SJIF Impact Factor: 5.464

WORLD JOURNAL OF ADVANCE HEALTHCARE RESEARCH

ISSN: 2457-0400
Volume: 5.
Issue: 6.
Page N. 213-217
Year: 2021

Original Article www.wjahr.com

DETERMINATION OF SMALL WILD MAMMALS IN PREFECTURES OF DINGUIRAYE AND SIGUIRI

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Received date: 25 September 2021 **Revised date:** 15 October 2021 **Accepted date:** 05 November 2021

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ABSTRACT

Small mammals are a faunal group whose distribution of species is still relatively unknown in Guinea. Yet they are very abundant and diverse. The mammalological inventory would benefit from being completed by looking at several faunal groups not yet inventoried or incompletely determined. The objective of this determination was to identify small wild mammals found in the prefectural territories. This work was carried out in December 2017, which coincides with the dry season and the breeding season of most rodents, in order to better characterize the biodiversity of rodents, shrews and chiroptera in the prefectures of Dinguiraye and Siguiri. After trapping, morphometric and biometric analyses made it possible to know the different individuals. A total of 158 individuals belonging to 17 species were collected, including 69 individuals in Dinguiraye and 89 individuals in Siguiri. Highly variable trapping yields were observed between 4,49 and 13,33 per cent; the highest yield was obtained in the locality of Siguirini with 16,85 p.100 for a relative frequency of 22,15 p.100 followed by Selouma, Lansanaya and Sikoro with respectively 21,52 p.100 and 17,09 p.100 for the last two. For ecological habitats, human dwellings showed a frequency of 38 per cent followed by forests 30 per cent. Beyond this study, habitat-species links need to be defined and more accurate distribution maps. It should be noted that during this inventory *Mastomys natalensis* (27,21%) and *Mastomys erythroleucus* (24,68%) are more frequently encountered in all localities.

KEYWORDS: Determination, Small mammals, habitats, Biodiversity.

INTRODUCTION

Inventories have been used since ancient times to determine the fauna and flora present on sites. They consist of visiting one or more times one of the chosen sites and drawing up a list of all the species encountered. Rodents form one of the most diverse orders of the mammal class. They are among the mammals best adapted to the occupation of the most varied natural habitats. The study of the distribution of small mammal species in Guinea through spatial scales has been challenging scientists for many years.

In Guinea, small vertebrates are generally little considered in the assessment of the impact of humans on diversity. However, these organisms constitute a very heterogeneous and complex taxon due to their biology, ecology, behavior and interaction with humans. Like many other West African countries, Guinea is facing strong demographic pressure associated with intensive urbanization. In addition to these phenomena, global climate change and desertification are causing significant disturbances that can affect populations of endemic small mammals irreversibly.

The biogeographical work of these organisms is of interest for the conservation of species because it provides a better understanding of their interaction with the environment [Thiam, M. et al. 2008].

Rodent populations respond to the impacts of changes in their environment. As a result, observations are used to both estimate population size and trends [Mattson, D. J., 1997; Kojola, I. et al. 2006; Kindberg, J. et al., 2009]. Changing the ranges of a number of species is one of the first and most visible responses to climate change [Hughes, L., 2000 and Walther, et al. 2002]. Small wild mammals are generally rarely considered in assessing their effects on biodiversity and have often been neglected in several geographical areas. It is obvious to characterize the morphological and genetic diversity of

these small rodents of Guinea, it is necessary to make an inventory of their population using modern trapping techniques.

The prefectures of Dinguiraye and Siguiri, are characterized by ecosystems of Guinean Sudano savannahs with tree strata consisting of wooded savannahs, wooded savannahs, shrub and grassy savannahs that constitute a remarkable fragmentation of habitats.

The main objective of our work has been to inventory specimens of small wild mammals in the Dinguiraye and Siguiri areas.

The biodiversity of small mammals in the region is not well known. In order to establish a faunal list, we conducted a preliminary inventory of rodents in the region and researched the ecological preferences of the different animals caught in order to clarify the structure of the communities. So we can say what species are present in houses? What are the rodent pests of crops?.

