0.007 (Table 2).

This very low population density might be a result of evident habitat decimation, land encroachment, and emigration of the species to other areas. The high number of individuals in all communities where the study was undertaken correlates with work of Lynne *et al*, (2014) that reported cases of killing the guenons had no negative impact on the population of the species. The high population size recorded in both seasons was also a result of the local taboo which prohibits from killing the monkeys. This population size also corroborates with Lynne and Olusegun (2007), that the guenons reproduce at early stages of their lives and survives in habitats that are fragmented. The low density recorded may also have been due to the fact that some monkeys may have migrated to other areas or were missed during the survey period.

*Table 2: Wet season summary population data of Sclater's monkeys in the study area.*

Location	Troop Size	Density (Troops/km <sup>2</sup> )
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WT <sub>1</sub>	6.29	0.054
WT <sub>2</sub>	5.26	0.056
WT <sub>3</sub>	4.46	0.044
WT <sub>4</sub>	1.88	0.000
WT <sub>5</sub>	2.13	0.039
WT <sub>6</sub>	0.00	0.021
WT <sub>7</sub>	4.58	0.040
WT <sub>8</sub>	4.84	0.024
<b>MEAN ± S. E</b>	<b>3.68 ± 0.75</b>	<b>0.035 ± 0.007</b>

WT (Wet Season Transect)

Though there was no significant difference in troop size for both seasons, there was however, a difference in troop density as indicated in the t-test analysis (Table 3).

The troop sizes and density were higher in the dry season than in the wet season, and may be because they were less disturbed during the dry season than the wet season, as the monkeys were more visible during the dry season. Several individuals of these species were sighted in different locations during the study, against reports from different researchers that the sclater's guenons are rare and at the brink of extinction. The relatively small size of the guenons compared to other monkeys made the monkeys visible from a distance in all transects surveyed. The monkeys are very intelligent, and can spot and runaway from humans very quickly as reported by some hunters encountered. This agrees with the work of Ijeomah *et al.*, (2011). Primates generally are important for the conservation of other species of animals, as their emotional, fascinating, and redolent nature makes them attractive to people. This agrees with the views of Meijaard *et al.*, (2012). The health of guenon population is a reflection of the general health of an ecosystem, making it an indicator species as highlighted by Marshall *et al.*, (2009).

The classification of human beings as primates stimulates their conservation, providing opportunity for studying its behaviour and ecology, and in line with Fleagle, (2013) finding.

The role of guenons in seed germination, dispersal and plant pollination cannot be over emphasized. These ecological functions are vital in the functioning of the ecosystems they are found.

Table 3: T-test analysis (at  $P = .05$ ) for troop size and troop density.

	Troop size		Troop density	
	Dry Season	Wet Season	Dry Season	Wet Season
T <sub>1</sub>	7.29	6.29	0.070	0.054
T <sub>2</sub>	6.01	5.26	0.058	0.056
T <sub>3</sub>	2.08	4.46	0.020	0.044
T <sub>4</sub>	4.59	1.88	0.044	0.000
T <sub>5</sub>	0.00	2.13	0.000	0.039
T <sub>6</sub>	2.67	0.00	0.026	0.021
T <sub>7</sub>	4.92	4.58	0.047	0.040
T <sub>8</sub>	5.13	4.84	0.049	0.024
T-cal.	<b>0.607</b>		<b>0.97</b>	
P-value	<b>.56</b>		<b>.36</b>	

T (Transect)

### 3.2 Habitat requirements/species distribution of the sclater's guenon

The most common habitat of the species was secondary forest, sacred groves and a combination of economic trees. The monkeys were also sparingly found within dense and open primary forests (Table 4).

