



Importance of the Ouyatouo village Community forest in the sustainable conservation of mammalian fauna (West, Côte d'Ivoire)

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1. Abstract

Mammals contribute effectively to forest recolonization by disseminating plant seeds. Despite this ecological importance, these animal species are threatened by human activities. The Zouan-Hounien department is no exception to this scourge. This increases the vulnerability of mammalian fauna in this area of Côte d'Ivoire. The Ouyatouo village community forest does not benefit from an ecological monitoring program, as is the case in the country's National Parks. To improve this situation, a study was conducted in this forest to determine the diversity, distribution, and threats to mammals in order to help the Ivorian government make better decisions aimed at the sustainable conservation of its biodiversity. The methodology consisted first of surveys and then of pedestrian surveys in the forest. Following the pedestrian inventories, five Orders of Mammals (Artiodactyls, Carnivores, Hyracoidea, Primates, and Rodents) were identified in this forest relic. The majority of Mammals were identified in the North, Southeast, and Southwest of the forest. It would be interesting to implement a sustainable conservation program for this forest because it contains Mammals threatened with extinction by human activities.

Keywords: *Biodiversity, conservation, Mammals, Tonkpi region, Côte d'Ivoire*

ARTICLE INFO**Article History:**Received 26th September, 2025Received in revised form 15th October, 2025Accepted 20th October, 2025Published online 31st October, 2025**2. Introduction**

Forests in tropical regions, which are home to more than half of the world's biological diversity, are mostly subject to human activities, especially those in West Africa (Caspary et al., 2001; Koné et al., 2014). Like tropical countries, Côte d'Ivoire is highly concerned by biodiversity conservation issues. Threats to Ivorian wildlife diversity are caused by the destruction of natural habitats and also by intense, uncontrolled harvesting of wild animals by hunters (Caspary et al., 2001; Béné et al., 2007). The factors putting pressure on Ivorian forests are, in order of their relative importance: deforestation, agricultural expansion, poaching, uncontrolled bush fires, urbanization and artisanal and/or semi-industrial mining (Koné, 2004; Kadjo et al., 2014; Béné et al., 2015). With the aim of mitigating the disappearance of its biodiversity, the Ivorian State, upon gaining independence, established institutions and even defined a policy for the management of its natural resources, in particular wildlife and game resources. The Forest Development Company (SODEFOR) was created in 1966 with 231 classified forests under management, a hunting ban was issued in 1974 and a network of 14 protected areas was created: 8 national parks and 6 nature reserves managed by the Ivorian Office of Parks and Reserves (OIPR), created in 2002 (Assoa, 2004). The network of protected areas has grown to 17 with 8 national parks and 9 nature reserves and covers nearly 10% of the Ivorian territory (OIPR, 2022). While classified forests and protected areas are protected by SODEFOR and OIPR respectively, the community forest of the Ouyatouo village does not benefit from any ecological monitoring program. The general objective of this study was therefore to determine the conservation status of mammalian fauna in this forest and to contribute

to its sustainable conservation. Specifically, in the Community forest of Ouyatouo village, the aim was to (i) identify the species of Mammals ; (ii) determine the distribution of the different Orders of Mammals ; (iii) identify the threats to Mammals in the Community forest of Ouyatouo village.

3. Methodology**3.1 Study site**

15 km from the Krozialé classified forest, there is a community forest near the village of Ouyatouo in the Tonkpi region of western Côte d'Ivoire (OIPR, 2022). It is located 16 km east of the town of Zouan-Hounien between 6°53' and 6°54' North latitude and between 8°70' and 8°80' West longitude. It has an area of 170 hectares and is well preserved. In terms of sustainable conservation of mammals, a well-preserved forest is a plant formation where the majority of tree crowns are more than 15 meters above the ground with the presence of several lianas around the tree trunks and sometimes on mountains (Galat-Luong & Gérard 2000), thus providing a place of camouflage for wildlife (**Figure 1**).

3.2 Data Collection Methods**3.2.1 Investigation**

A survey of hunters and old people with proven knowledge about wildlife in general and mammals in particular was conducted in the villages around the forest. During the survey, we showed a pre-selected sample of different images of mammal species likely to be present in the area, as well as several other images of mammals that are not known in the area to assess the reliability of identification through photos. This survey made it possible to draw up a list of mammals that could be encountered, then to identify the forest that still shelters these mammals.