MATERIALS AND METHODS

Study areas

The localities of Siguiri and Dinguiraye are part of the administrative regions of Upper Guinea respectively Kankan and Faranah.

The prefecture of Siguiri has the geographical coordinates (11°25' 20″ latitude North and 9°10′11" longitude West); that of Dinguiraye 11°18′ 03" north latitude, 10°43′ 05" west longitude. In Siguiri the localities of Siguirini, Lero, and Kabaya were selected for our study; while in Dinguiraye it is the localities of: Selouma, Lansanaya, Tinkisso and Sikoro that were targeted.

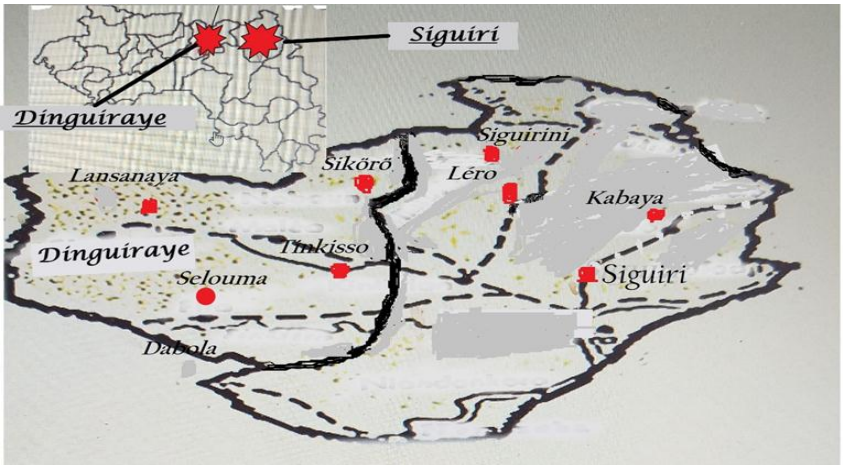

Figure I: catch areas (source M. Camara, CERPA-Conakry).

In the targeted localities, particularly in terrestrial ecosystems, traps have been placed in different places such as dwellings and surroundings, crop fields, forests, plains, wetlands and herbaceous savannahs in order to be able to capture and identify a great diversity of species related to their living environment.

Methods

After capture the weighing and measurement operations were carried out. Pesola, toolbox, bibs, autopsy plate, stainless rulers and caliper were used for this purpose. An autopsy sheet was used to summarize the information collected.

Capture and collection

During this inventory, baited "Sherman" traps were placed in the various biotopes. For chiroptera, Japanese nets were used with 12 mm meshes and an opening of 2 pockets.

For the rats, the traps were set in the evening in line with a distance of about 5 m between the traps and surveyed the next morning. Regarding chiroptera, the nets are opened a few minutes before the first flight of individuals. These nets are mounted on poles with a height of 2.5 m. The captured individuals were carefully removed from the net.

The animals were sacrificed, weighed (g) and measured (mm): Head + body length (LTC); tail length (LQ); length of ears (Gold) and hind legs (Pp).

For chiroptera the measurements were made on the tibia (mm), the forearm (mm), the head length plus body (mm). The skulls of some specimens were removed and prepared for taxidermy work at the CERPA laboratory (Centre d'Etude et de Recherche sur les Petits Animaux).

The identifications were made through the determination keys of Duplantier, J., M., et al., (1993); De Visser, et al., (2001). After measurement, some specimens were stored in 70% ethanol for taxidermic and osteological preparation in the laboratory.

Statistical analyses

The data collected was processed using Excel 2010 software. It was possible to calculate trapping yield or trapping effort and trap nights for these small mammals, using the following formulas:

Trapping effort (Ep.) = (Total number of specimens) / (Total number of traps) x 100

Trap nights = (Number of traps used) x (Number of nights caught)

Univariate statistics were also applied to calculate the mean and standard deviations.