The study revealed that the sclater's monkeys were restricted mostly to secondary forest, sacred groves and economic trees. This was largely so because most, if not all of the primary forest is lost to land development, agricultural and livestock farming. This assertion is in line with Lynne *et al.*, (2009), that habitat decimation has greatly impacted the sclater's monkeys negatively. This assertion agrees with that of Effiom *et al.*, (2013). Small numbers of the monkey were however, occasionally sighted in the remaining fragmented portions within dense and open primary forest. However, the species were not indicative of those in

the secondary forest, sacred groves and economic trees. This habitat loss may be responsible for the shrinking density of the sclater's monkeys.

Table 4: Distribution of tree plant species and in their habitats in the study area.

Family	Species	DPF	OPF	SF	VT	HP	SH	SG	ET
Anacardiaceae	<i>Magnifera indica</i>	-	+	+	-	-	-	-	+
Arecaceae	<i>Elaeis guinensis</i>	-	+	+	-	-	-	-	+
Burseraceae	<i>Dacryodes edulis</i>	+	+	+	-	-	-	+	+
Combretaceae	<i>Terminalia ivorensis</i>	+	+	-	-	-	-	-	-
	<i>T. superba</i>	+	-	+	-	-	-	+	-
Fabaceae	<i>Afzelia africana</i>	+	+	+	-	-	-	+	-
	<i>Brachystegia eurycoma</i>	-	-	+	-	-	-	+	+
	<i>Parkia biglobosa</i>	-	-	+	-	-	-	-	+
	<i>Tetrapleura tetraptera</i>	-	+	+	-	-	-	+	-
Irvingiaceae	<i>Irvingia gabonensis</i>	-	-	-	-	-	-	-	+
	<i>I. wombulu</i>	-	-	+	-	-	-	-	-
Lamiaceae	<i>Gmelina arborea</i>	-	+	+	-	-	-	-	+
	<i>Tectona grandis</i>	-	+	+	-	-	-	+	+
Lecythidaceae	<i>Napoleona vogelli</i>	-	-	-	-	+	-	-	-
Leguminosae	<i>Pterocarcus mildbradii</i>	-	-	-	-	-	+	-	-
	<i>P. osun</i>	-	-	-	-	-	+	-	-
Malvaceae	<i>Bombax buonopozense</i>	-	-	+	+	-	+	-	-
	<i>Bosqueia angolensis</i>	-	+	-	-	-	-	-	-
	<i>Triposchiton scleroxylon</i>	-	-	+	+	-	+	-	+
Meliaceae	<i>Khaya ivorensis</i>	-	+	-	+	+	+	-	+
Moraceae	<i>Melicia excelsa</i>	-	+	-	-	+	-	-	-
	<i>Treculia africana</i>	-	+	-	+	-	+	-	+
Myristicaceae	<i>Pycnathus angolensis</i>	-	+	-	-	+	-	-	-
Poligalaceae	<i>Carpolobia lutea</i>	-	-	-	-	-	-	+	-
Rubiaceae	<i>Heinsa crinata</i>	-	+	-	-	-	+	-	-
	<i>Nauclea diderrichi</i>	-	+	-	+	-	+	-	+
	<i>Randia longiflora</i>	-	+	-	-	+	-	-	-
Rutaceae	<i>Citrus sinensis</i>	-	+	-	+	-	+	-	-
Sterculiaceae	<i>C. gigantean</i>	-	+	+	-	-	-	+	-
	<i>C. nitida</i>	-	+	+	-	-	-	+	-
	<i>Sterculia oblonga</i>	-	-	+	-	-	-	-	-
	<i>Sterculia tragacantha</i>	-	-	+	-	-	-	-	-
Urticaceae	<i>Musanga cercopoides</i>	-	+	-	-	+	-	-	-
	<i>Myrianthus arboreus</i>	-	-	-	-	+	-	-	-

- Not Available, + Available; **DPF** Dense Primary Forest, **OPF** Open Primary Forest, **SF** Secondary Forest, **VT** Vine Tangle, **HP** Herb Patch, **SH** Shrubs, **SG** Sacred Groves, **ET** Economic Trees. **Source:** Field Survey 2019-2021

The most dominant plant species throughout the study area were *Khaya ivorensis*, *Treculia africana*, *Nauclea diderrichi*, *Gmelina arborea*, *Magnifera indica* and *Tectona grandis*, while the least dominant plant species was *Bosqueia angolensis* (Table 5).