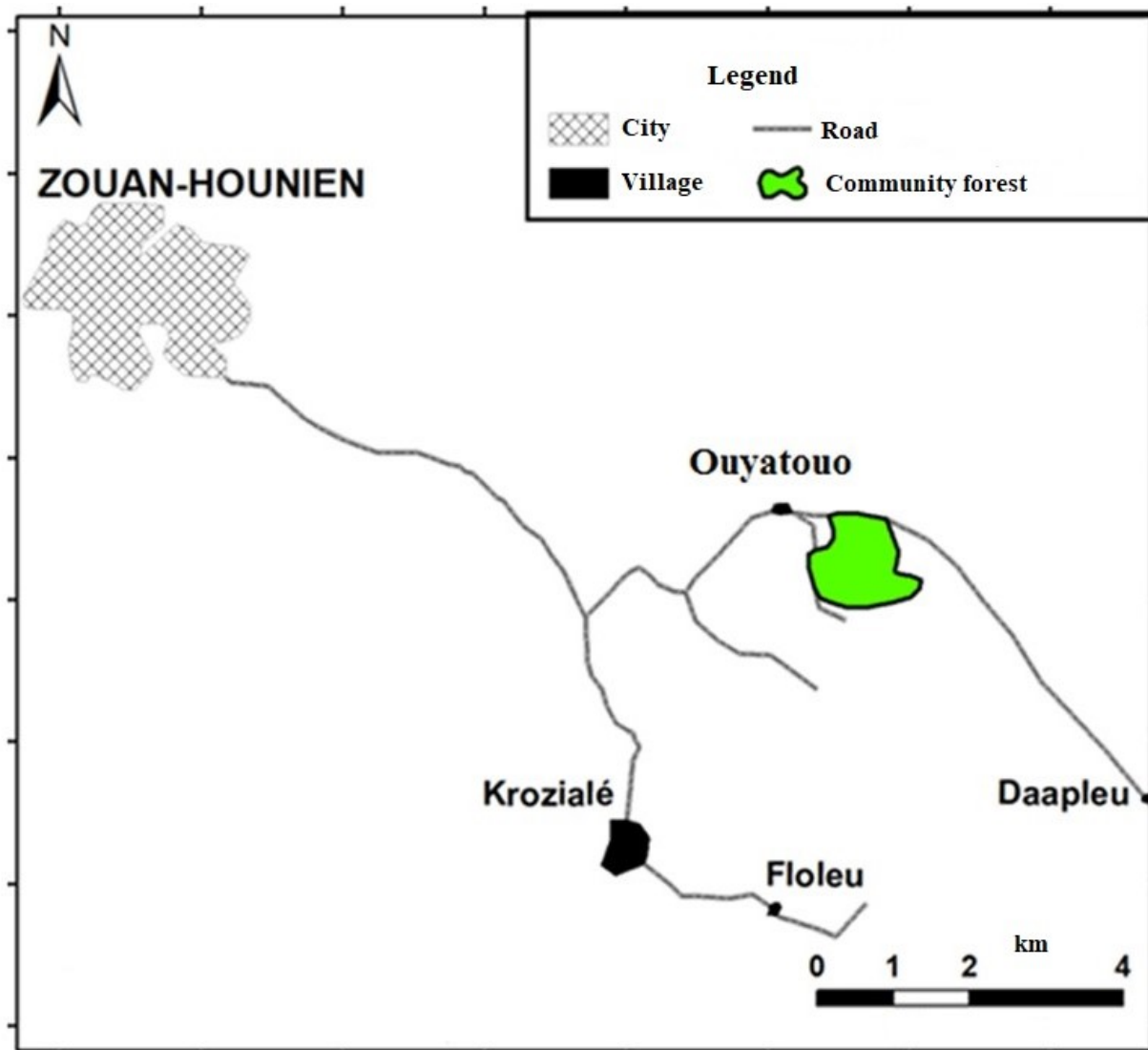


Figure 1 :Geographical location of the study area

3.2.2. Foot prospecting

The walking surveys during this study were conducted both day and night in the community forest of the Ouyatouo village by combining the linear transect method (Kadjo et al., 2014; Hoppe-Dominik et al., 2011) and the reconnaissance walks (RECCE). These two methods were combined to increase our efforts and cover areas of potentially high diversity and density and increase our chances of detecting threatened species. The transect method consisted of walking three (03) virtual straight lines of 600 m long inside the forest and positioned to prospect the main habitats of the site. During the linear transects, deviations are not allowed. As for the