RESULTS AND DISCUSSION

A total of 158 specimens were captured (154 rodents and 04 shrews). Among these small mammals, bats (4 genera), mice (13 genera) and shrews (4 genera) have been identified. Compared to the places of capture, the dwelling huts had a considerable number (60 individuals) compared to the other places (see Figure II).

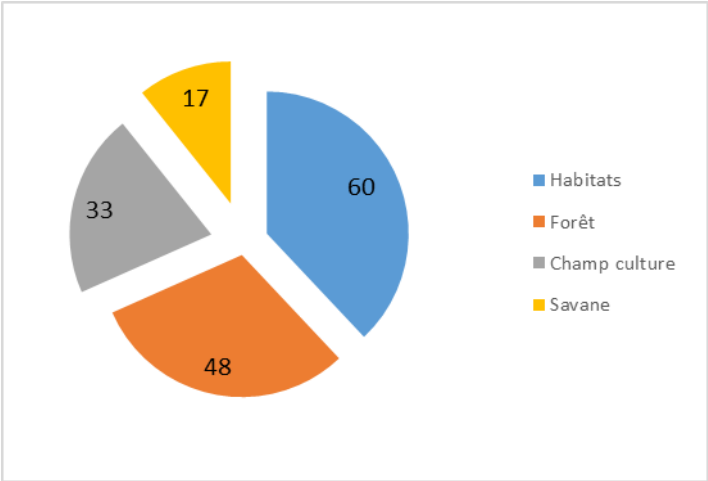

Figure II: Relative frequencies of individuals captured by area.

The abundance of capture of faunal specimens during this campaign in the different biotopes is remarkable. Something that materializes in the frequency of captured individuals and is due to a favorable habitat and climate in harmony with their food.

During this study, 1,662 traps were used or 267 traps per night for a total of 40,530 trap nights with a trapping yield of 9.50 p.100. The greatest trapping effort was obtained in Siguirini with 16.85 p.100 followed by that of Lero with 13.33 p.100. In all the localities visited, the lowest trapping effort observed was 4.49 per cent (see Table 1).

In these localities (Kabaya, Lansanaya and Selouma) the group of bats captured are generally more diverse but less abundant (relative abundance). Thus, the 19 captured individuals are for the most part only weakly represented (see Table 2).

The localities of Siguirini and Selouma recorded respectively 22.15 p.100 and 21.52 p.100 of individuals followed by Lansanaya and Sikörö with 17.09 p.100 of individuals, and in the end Lero with 3.80 p.100 (see Table 3).

In all the localities explored, *Mastomys erythroleucus* and *Mastomys natalensis* were found to be present. In Léro and Siguirini, bats have not been observed.

In terms of ecological habitats, there is a significant number of small mammals in dwellings with a presence rate equal to 37.97 p.100, followed by the gallery forest (30.38 p.100) and finally the grassy savannah with 10.76 p.100 (see Table 3).

The genus Mastomys has been much more encountered in dwellings and their surroundings, in the fields of cultivation. This fact showed their status as anthropogenic commensal species.

The genera Rhinolophus and Scotonycteris are the most common in the environments explored, and the frugivorous species (Epomops spp.) was caught at Kabaya in greater numbers than other sites.

Table 1: Trap Nights.

Number of Nights	Number of traps	Capture	Percentage catch yield
1	60	8	13,33
2	267	16	5,99
3	267	25	9,36
4	267	20	7,49
5	267	45	16,85
6	267	32	11,98
7	267	12	4,49
Total	**1662**	**158**	**9,50**

Table 2: Summary of small mammal species caught and their frequency.

