

Short communication

A SURVEY ON MAMMALS OF THE YAYU FOREST IN SOUTHWEST ETHIOPIA

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ABSTRACT: A survey of mammals of the Yayu forest, southwest Ethiopia, was conducted between August, 2009 and February, 2010. Transect survey method was used. The survey was conducted in seven selected sampling blocks, each with an area of 0.5 km². The blocks were representatives of vegetation types (afromontane forest, transitional rain forest and riverine forest) and conservation zones (core, buffer, and transition). A total of 14 species of mammals were recorded. The study supplements the recognition of the Yayu forest as a biodiversity hotspot and it is recommended that ongoing conservation and biodiversity documentation efforts should continue.

Key words/phrases: Biodiversity, Ethiopia, mammals, Yayu

INTRODUCTION

The Yayu forest is one of three intact forests in southwest Ethiopia proposed to serve as *in-situ* conservation site for wild coffee (*Coffea arabica* L.) gene pool. The other two proposed forests are Birhane-Kontir and Boginda-Yeba (Demel Teketay *et al.*, 1998 cited in Tadesse Woldemariam, 2003). The conservation of wild coffee in the three natural forests mentioned above needs to be carried out as a comprehensive conservation endeavour of the entire ecosystem as a whole (Tadesse Woldemariam, 2003). As a first step in the conservation activity of wild coffee in the Yayu forest, a large-scale vegetation study of the forest has been conducted (Tadesse Woldemariam, 2003). The study documented 220 species of vascular plants from an area of 100 km² intact forest.

The present study can be considered as a phase in the overall conservation undertaking of the Yayu forest in general and wild coffee in

particular. It is targeted to document the mammalian diversity of the forest.

THE STUDY AREA AND METHODS

The study area

The Yayu forest is located about 560 km west of Addis Ababa in southwest Ethiopia within the Illubabor Zone of Oromia Regional State. It lies between 8°21'–8°26'N latitude and 35°45'–36°3'E longitude within an altitudinal range of 1200 to 2000 masl (Fig. 1). The study area is divided into three conservation zones, which differ in levels of conservation priority. In the core zone, no human activity is allowed; in the buffer zone some economic activities like collection of forest resources, including coffee, is allowed while the transition zone is the least restrictive and most accessible which allows free human activities including cultivation of crops (Tadesse Woldemariam, 2003).

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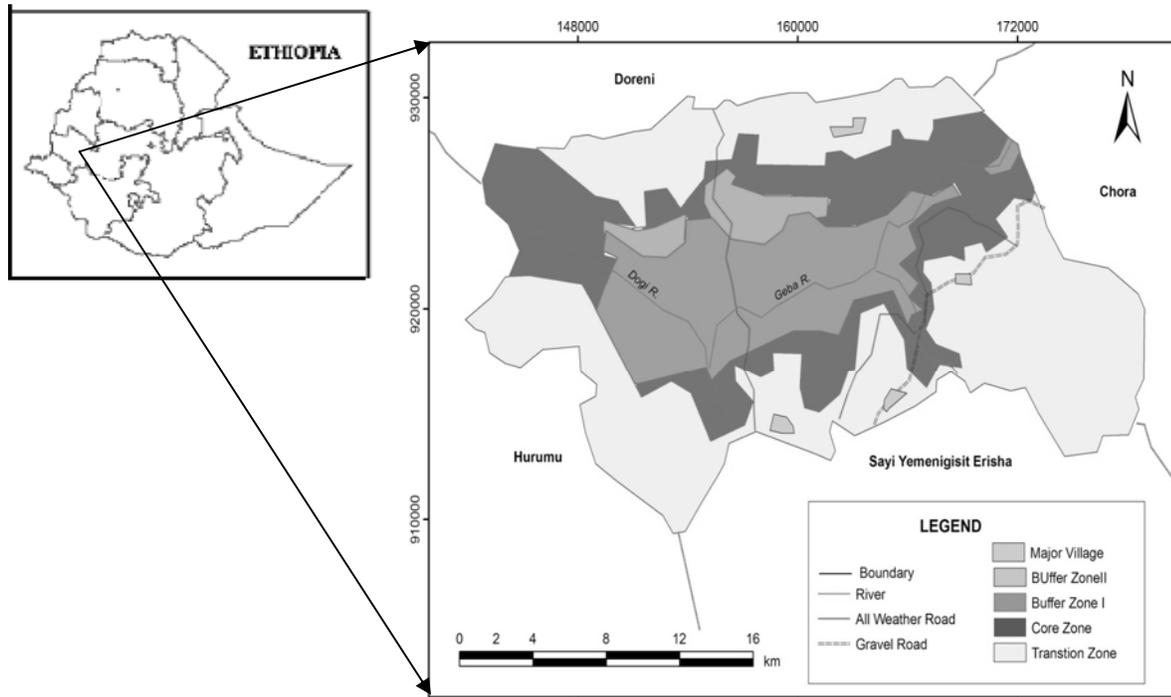


Fig. 1. Location map of the study area.