reconnaissance walks, we followed a predetermined direction, but which allowed for deviations during the surveys. Recces had the advantage of allowing the team to cover more areas in a short period of time, while having minimal impact on the environment (Walsh and White, 1999). Using GPS and a compass, we walked slowly along lines at a speed of 0.5 to 1 km/h to collect data on the presence of mammals. Species detection along the transects could be direct or indirect. Direct observations concerned any visual contact with animals while walking on the transect. Indirect observations took into account all indirect evidence that could definitively justify the presence of mammals on the site. Each time an indication of presence was

found, the inventory team stopped to characterize it and take the geographical coordinates. During the pedestrian surveys, we also recorded evidence of anthropogenic presence such as tracks, agriculture, gold panning, and hunting. All observations were recorded on a pedestrian inventory sheet designed for the purpose.

3.2.3 Data analysis

Two software programs (PAST (2.17c) and QGIS Version (3.10.6) were used for data analysis. The PAST software (2.17c) was used to perform statistical tests on frequency differences and to calculate numerical abundance. The QGIS Version (3.10.6) software was used to produce maps of the spatial distribution of mammalian Orders inventoried in the forest (Bohoussou et al., 2018).

4. Results

4.1. Specific richness of mammalian fauna in the Ouyatouo village community forest

The mammals discovered in the community forest were divided into six orders. The order Rodents was identified with 64% (N = 762). The order Primates had 17.14% (N = 204). Artiodactyls had 9.91% (N = 122). Carnivore and Hyracoids had (5.90% ; N = 70) and (2.88% ; N = 34) respectively (**Figure 2**). The Order of Rodents counted thirteen (13) species, the most numerous of which were mice (Mouse sp, *Malacomys longipes*, *Arvicanthis niloticus*, *Lemniscomys striatus*) with respectively (14.96%; N = 178), (1.26%; N = 15), (0.33%; N = 4) and (0.08%; N = 1). Next came Stanger's Giant Squirrel (*Protoxerus stangeri*), (12.27%; N = 146), Gambian Giant Rat (*Cricetomys gambianus*), (9.32%; N = 111), African Ground Squirrel (*Atherurus africanus africanus*), (8.99%; N = 107), Ground Squirrel (*Euxerus erythropus*), (7.14%; N = 85) and Grasscutter (*Trhyonomys swinderianus*), (4.62; N = 55). Pel's Anomalure (*Anomalurus peli*), was at 0.58 (N = 7) while Derby's Anomalure (*Anomalurus derbianus*), had 0.42% (N = 5). The Red-legged Heliosmitur and the Gambian Heliosmitur had 2.6% (N = 31) and

1.59% (N = 19), respectively. The carnivore species present were the African civet (*Civettictis civetta*), (3.61%; N = 43), the Nandinia (*Nandinia binotata*), (1.18%; N = 14), the red mongoose (*Herpestes sanguinea*), (0.67%; N = 8) and the brown mongoose (*Crossarchus obscurus*), (0.42%; N = 5). The Artiodactyl had two species. These were the Bushbuck (*Tragelaphus scriptus*), (6.72%; N = 84) and the White Doe (*Cephalophus maxwelli*), (3.19%; N = 38). *Dendrohyrax dorsalis* was the only Hyracoids species with (2.86%; N = 34).

The Primates Order was composed of five species. The one with the highest numerical abundance was the Thomas's Bush-baby (*Galagoides thomasi*) with 10.42% (N = 124). Next came the Mona Monkey (*Cercopithecus campbelli*), the Bosman's Potto (*Perodicticus potto*), and the White-nosed Monkey (*Cercopithecus petaurista*) with (2.18%; N = 26), (2.10%; N = 25), and (1.68%; N = 20), respectively. One species of Colobus was present in this forest: the Red Colobus (0.76%; N = 9) (P value = 0.61 > 0.05). (**Table 1**). The Shannon index value in the forest was (H = 2.75).

