Journal of Natural Sciences Research www.iiste.org
ISSN 2224-3186 (Paper) ISSN 2225-0921 (Online)
Vol.6, No.21, 2016

# Feeding Ecology of Olive Baboon (Papio anubis) in Arba Minch Forest, Arba Minch, Ethiopia

Dagnachew Mullu[1*] Melese Solomon[2]
1.Lecturer in Department of Biology, Arba Minch University, Post Box No: 21, Arba Minch, Ethiopia
2.Department of Biology, Arba Minch University, Post Box No: 21, Arba Minch, Ethiopia

**Abstract**
The diet of Olive baboon *(Papio anubis)* were assessed at Arba Minch Forest within Nech Sar National Park in Arba Minch, Ethiopia. They normally eat seed, flowers, woody bark, insects, buds, etc. Olive Baboon dietary data were collected for 15 days at 9 to 11 hours by members of the study groups during scan sampling. During the activity of scan sampling, the type of food item: leaves, roots, stem, flower, fruit, shoot, bark, bud or animal prey and the type of species consumed were recorded on a standardized data sheet in each transect line. The frequency of food items observed in the field varied in the study area. Fruits (27.97%) constituted the largest portion of the diet of the Olive Baboons during this study. There were 6 items of food in the feeding ecology of Olive Baboons in the ground water forest, Nech Sar National Park, as revealed during the present study. The homogeneity of the habitat in the Ground water forest of Nech Sar National Park might have contributed to the less variety of food items. Olive Baboons are known to eat diverse food items. Fruits were a major food items for an extended time. This may be due to most plants in ground water forest had fruits throughout the year with very little monthly variation. Based on the data of the present study, Olive Baboons are considered as generalists inhabiting different habitats. From the current project we recommend that it is possible to enhance the number of plant species which can give fruit for Olive Baboons.
**Keywords:** buds, feeding, generalist, Olive baboon, transect line, woodbark

## 1. Introduction

Primates, occupy a wide range of habitats even though they are a relatively small order. In addition, they occupied a wide diversity of ecological niches (Addisu Mekonen, 2006). Different species and subspecies of primates occur in Ethiopia. Some of them are Bush Baboon or Senegal lesser gala go (*Galsenegalensis)* and Somali lesser gala go (*Gala go gall arum)* (Addisu Mekonen, 2004). Hamadryads Baboon (*Papio hamadryas),* olive baboon (*Papio anubis*) (Fig.1), black and white colobus monkey (*Colobus guereza*), gelada baboon (*Theropithecus gelada*), grivet monkey (*Cercopithecus aethiops*), Black-faced vervet (*C. pygerythrus*), Bale monkey (*C. djamdjamensis*), De Brazza's monkey (*Cercopithecus neglectus),* Patas monkey (*Erythrocebus patas),* Sykes' Monkey (Cercopithecus albogularis) (Kingdon, 1997; Grubb *et al*., 2003; Groves, 2005), two subspecies of blue monkey (*Cercopithecus mitisstuhlmanni*) (Fairgrieve and Muhumuza, 2003) and (*Cercopithecus mitisboutourlinii)* (Kingdon, 1997). They are found throughout equatorial Africa from Senegal, East to North Zaire, Ethiopia, Kenya, Uganda and Northern Tanzania (Merriam-Webster dictionary.Merriam-Webster.Retrieved 2 April 2013).

Understanding the feeding ecology of the Baboon is important for its ecology, conservation, management, disease control, and sustainable use of its benefit, which we can get from baboons. In addition, the study will increase the awareness of both the scientific and general public. In addition identifying the food items of Baboons is very essential for the conservation of those food species. The present study, therefore, focuses on feeding ecology of Olive Baboons. This study addressed the following questions: (a) what are the food items of plant and animal origin consumed by them? (c) Which food items are preferred by baboons with in their age group?

### 1.1. The Study area and methods

#### 1.1.1. Description of the study area

The study area, Abra Minch Forest is located in southern Ethiopia near Arba Minch town. Arba Minch Forest is part of Nech Sar National Park (NSNP) (Fig. 2). It is located about 510 km south of Addis Ababa, the capital city of Ethiopia (Duckworth *et al*., 1992). Nech Sar National Park is known as home of a variety of wildlife. This National Park consists of the narrow piece of land separating Lake Chamo (blue water with white sands) and Lake Abaya (murky brown waters), both of which are located in the craters of ancient volcanoes. It is located between 5º 57'−6º 05' N latitude and 37º 32'−37º 48' E longitude at the center of the Ethiopian Great Rift valley with an altitudinal range of 1,108−1,650 meters above sea level (Bolton, 1973).Arba Minch Forest, which is part of the Park, covers about 2120 ha. It also includes the strip of riverine forest habitat that lies along the southwestern shore of Lake Abaya as well as the western most section of the Rift Valley (Dagnachew Mullu and Balakrishinan, 2014).