Methods

Seven sampling blocks, each having a total area of 0.5 km², were selected. Selection was conducted in such a way that different altitudinal, vegetation and conservation zones were included (Table 1).

Mammals that can be visually detected (medium to large size) were recorded using transect survey. The researcher and two field assistants walk on a transect line which has a length and width of 5 km and 50 m, respectively covering an area of 0.25 km² (half of the total area of a sampling block). The remaining half was covered by surveying another 5 km × 50 m transect on the return journey. When any individual mammal was spotted, it is identified based on previous knowledge of the researcher.

When an unknown species was observed, the field assistants were consulted for the local name and the scientific name was determined later with the help of the field guidebook (Alden *et al.*, 1995). The presence of mammalian species was also detected based on sign marks, including footprints, faecal droppings, vocalizations and scent marks. Each sampling block was surveyed for one day during each of the three sampling phases mentioned below.

The research was carried out in three sampling phases representing one wet (August, 2009) and two dry (December, 2009 and February, 2010) months. Species diversity between vegetation types and conservation zones were compared using independent sample *t*-test. The 95% significance level was used.

Table 1. Sampling blocks and their elevation, coordinates, vegetation type and conservation zone categories.

Sampling block	Elevation	Geographic coordinates	Forest type	Conservation zone
Saki	1298–1325m	08°21'N and 35°46'E	Riverine	Core
Geba	1476–1489m	08°21' N and 35°47'E	Riverine	Core
Geba-Dureni	1335–1458m	08°22' N and 35°47'E	Transitional rainforest	Core
Wotetie	1490–1534m	08°23' N and 035°53'E	Transitional rainforest + Afromontane forest	Core
Megela	1260–1385m	08°21' N and 035°49'E	Transitional rainforest	Buffer
Mesengo	1252–1271m	08°23' N and 035°48'E	Transitional rainforest	Buffer
Wabo	1373–1486m	08°22' N and 035°54'E	Transitional rainforest	Transition

RESULTS

The total number of species recorded for each study block during both wet and dry seasons are presented in Table 2. A total of 14 species that belong to four Orders (Primates, Artiodactyla, Carnivora and Lagomorpha) were recorded. Colobus monkey (*Colobus guereza*), vervet monkey (*Cercopithecus aethiops*) and anubis baboon (*Papio anubis*) were the most common mammals which were recorded in all the habitat types while blue monkey (*Cercopithecus mitis*), spotted hyena (*Crocuta crocuta*), black-backed

jackal (*Canis mesomelas*), bush pig (*Potamochoerus larvatus*) and African civet (*Civettictis civetta*) were recorded only in three habitat types each. Most of the sampling blocks had species number records of 9 to 11 while Wabo, which is in the transition zone had the least number of records which is six (Table 2).

The difference in number of species between the riverine forest and transitional rainforest was not significant ($F=5.33, P>0.05$) (Fig. 2A). Similarly, there was no significant difference ($F=6.00; P>0.05$) in the number of species recorded for the core and buffer zones (Fig. 2B).

Table 2. Species records in the seven sampling blocks.

No	Common name	Scientific name	Method of identification	Habitat types						
				Saki	Geba	Geb-Dureni	Wotetie	Megela	Mesengo	Wabo
1	Guereza	<i>Colobus guereza</i>	visual	1	1	1	1	1	1	1
2	Vervet monkey	<i>Cercopithecus aethiops</i>	visual	1	1	1	1	1	1	1
3	Blue monkey	<i>Cercopithecus mitis</i>	visual	0	1	1	1	0	0	0
4	Anubis baboon	<i>Papio anubis</i>	visual	1	1	1	1	1	1	1
5	Bushbuck	<i>Tragelaphus scriptus</i>	visual	1	1	1	1	1	0	0
6	Bush pig	<i>Potamochoerus larvatus</i>	visual	1	1	0	1	0	0	0
7	Common duiker	<i>Sylvicapra grimmia</i>	visual	1	1	0	0	1	1	0
8	African buffalo	<i>Syncerus caffer</i>	Faeces/footprint	1	1	1	1	0	0	0
9	Spotted hyena	<i>Crocuta crocuta</i>	Faeces/sound	0	0	0	0	1	1	1
10	Black-backed jackal	<i>Canis mesomelas</i>	visual	1	0	0	0	1	0	1
11	African civet	<i>Civettictis civetta</i>	Faeces/scent marks	1	1	1	0	0	0	0
12	Slender mongoose	<i>Herpestes sanguineus</i>	visual	1	1	1	1	1	0	0
13	White-tailed mongoose	<i>Ichneumia albicauda</i>	visual	0	1	1	0	1	1	0
14	African rabbit	<i>Poelagus marjorita</i>	visual	0	0	0	1	1	1	1
Total				10	11	9	9	10	7	6