4.2. Spatial Distribution of Mammals in the Ouyatouo Village Community Forest

Investigations showed that Rodents (**Figure 3**) were very abundant in the southwest and southeast of the forest. They were the only Mammalian Orders observed in the north of the forest. The Orders Primates (**Figure 4**), Carnivores (**Figure 5**) Artiodactyls (**Figure 6**), were all observed in the southwest and southeast of the forest. Hyracoids (**Figure 7**) were also inventoried in the Artiodactyls and Carnivora distribution areas. No Mammalian Orders were encountered in the center-east of this forest fragment during our study.

4.3. Anthropogenic pressures on mammals in the Ouyatouo village community forest

In this forest, agriculture dominated human activities. Its frequency was 64.08% (N = 248). Hunting came in second place with a frequency of 21.19% (N = 82). The Société des Mines d'Ity

(SMI) has already carried out surveys there with a view to its exploitation. The frequency of encountering indices of the activities of this company amounted to 09.82% (N = 38). As for gold panning, it was represented at 3.36% (N = 13). Wood extraction was very low and

represented only 01.55% (N = 6) of cases. According to the Kruskal-Wallis test, all these human activities constituted practically the same level of threat to the diversity of Mammals (P value = 0.97 > 0.05).

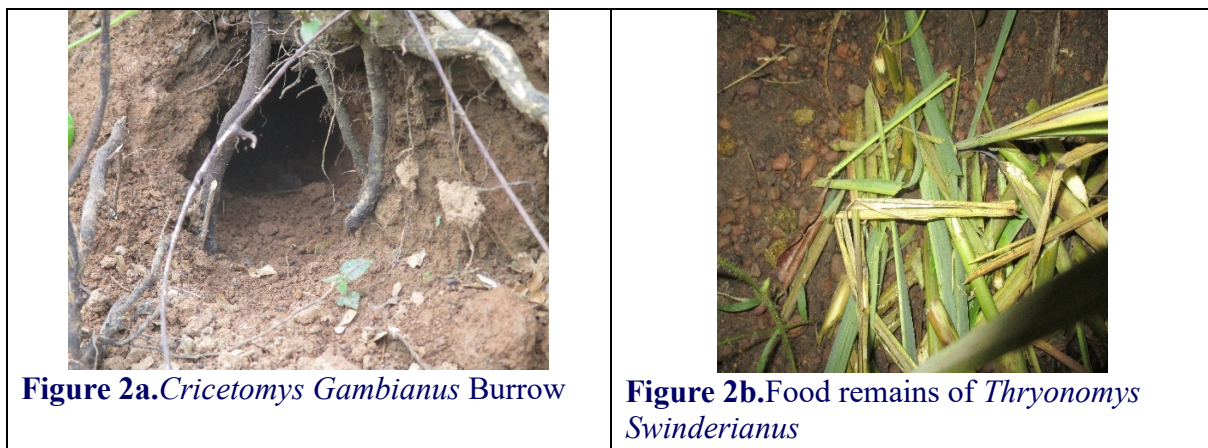


Figure 2.Evidence of mammal presence in the community forest of the Ouyatouo village

Table 1.Mammals inventoried in the community forest of the village of Ouyatouo

Order	Nom scientifique	Effective(n)	Frequency
Primates	<i>Perodicticus potto</i>	25	2,1
	<i>Ptilocolobus badius</i>	9	0,76
	<i>Cercopithecus campbelli</i>	26	2,18
	<i>Cercopithecus petaurista</i>	20	1,68
	<i>Galagoïdes thomasi</i>	124	10,42
Carnivores	<i>Nandinia binotata</i>	14	1,18
	<i>Civettictis civetta</i>	43	3,61
	<i>Crossarchus obscurus</i>	5	0,42
	<i>Herpestes sanguinea</i>	8	0,67
Artiodactyls	<i>Tragelaphus scriptus</i>	84	6,72
	<i>Cephalophus maxwelli</i>	38	3,19
Rodents	<i>Protoxerus stangeri</i>	146	12,27
	<i>Souris sp</i>	178	14,96
	<i>Thryonomys swinderianus</i>	55	4,62
	<i>Cricetomys gambianus</i>	111	9,32
	<i>Euxerus erythropus</i>	85	7,14
	<i>Helioscirus gambianus</i>	19	1,59
	<i>Helioscirus rufobrachium</i>	31	2,6
	<i>Lemniscomys striatus</i>	1	0,08
	<i>Malacomys longipes</i>	15	1,26
	<i>Anomalurus derbianus</i>	5	0,42
	<i>Anomalurus peli</i>	7	0,58
	<i>Arvicanthis niloticus</i>	4	0,33
	<i>Atherurus africanus africanus</i>	107	8,99
	<i>Dendrohyrax dorsalis</i>	34	2,86
Hyracoids			