### 1.2. Materials and Methods

#### 1.2.1. Feeding ecology

Olive Baboon dietary data were collected for 15 days by scan sampling. During the activity of scan sampling, the

type of food item: leaves, roots, stem, flower, fruit, shoot, bark, bud or animal prey and the type of species consumed would be recorded on a standardized data sheet (Fashing, 2001b; Fairgrieve and Muhumuza, 2003; Di Fiore, 2004). Diet composition was evaluated by using the proportion of different food items and type of species consumed by the baboon. The monthly proportion of each food item scanned was calculated as the total number of monthly individual scans for each food item divided by the total number of individual scans for all food item individual scans spent for the groups. The relative proportion of plant species used as food for Olive Baboon was calculated from the monthly percentage contribution of different species (Fishing, 2001b; Di Fiore, 2004). Diet selection of the study groups were determined from the relative proportions of the number of scans spent feeding on different food items in their diet.

**1.2.2. Data collection**

The data were collected primarily by observing Olive Baboons during the time of feeding and observing the fecal matters. On each day how they fed and what they feed recorded frequently, then the recorded data was analyzed.

**1.2.3. Transect**

There were four transects to collect data by scan sampling and to observe some of the activities done by Olive Baboons. These transects are lied randomly depending up on the frequency of observations of Baboons in the study area. The distance between one transect to the other is 50m.This methods is crucial to identify the food items of Baboons.Transects were marked with brightly colored vinyl plastic flagging written with permanent pen at every 50 m interval (Peres, 1999). Each transect will be walked 12 to 16 times in total during the study period (Addisu Mekonnen *et al.,* 2010). Surveys were conducted on transects from 06:30-06:45 to 10:30-10:45 in the morning and from 14:00 - 18:00 in the afternoon at an average speed of 1 km/hr. (Peres, 1999; Chapman *et al.,* 2000). Transects were walked with brief stops for listening and maximize the probability of detecting the animals. A maximum of 10 minutes were spent to observe and obtain reliable information when the animals are encountered. The exercise was not carried out during rain (Anderson *et al.*, 2007).The data were analyzed by computer software (SPSS) ($16^{th}$ version).

## 2. Results

### 2.1. Feeding habits of Baboons

During the present investigation, 4 transects were located in the intensive study area of 2120ha. Detailed observations were carried out at these transects, selected on the basis of distance from each other and abundance of Baboons in the habitat.

During the present study, 6 common food items were identified from the collected data. A total of 161 occurrences of the 6 items were recorded from the observation. The site-wise observations on the items observed and the percentage of occurrence are given in Table 1. The frequency of food items observed in the field varied in the study area. The variation in food preference was statistically significant ($\chi 2 = 21.42$, df =5, $P < 0.05$).

Fruits (27.97%) constituted the largest portion of the diet of the Olive Baboons during this study. Leaf accounted for 20.49% of the diet, followed by grass (15.52%), woody bark (14.9%), and insects (11.18%). Roots (9.7%) of plants were the other items observed in the food items collected of Olive Baboons (Fig. 3).

## 3. Discussion

### 3.1. Feeding habits of Olive Baboons

Data on feeding of the Olive Baboon confirms that they are generalist feeders. They are regarded as omnivores because they consume variety of food items of both plants and animals. There were 6 items of food in the feeding ecology of Olive Baboons in the ground water forest, Nech Sar National Park, as revealed during the present study. The homogeneity of the habitat in the Ground water forest of Nech Sar National Park might have contributed to the less variety of food items.

Olive Baboons are known to eat diverse food items (Whiten *et al.,* 1991). Fruits were a major food items for an extended time. This may be due to most plants in ground water forest had fruits throughout the year with very little monthly variation. In additions some fruits, for example fruits of Ficus spp. have about one-third digestible components, mostly carbohydrate with some lipids and proteins. It also contains high amount of minerals such as potassium, calcium, sodium and phosphorus (Wendeln *et al.,* 2000). They have also suggested that free standing figs had higher percentage of protein, complex carbohydrate and ash than strangler figs. It has been suggested that protein is one of the important nutrients for the growth and reproduction, and that its availability governs the feeding ecology of all organisms (White, 1993). Food items of Olive Baboons were high in abundance in the present study area, because of moderate temperature and rainfall, and due to the presence of enough water sources from ground water streams. In the current study area, the distribution of figs (the tree that produces sweet-tasting fruits) was of free standing types.

Plant leaf constituted the second highest proportion of the food items of the Olive Baboons next to fruits. The study area has diverse plant species and they have leaf throughout the year because of the availability of water from the ground. The adult Baboons were consumed more leaf than young Baboon, because adults were able to

climb on the tip of the tree. Grass, woody bark and roots of plants also formed food of the Olive Baboons as revealed from the analyses of food items of Olive Baboons during the present investigation. This condition will also probably related to the presence of good environmental conditions and/or good ecological requirements for the growth of those plant species. Adult consumed more woody bark than the young, because adult Baboons have strong teeth to digest the bark of wood and have active digestive system. Olive Baboons feed roots of plants probably due to the scarcity of food items. Insects were also the other food items of Olive Baboons during the present study. These items in the food of Olive Baboons form the source of protein (Pugh, 1998). Adult Baboon consume high percentage of insects than young and it account 12% of insects, and young consume less amount insect and it account 9.83% of insects, because the adult Baboons can capture insect easily.