Species \ Locality	Léro	Kabaya	Lansanaya	Sikoro	Siguirini	Selouma	Tinkisso	Effectif.	Fr %
Crocidura	0	0	0	1	2	1	0	4	2,53
Gramomys spp.	0	0	0	0	2	0	0	2	1,27
Nanomys	1	0	2	2	2	1	2	10	6,33
Lemniscomys striatus (Linnaeus 1758)	2	0	1	0	0	0	0	3	1,90
Praomys roostratus (Thomas 1915)	0	2	3	0	16	3	1	25	15,82
Taterilus	0	0	0	0	0	0	1	1	0,63
Tatera guinea (Thomas 1910)	0	1	0	0	0	0	0	1	0,63
Uranomys oweni (Thomas 1910)	0	0	0	0	0	1	0	1	0,63
Graphiurus huetti (Rochebrune 1883)	0	0	0	0	0	1	0	1	0,63
Myomys daltoni	0	2	3	0	2	1	0	8	5,06
Mastomys erythroleucus (Thomas, 1915)	5	1	6	11	11	2	3	39	24,68
Mastomys natalensis (A. Simith 1834)	0	3	5	4	9	19	3	43	27,21
Graphirus horraineus	0	0	0	0	1	0	0	1	0,63
Rhinolophus simulator	0	3	1	0	0	1	0	5	3,16
Epomops spp.	0	4	1	0	0	0	0	5	3,16
Nanonycteris veldkampi (Jentink)	0	0	1	1	0	0	1	3	1,90
Scotonycteris	0	0	2	1	0	2	1	6	3,80
Total	**8**	**16**	**25**	**20**	**45**	**32**	**12**	**158**	**99,99**

Table 3: Summary any result to locality and site explored.

Locality / Site		Dinguiraye			Siguiri			Total	Fr %
	Tinkisso	Lansanaya	Sikörö	Selouma	Léro	Kabaya	Siguirini		
Habitation	4	12	7	13	1	8	15	**60**	**37,97**
Forest	0	2	14	12	0	8	12	**48**	**30,38**
Field to culture	3	9	5	5		5	6	**33**	**20,87**
Savanna	1	4	1	4	5	0	2	**17**	**10,76**
Total	**8**	**27**	**27**	**34**	**6**	**21**	**35**	**158**	**100**
Fr %	**5,06**	**17,09**	**17,09**	**21,52**	**3,80**	**13,29**	**22,15**	**100**	**-**

In comparison with the 2011 work carried out in different areas of Forécariah (Samayah) and Fria (Sabèndè), the average capture yields of small mammals are of the same order: 09.50 p.100 on average in this case, against 12.30 p.100 (Samayah) and 13.30 p.100 (Sabèndè) for the 2011 study [Camara M. et al. 2019].

However, depending on the distribution of catches by biotopes or sites, the frequency varies from 10.76 to 37.97 p.100 for this mission, against 4.16 to 48.64 p.100 for that of 2011 whose publication was published in 2019 [Camara, M. et al. 2019].

In 2008, in the region of El Bayadh (Algeria) an average number of individuals of 3.04 per cent was also obtained for 1,500 trap nights [Djelaila, Y., 2008]. During the studies, for 78 catches with six species a yield of 1,422 trap nights was obtained, or 5.48 p.100 [Hadjoudj, M. et al. 2011]. The presence of Epomops in Guinea was confirmed by IUCN in 2009.

The comparison between the different results of the study work shows more or less important differences, therefore a similarity in faunal composition between the localities sampled, the sites, the catch yields or the trap

nights, which is summarized on the specific diversity and the success of trapping.

CONCLUSION

Small wild mammals and mainly rodents are found in very diverse environments ranging from closed ecosystems (dense forests) to very open environments (crop fields) or even in homes. These small mammals are a main component of the food resources of animal origin consumed by both animals (food chain) and humans; they are an accessible source of protein at low cost. However, they have an influence or impact both positive and negative at various levels of crop systems, and consequently on food security. This study deserves to be extended throughout Guinea in order to better characterize the stands of small mammals on the semi-quantitative level especially, to clearly understand the links between habitats and species and to draw up more precise distribution maps.

ACKNOWLEDGEMENTS

We would like to thank the CERPA Directorate for their support in carrying out this study. We also remain grateful to all the administrative authorities of Dinguiraye, Siguiri and the elders of the districts of Lansanaya, Tinkisso, Selouma, Sikörö in the prefecture of Dinguiraye and Kabaya, Léro and Siguirini in the prefecture of Siguiri, who kindly facilitated the completion of this study.

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