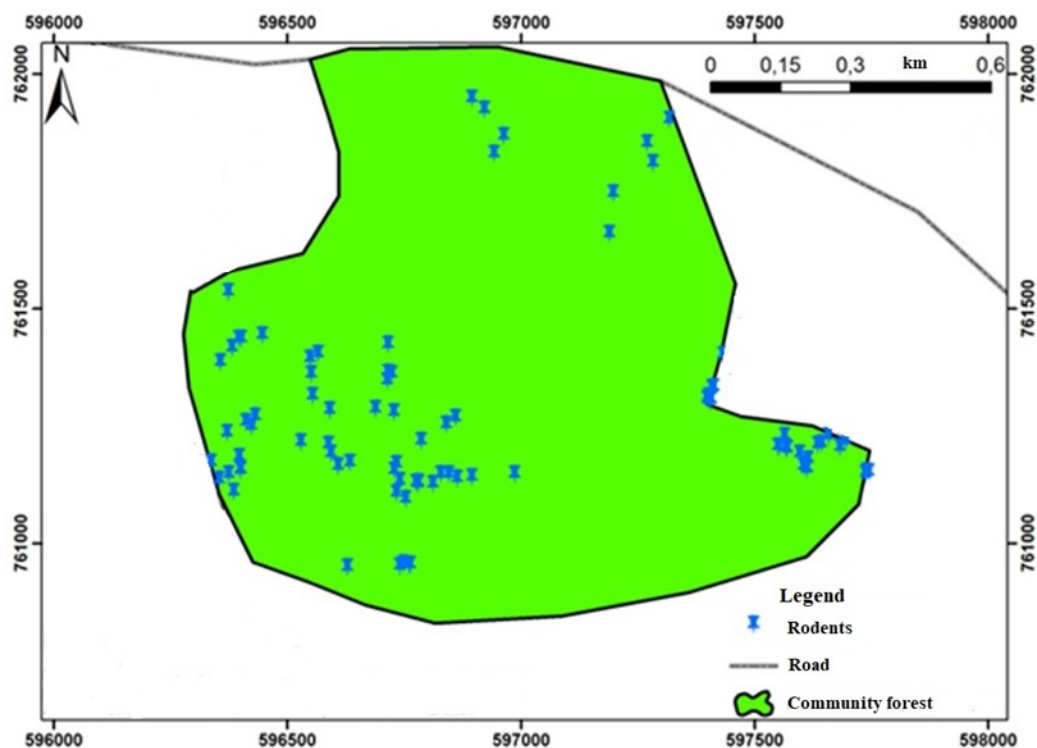


Figure 3. Map of the spatial distribution of Rodents

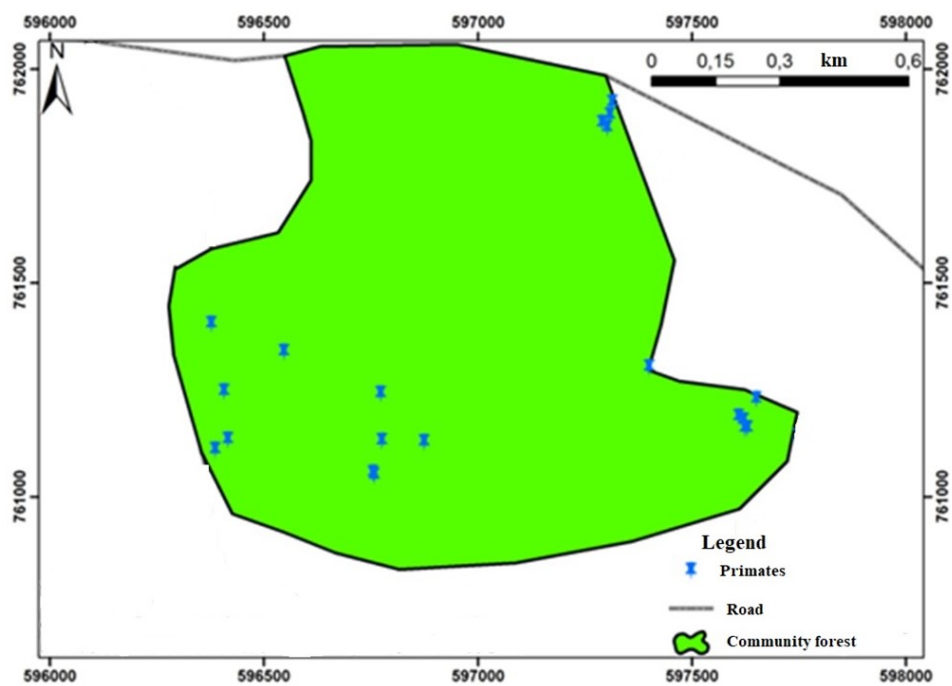


Figure 4. Map of the spatial distribution of Primates

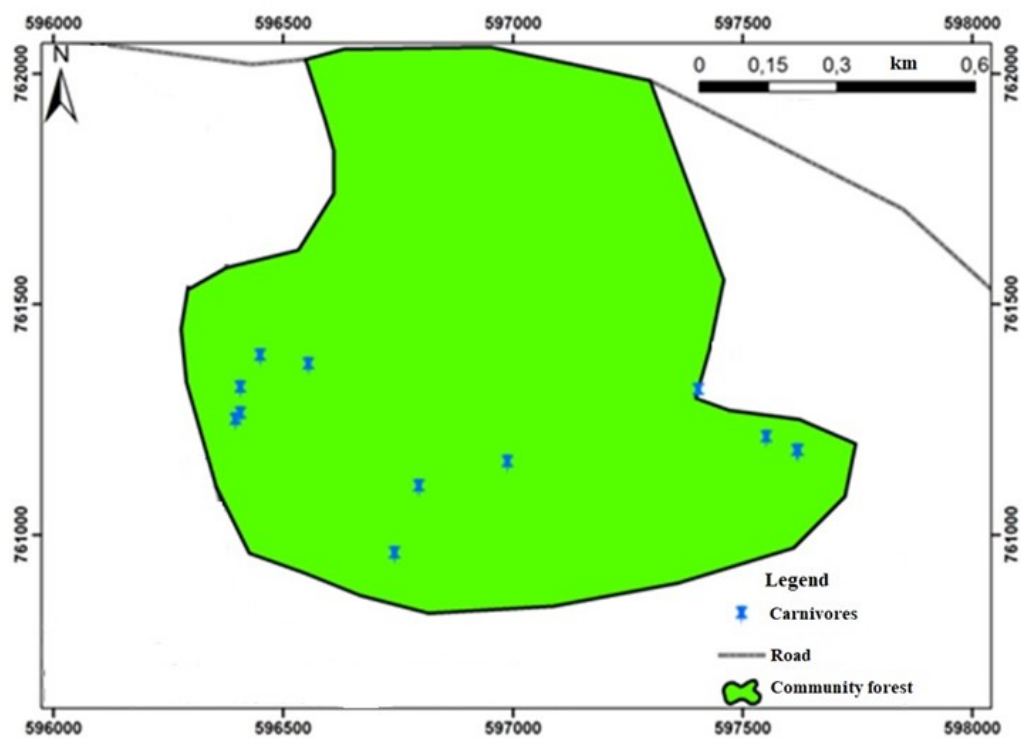


Figure 5. Map of the spatial distribution of Carnivores

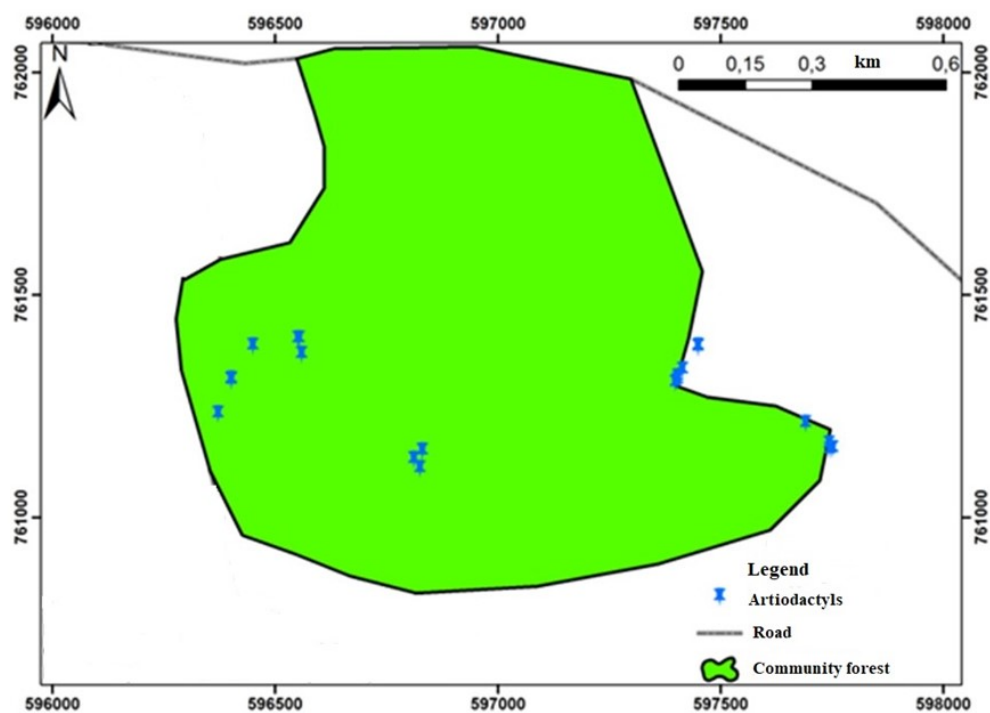


Figure 6. Map of the spatial distribution of Artiodactyls

5. Discussion

The Shannon index value ($H = 2.75$) in this study illustrated the fact that in addition to classified forests and parks, some community forests continued to play an important role in the sustainable conservation of wildlife in the Tonkpi region (Kouakou, 2014). In 2004, Lamon conducted studies on the management of community forests on the outskirts of the W park for the sustainable conservation of wildlife in Burkina Faso. The majority of the species inventoried belonged to the Order of Rodents. Indeed, mice, which are small rodents (Jonathan, 2006), are very abundant in both classified forests, national parks and community forests. They were followed in their numerical abundance by the Gambian Giant Rat and the Stanger Giant