

Estimate of Wild Mammals Population in the Area of Zalingei, Sudan

A. M. A. Adam^{1*}, Latifa, A. A Altigani³, M. A. Ahmed Abdalla³

^{1,2,3}Department of Wildlife, Faculty of Forestry Sciences, University of Zalingei, Zalingei, Sudan

*Corresponding Author: alfadil09@yahoo.com

Abstract

This study was conducted in Zalingei area (100 km²), to estimate the population of active wild mammals during the day and to know which period of the day (morning, mid-day, and evening) can see more animals as well as to know the distribution of animals per direction (north, south, east, and west). Data for estimating wild mammals collected through road count method. We found that, rat has the highest abundance in the area (938 individual) and fox has less abundance with only (13 individual), whereas morning period can see more animals and northern part inhabited by bigger number of mammals.

Key words: Mammals population, total population, road count method, and Zalingei area.

I. INTRODUCTION

A population estimate is numerical approximation of true population size calculated from sample data collected from sampled population animals, whereas a population size refers to the number of individual animals [3]. Estimate refers to the number of animals which have been calculated, usually from sample data [2]. Our study is the first in the area of Zalingei, it is important database for future studies of the population, management practices and other related purposes. Wild animal population is monitored for different reasons like to know the status of species whether it is in

threatened or endangered state, research purposes or biological interest, game management, population being monitored to assess recovery or progress of any threatened species, biological diversity study, to know the effects of human management actions, land use patterns, etc [4], [5], [7].

The objectives of this study were: to estimate wild mammals population in the area of Zalingei, to know occurrence of population per direction and to know in which period of the day can see more mammals.

II. MATERIAL AND METHODS

A. Area of Study

This study was conducted in Zalingei, located in Central Darfur State- Sudan in the western

part of the Jebel Marra. Geographically it falls in the poor savanna zone it covers about fifty

square kilometers in the poor savanna zone between latitudes 12° 30 and 13° 30 North, and longitudes 22° 20 and 23° 45 East[1]. Zalingei area is traversed by many seasonal streams known locally as Wadis and khors. These seasonal streams come down from Jebel Marra

and flow westwards. Wadi Azum and Wadi Areebou are the most important seasonal streams. In the dry season these two Wadis stop running and many permanent water pools are left in their beds. These pools are used by various species of wild animals for drinking and feeding [1].

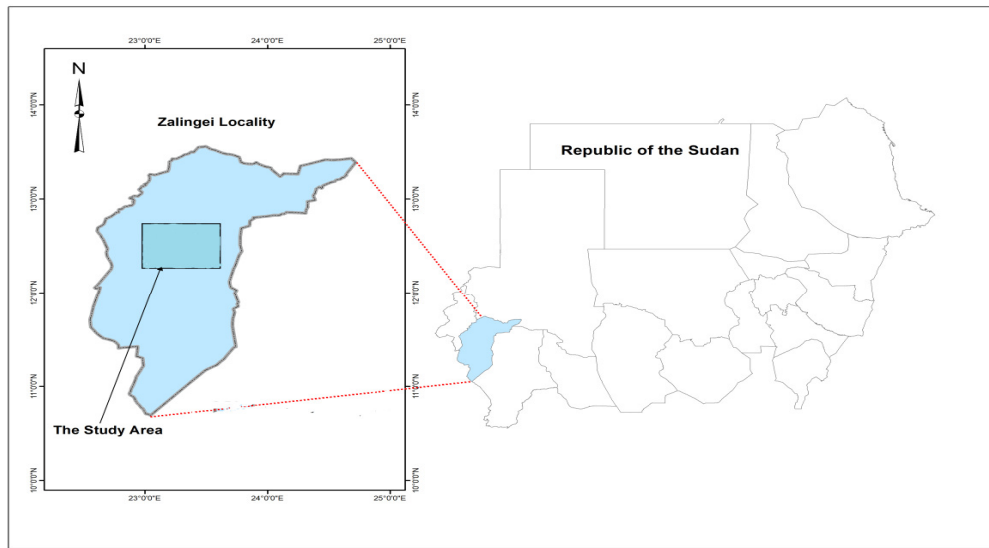


Fig 1: The study area

B. Data Collection

We used road count method for estimating wild mammals in the area of Zalingei (100 km²). A road strip count is the most common way of ground-based sampling. Road strip counts are usually used in smaller wildlife areas (100 - 1000 km²) and game ranches[2].

The study area was divided into four directions (North, South, East and West) with 5km length of each direction. We surveyed each direction three periods (morning, mid-day and evening).

The total wildlife area = (10x10) = 100 km²

Total distance we surveyed = 5 km each direction (20 km)

Average distance of animals seen from the road = 200 m each road side (0.4 km)

Total area surveyed = 20 km x 0.4 km = 8 km²

Total number of animal species seen = N

Then can estimated total population of specific species from: $N/8 \times 100 = ?$

III. RESULTS AND DISCUSSION

Main species found in the area of Zalingei during the periods of counting are: Rat (*Rattus spp.*), squirrel (*Euxerus spp.*), patas monkey (*Erythrocebus patas*) green monkey (*Cercopithecus sabaeus*), Rabbit (*Sylvilagus Spp.*), caracal (*Felis caracal*), fox (*Vulpes vulpes*), porcupine (*Hystrix cristata*) and meerkat (*Suricata suricatta*) Table 1.