The domination of the habitats by a few indigenous tree species like *khaya ivorensis*, *Treculia africana*, *Nauclea diderrichi*, and more of *Gmelina arborea*, *Tectona grandis* and *Magnifera indica* is an indication that the habitat is highly degraded, and have become more or less a plantation, with a conglomeration of exotic tree species within the animal's range. This forced the animals most of the time, especially during the dry season to take refuge in sacred shrines, mango, oil palm and kolanut trees. Apart from a few indigenous tree species, the monkeys spent much of its time resting, playing and feeding around mango, orange, oil palm, gmelina and teak, as indicated by the importance value index (IVI)

Table 5: Trees/plant species composition in the study area.

Species	Frequency	No. of trees/ha	Rel. Density %	Relative Dominance %	Rel. freq. %	IVI
<i>Afzelia africana</i>	11	84	3.3416	3.9069	3.6184	10.8669
<i>Bombax buonopozense</i>	5	38	1.4413	1.0799	1.6447	4.1659
<i>Bosqueia angolensis</i>	1	8	0.5437	0.1134	0.3289	0.986
<i>Brachystegia eurycoma</i>	9	68	2.7781	4.5993	2.9605	10.3379
<i>Carpolobia lutea</i>	1	8	0.5437	0.1278	0.3289	1.0004
<i>Citrus sinensis</i>	7	53	2.4215	1.786	2.3026	6.5101
<i>Cola gigantean</i>	8	61	2.6514	6.0015	2.6316	11.2845
<i>Cola nitida</i>	11	84	3.3416	7.3744	3.6184	14.3344
<i>Dacryodes edulis</i>	12	91	3.8341	2.4987	3.9474	10.2802
<i>Elaeis guinensis</i>	13	99	3.9672	1.7665	4.2763	10.01
<i>Gmelina arborea</i>	27	205	7.4402	6.7615	8.8816	23.0833*
<i>Heinsa crinata</i>	3	23	0.7673	0.7522	0.9868	2.5063
<i>Irvingia gabonensis</i>	3	23	0.7673	1.0892	0.9868	2.8433
<i>Irvingia wombulu</i>	1	8	0.5437	0.3239	0.3289	1.1965
<i>khaya ivorensis</i>	39	296	9.7231	12.5765	12.8289	35.1285**
<i>Magnifera indica</i>	24	182	7.5642	6.1051	7.8947	21.564*
<i>Milicia excelsa</i>	3	23	0.7673	3.545	0.9868	5.2991
<i>Musanga cercopoides</i>	5	38	1.4413	0.8116	1.6447	3.8976
<i>Myrianthus arboreus</i>	2	15	0.2647	1.1418	0.6579	2.0644
<i>Napoleona vogelli</i>	1	8	0.5437	0.0441	0.3289	0.9167

<i>Nauclea diderrichi</i>	26	198	7.3764	8.8261	8.5526	24.7551*
<i>Parkia biglobosa</i>	2	15	0.6579	0.4163	0.6579	1.7321
<i>Pterocarpus mildbraedii</i>	1	8	0.5437	0.1978	0.3289	1.0704
<i>Pterocarpus osun</i>	1	8	0.5437	0.2447	0.3289	1.1173
<i>Pycnathus angolensis</i>	3	23	0.7673	1.573	0.9868	3.3271
<i>Randia longiflora</i>	4	30	1.3158	1.3659	1.3158	3.9975
<i>Sterculia oblonga</i>	1	8	0.5437	0.2305	0.3289	1.1031
<i>Sterculia tragacantha</i>	2	15	0.2647	0.8877	0.6579	1.8103
<i>Tectona grandis</i>	24	182	7.5642	3.8492	7.8947	19.3081*
<i>Terminalia ivorensis</i>	12	91	2.7641	3.3687	3.9474	10.0802
<i>Terminalia superba</i>	3	23	0.7673	1.1982	0.9868	2.9523
<i>Treulia africana</i>	26	198	7.3764	10.8005	8.5526	26.7295**
<i>Tripochiton scleroxylon</i>	10	76	3.7363	3.2499	3.2895	10.2757
<i>Tetrapleura tetraptera</i>	3	23	0.7673	1.3864	0.9868	3.1405
	<b>304</b>	<b>2310.4</b>	<b>99.7516</b>	<b>100.0002</b>	<b>99.9992</b>	<b>299.7510</b>