Records: 1- Present 0-Absent

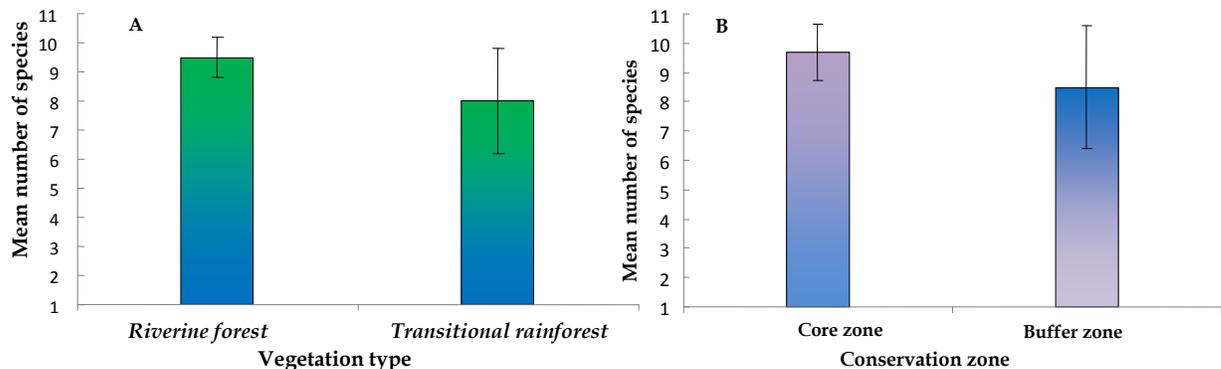


Fig. 2. Number of mammalian species (Mean±SD) recorded in sampling blocks in vegetation types (A) and conservation zones (B).

DISCUSSION

The present study surveyed the mammalian fauna in one of the intact forest fragments of southwest Ethiopia. The Yayu forest is valued for its wealth of biodiversity that is evident by its designation as a biosphere reserve by UNESCO (2010). The forest also has agronomical significance due to its high wild coffee (*Coffea arabica*) gene pool. As a result, it has received high-level conservation priority (Hindorf *et al.*, 2010). The present study was also an effort to contribute towards the overall conservation of the forest biodiversity. The mammalian species diversity of the Yayu forest is comparable with records published elsewhere. In bush woodland-shore habitat mix in Ethiopia, Shiferaw Ayele (2008) recorded 18 species; in Tanzania, 20 species were recorded in a woodland and teak plantation by Hinde *et al.* (2001), and in India, Olupot and Sheil (2011) recorded 7 species.

The results of this study showed that the mammalian diversity within vegetation types (transitional rainforest vs. riverine forest) and conservation zones (buffer vs. core zones) did not show significant difference. This indicates that the different vegetation and conservation categories of the Yayu forest have comparable faunal diversity of mammals. Therefore, the different zones should be given equivalent conservation attention.

The mammalian survey in the present study was incomplete since it did not include small mammals. The attempt to trap rodents had resulted in unusually low trap success. As a result, the small mammal survey had to be abandoned. Several studies on the diversity and ecology of rodents, including forest habitats in Ethiopia and elsewhere, have recorded a number of species (Happold and Happold, 1986; Yalden, 1988; Tilaye Wube, 2005; Tadesse Habtamu and Afework Bekele, 2008; Serekebirhan Takele *et al.*, 2011). The low trap success in the present study, therefore, is most probably due to a chance factor rather than actual absence of rodent species. Future studies should be planned to fill the gap in this respect.

In summary, the present study confirms that the Yayu forest contains rich diversity of mammals and hence its conservation and biodiversity documentation efforts should continue uninterrupted.

ACKNOWLEDGEMENTS

The Horn of Africa Regional Environment Centre and Network is acknowledged for financial support. We are also indebted to field guides and guards at the Yayu forest. Kassahun Tesfaye is acknowledged for his assistance in locating reference materials.

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