Table 1: The total population estimated in all the study area

Species	North			South			East			West			Total seen (No.)	Total population
	M	D	E	M	D	E	M	D	E	M	D	E		
Rat	10	7	15	7	5	1	6	4	3	3	5	9	75	938
Squirrel	5	6	8	1	2	7	4	2	5	3	1	0	44	451
Monkey	3	2	5	2	3	5	7	5	3	2	0	1	38	420
Rabbit	2	1	0	2	0	1	3	1	2	1	0	0	13	138
Caracal	0	0	0	1	0	0	0	0	2	0	0	0	3	38
Fox	1	0	0	0	0	0	0	0	0	0	0	0	1	13
Procupine	1	0	0	0	0	1	0	0	0	0	0	0	2	26

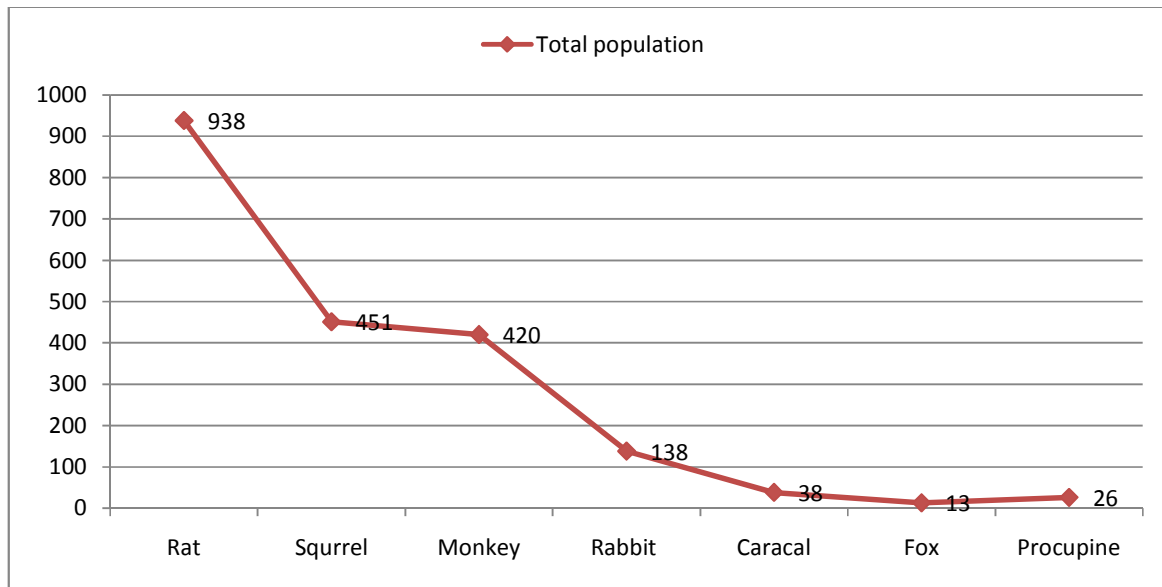


Fig. 2: Shows the total population estimated in all the study area

We estimate the population in order to identify the species of mammals and their abundance in the study area, the highest abundance per species was rat, then squirrel, monkey, rabbits, porcupine and fox with total population: 938, 451, 420, 138, 38, 26, 13, respectively (Table 1, Fig. 2). We consider this study as base for further studies in the area, in terms of

management, population status. Reference [2] can tell the numbers counted, where they have mentioned that, results for one year alone been counted, which areas have more animals cannot tell us whether the numbers of animals or which type of animals has the largest number are increasing, decreasing or staying the same. or the smallest number within the area [2].

However, looking at the results for one year we

Table 2:The total population estimated in all study area per period of the day

Species	Period		
	Morning	Mid-day	Evening
Rat	325	263	350
Squirrel	163	138	250
Monkeys	175	125	122
Rabbit	100	0	38
Caracal	13	0	25
Fox	13	0	0
Procupine	13	0	13
Meerkat	38	0	0
Total number of population/period	840	526	798