Squirrel. Several tracks of African Atherure and Cane Rat were observed. The high representativeness of the latter could be explained by the presence of plantations around and inside the forest (Pauline, 2010 ; Adou yao et al., 2015). Indeed, most of their presence indices were recorded on food crop plots and in cocoa plantations (Sarhou 2006). The Heliosciure and the Ground Squirrel have a low numerical abundance compared to other rodent species. This situation would be due to the scarcity of their food resources. Rodents were observed both on the periphery and inside the forest. The high representativeness of these mammals would be due to the fact that they are not regularly hunted for the majority (Caspari et al., 2001; Roger et al., 2011). No mammals were recorded in the central-eastern part of the forest. This could be explained by the strong presence of human activities within this forest. The human activities recorded during this study in the forest were agriculture, logging and mining, gold panning and hunting. Deforestation, due to human activities, is a reality in Côte d'Ivoire (Moussa et al., 2014). The control of forest resources constitutes a development issue in the life of any nation (Zeta & Kragbé, 2012).

6. Conclusion

The Mammals discovered in the Ouyatouo village community forest were divided into five (05) Orders. These were Rodents, Primates, Artiodactyls, Carnivores and Hyracoids. The Rodent Order was the most abundant. The majority of Mammals were identified in the North, South-East and South-West of the forest. The sustainable conservation of Mammals is threatened by agriculture, hunting, mining, gold mining and timber harvesting.

7. Acknowledgement

Our thanks go to the Chief of the Ouyatouo village and his notables for the warm welcome. We thank Mr. Gecelin for his good collaboration in being the main guide for the smooth running of this study.

8. Conflicts of interest

The authors declare that there is no conflict of interest for this article.

9. Authors' Contribution

KRAMOKO BAMBA collected the data, KRAMOKOBAMBA and DJAHA KOUAME performed the data processing, statistical analysis, and manuscript writing. The other co-authors contributed to proofreading and improving the article.

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