Source: Field Survey 2019-2021

The family *Fabaceae* was higher in species richness, followed by *Sterculaceae*, *Malvaceae*, and *Rubiaceae* (Figure 2).

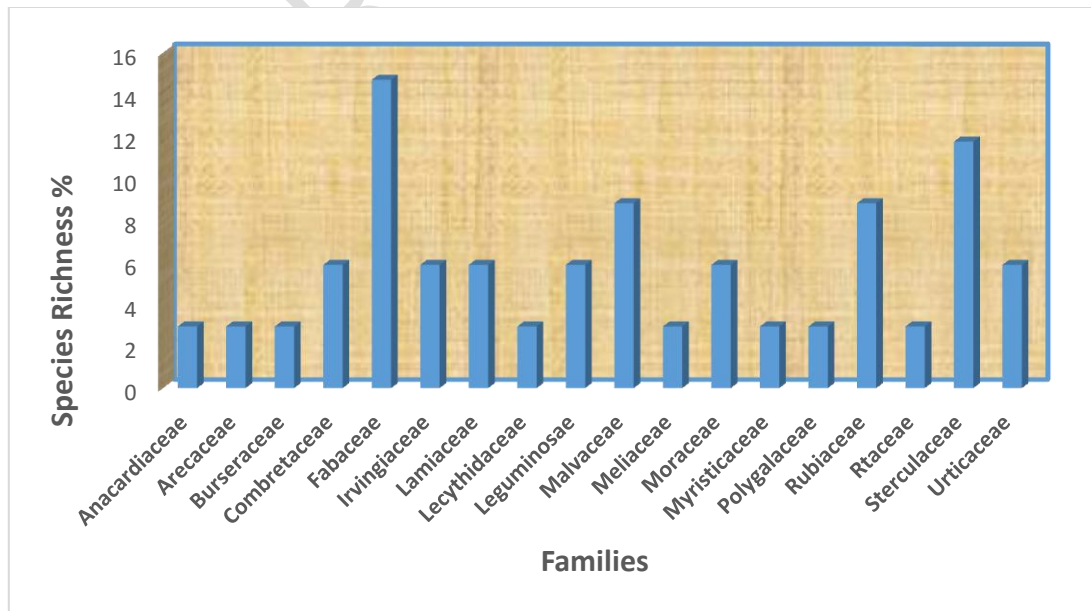


Figure 2: Trees species families in the study area.

The majority of the tree species were within the dbh class of between 21cm and 30cm (Table 6). Major tree species had diameter at breast height (dbh) between 21 and 30cm, an indication of a highly degraded habitat, with sparsely distributed tree species. Though the habitat was dominated by *Tectona grandis* and *Gmelina arborea*, mahogany, kolanut, obeche, opepe, silk cotton and bush apple were richer in diversity. This implies that indigenous tree species still enjoy some form of conservation in the form of sacred groves and shrines. The sclater's guenons are a diverse group of organisms with ecological and behavioural variability. They inhabit a variety of habitats and consume different variety of diets, and understanding the diversity of this biological community becomes therefore imperative

*Table 6: Diameter at breast Height (DBH) Class distribution of trees in the study area.*