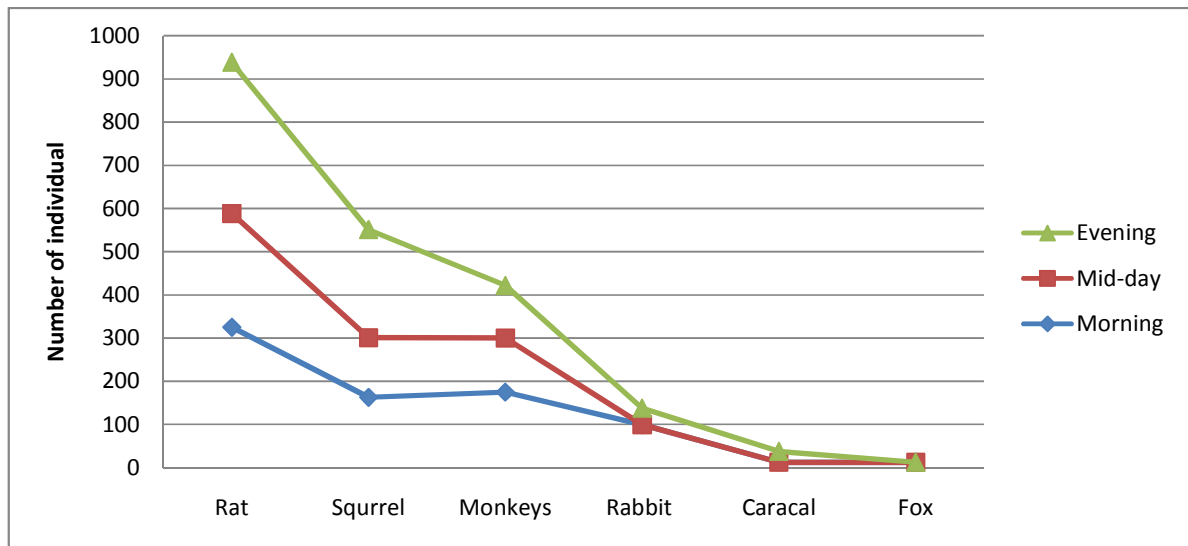


Fig. 3 : shows the total population estimated in all study area per period of the day

Our results appeared that, wild mammals more mouse is primarily active during the night-time active during the morning and evening, and most of its exploratory activity, feeding and espacially rat species, as confirmed by [8]that, drinking is done during the hours of a nocturnal animals species such as the house darkness. This behaviour has most likely

evolved as an avoidance prey which are primarily active during daytime response to predation pressure by birds of [8].

Table 3:The total population estimated in all main directions of the study area

Species	North			South			East			West		
	M	D	E	M	D	E	M	D	E	M	D	E
Rat	10	7	15	7	5	1	6	4	3	3	5	9
Squirrel	5	6	8	1	2	7	4	2	5	3	1	0
Monkeys	3	2	5	2	3	5	7	5	3	2	0	1
Rabbit	2	1	0	2	0	1	3	1	2	1	0	0
Caracal	0	0	0	1	0	0	0	0	2	0	0	0
Fox	1	0	0	0	0	0	0	0	0	0	0	0
Procupine	1	0	0	0	0	1	0	0	0	0	0	0
Meerkat	2	3	0	0	0	0	0	0	0	0	0	0
Total seen (No.)	71			38			47			25		
Total population	888			475			588			313		

Table 3 shows that, animal population number in northern part is the highest because of mountains, valleys and forests, whereas, western

part is the lowest with high human activities such as agriculture and animal breeding.

IV. CONCLUSION

We concluded that the area has different species of wild mammals distributed in different direction more active during the morning and evening. Further studies about the nocturnal mammals are recommended, as well, it is important to know further detailed

information on population status, genetic diversity, seasonal migration, distribution, survival life span, habitat, and phylogenetic inferences of each particularly endangered wild animal found at protected areas.

REFERENCES

[1] Hunting technical serves, Land used planning studies in Jebel Marra Rural Development Project (JMRDP) *final report*, England, pp.100, 1995.

[2] WWF-SARPO, “Counting wildlife manual,” *Mozambique Wildlife Management Series*, pp 52, 2004.

[3] R. A. Lancia, W. L. Kendall, K. H. Pollock, J. D. Nicklos, “Estimating the number of animal in wildlife populations,

Available at
www.ijred.com

- In: Techniques for Wildlife Investigations and Management,* edited by Clait E. Braun, *The Wildlife Society*, pp. 106 -153, 2005.
- [4] Y. Shrestha, R. Lapeyre, “Modern wildlife monitoring technologies: Conservationists versus communities? A case study: The Terai-Arc landscape, Nepal,” *Conservation and Society*. Vol. 16, Issue 1, pp. 91-101, 2018.
- [5] Karanth KU, Kumar N. S, Srinivas V, Gopaldaswamy A. Revised Monitoring Framework for Tigers Forever In: Technical Support Team, Tigers Forever, edited by Panthera Sites”. Bangalore, India: WCSIndia; 2008.
- [6] A. Sadaula, Y. R. Pandeya, Y. Shah, D. K. Pant and R. Kadariya “Wildlife population monitoring study among endangered animals at protected areas in Nepal,” *Intech Open*, pp. 17, 2019.
- [7] Witmer G. W. “Wildlife population monitoring: Some practical considerations”, *Wildlife Research*, Vol 32, pp. 259-263, 2005.
- [8] Steinlechner, S. “Biological rhythms of the mouse in the laboratory mouse”, (2nd edition) pp. 383 -407, 2012.