Location	% DBH Class (cm)				Total
	10 ≥ 20	21 ≥ 30	31 ≥ 40	41 & above	
1	12.50	25.00	37.50	25.00	100
2	20.00	45.00	22.50	12.50	100
3	20.00	35.00	37.50	7.50	100
4	15.00	70.00	15.00	0.00	100
5	15.00	62.50	22.50	0.00	100
6	20.00	45.00	35.00	0.00	100
7	10.00	45.00	12.50	32.50	100
8	32.50	32.50	12.50	22.50	100
<b>Total</b>	<b>18.13</b>	<b>45.00</b>	<b>24.38</b>	<b>12.50</b>	<b>100</b>

**Source: Field Survey 2019-2021**

An increase in cases of conflict between humans and wildlife are a result of expansion into the natural habitats of the animals. This results in the destruction of the natural food sources of the guenons, and replaced with those planted by humans. According to a research by Shek and Cheng (2010). The feeding of monkeys on these anthropogenic crops is the reason for why the monkeys are usually regarded as pests.

#### **4. CONCLUSION**

The conservation and management of wild animal species population is better achieved through monitoring programs such as changes in population of wild animals, habitats, food availability and anthropogenic activities. In most cases, individual population may increase but available habitat may not be able to cater for the needs of such individuals. The range of these animals have shrunk due to habitat fragmentation, causing the animals to now compete with humans within the surrounding communities for survival. This portends danger for the animals as no one can predict what the future holds for the animals. If the only protection the animals enjoy is that of a taboo which forbid its killing, then with increasing land development and expansion of agricultural fields, continuous raiding of farms, gardens and homes by the monkeys, which may result in more conflicts, this unconscious form of conservation may not be sustainable in the long run. These conflicts are threats to the remaining very fragile population and habitats, and extinction of the animal may be imminent. Resistance against the conservation of the species by the host communities may spell doom for the animal, further aggravating the conflict which may cause severe alteration to the habitat, and forcing the animals to migrate to other areas. Concerted efforts is therefore needed by all concerned to ensure that the animal's populations and habitats are not negatively impacted. They should be conscious efforts geared towards restoration of the sclater's monkey's habitat, through regeneration programs such as indigenous tree planting and regulated felling. The guenons should be considered as species of urgent public attention, necessitating the establishing of a wildlife sanctuary in the area so as to ensure the complete protection of the species.

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## APPENDIX

### Appendix 1: Global Positioning System Transects Coordinates in the study area

Transect	Coordinates
1	5.412691 <sup>0</sup> N, 6.514272 <sup>0</sup> E
2	5.731462 <sup>0</sup> N, 4.751621 <sup>0</sup> E
3	5.625171 <sup>0</sup> N, 6.461320 <sup>0</sup> E
4	5.491721 <sup>0</sup> N, 6.772130 <sup>0</sup> E
5	5.561413 <sup>0</sup> N, 4.756135 <sup>0</sup> E
6	5.596141 <sup>0</sup> N, 7.415260 <sup>0</sup> E
7	5.643121 <sup>0</sup> N, 7.315612 <sup>0</sup> E
8	5.714213 <sup>0</sup> N, 5.168174 <sup>0</sup> E

### Appendix 2: Other wildlife species observed in the study area

Family	Species	Frequency	%	Rem.
Ardeidae	Grey Heron	5	1.4	DS
	Plantain Eater	12	3.3	DS
	Laughing Dove	63	10.1	WS
	Common Bulbul	37	10.1	WS
	Senegal Coucal	18	4.9	DS
	Cattle Egret	42	11.5	DS
	Pied Crow	26	7.1	DS
	Grey Headed Sparrow	29	7.9	WS
	Little Egret	48	13.2	DS
	Village Weaver	67	18.4	WS
	Black Kite	6	1.6	DS

	Red Bishop	3	0.8	DS
	Fire-Crown Bishop	7	1.9	DS
	Yellow-Mantled Whydal	2	0.5	DS
<b>Total</b>	<b>14</b>	<b>365</b>	<b>92.9</b>	

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DS (Dry Season), WS (Wet Season)

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