### 3.2. Conclusion

Based on the data of the present study, Olive Baboons are considered as generalists inhabiting different habitats. Generally from the study a Baboon feed on fruit, leaf, grass, woody insect and roots to suit therein the ground forest ecology. From the current project we recommend that it is possible to enhance the number of Olive Baboons by enhancing the number of plant species which can give fruit. Awareness creation to the local people is essential in order to give knowledge about the conservation practice of the forest. The legal harvesting of ground water forest by the local people for commercial purposes could impose threat to the distribution of Olive Baboon in the future. If this current trend continues, the number of Olive Baboon could be affected in the future. Therefore, it is recommended that management action should be taken to conserve the most important food resources such as fruit plants, and trees.

### 4. Acknowledgements

We want to dedicate our special thank for Arba Minch University who help for financial and material support. We wish to thank the Ethiopian Wildlife Conservation Authority for their support, providing assistance in the field and allowing to use their library reference materials

### REFERENCES

Addisu Mekonen. (2004). Distribution of Bale Monkey (Chlorocebus dijamdjaminesis) in the Bale Mountains and its Ecology in the Odo bullu Forest, Ethiopia- A study of Habitat Preference, Population Size, Feeding Behavior, Activity and ranging Patterns. M.Sc. Thesis, Addis Ababa University, Addis Ababa.

Addisu Mekonen, Afework Bekele, Fashing, P.J. and Anagaw Atickem (2010). Diet, activity patterns and ranging ecology of Bale Monkey (*Cholorocebus djamdjaminesis*) in the Odobullu Forest, Ethiopia. *Int. J. Primatol.* 31:339-362.

Anderson, J., Rowcliffe, J.m. and Cowlishaw, G. (2007). The Angola black-and-white Colobus *(Colobus angolensis palliantus)* in Kenya: historical range contraction and current conservation status. *Am. J. Primatol.* 69: 664-680.

Chapman, C.A., Gillespie, T.R., Skorupa, J.P. and Struhsaker, T.T. (2000). Long term effects of logging on African primate communities: a 28-years comparison from Kibale National Park, Uganda. *Conserv. Biol.* 14: 208-216.

Dagnachew Mullu and Balakrishnan M. (2014). Ecology of African Civet (*Civettictis civetta)* in Arba Minch Forest, Arba Minch, Ethiopia. *Sci. Technol. Arts Res. J.* 3: 99-102.

Di Fiore, A. (2004). Diet and feeding ecology of woolly monkeys in a western Amazonian rain forest. *Int. J. Primatol.* 25: 767-801.

Duckworth, J.W., Evans, M.I. Safford, R.J Telfer, M.G., Timmins, R.J. and Chemere Zewdie (1992). A Survey of Nech Sar National Park, Ethiopia. Report of the Cambridge

Fairgrieve, C. and Muhumuza, G. (2003). Feeding ecology and dietary differences between blue monkey (Cercopithecus mitisstuhlmanni, Matschie) groups in logged and unlogged forest Reserve, Uganda. *Afr. J. Ecol.* 41: 141-149.

Fashing, P.J. (2001). Activity and ranging pattern of guerezas in the Kakamega Forest: intergroup variation and implications for intragroup feeding competition. *Int. J. Primaiol.* **22:** 549-577.

Groves, C.P. (2005). Order Primates. In: Mammal Species of the World. A Taxonomic and Geographic Reference, pp 111-184 (Wilson, D.E. and Reeder, D.M., eds.). Johns Hopkins University Press, Baltimore.

Grubb. P. Butynski, T.M., Oates, J.F. Bearder, S.K. Disotell, T.R. Groves, C.P. and Struhsaker, T.T. (2003). Assessment of the diversity of African primates. International. *J. Primatol.* 24: 1301-1357.

Kingdon,J. (1997). The Kingdon Field Guide to African Mammals. Academic Press, London.

Merriam-Webster dictionary Merriam-Webster. Retrieved 2April 2013.

Peres, C.A. (1999). General guidelines for standardizing line-transect surveys of tropical forest primates. *Neotrop. Primatol.* **7:**11-16.

Wendeln, H. Becker, P. H. and Gonzalez Solis, J. (2000). Parental care of replacement clutches in common terns

(Sterna hirundo). *Behav. Ecol. and Sociobiol.* 47: 382-392.
Whiten A, Byrne RW, Barton R.A, Waterman P.G, Henzi S.P. (1991). Dietary and foraging strategies of baboons. *Phil. Trans. R. Soc. Lond.* 334 : 187-97.
White, T.C.R. (1993). The Inadequate Environment: Nitrogen and the Abundance of Animals. Springer, Verlag, Berlin.

Figure 1: Olive Baboon in Arba Minch forest

Figure 2: A view of Arba Minch forest

 

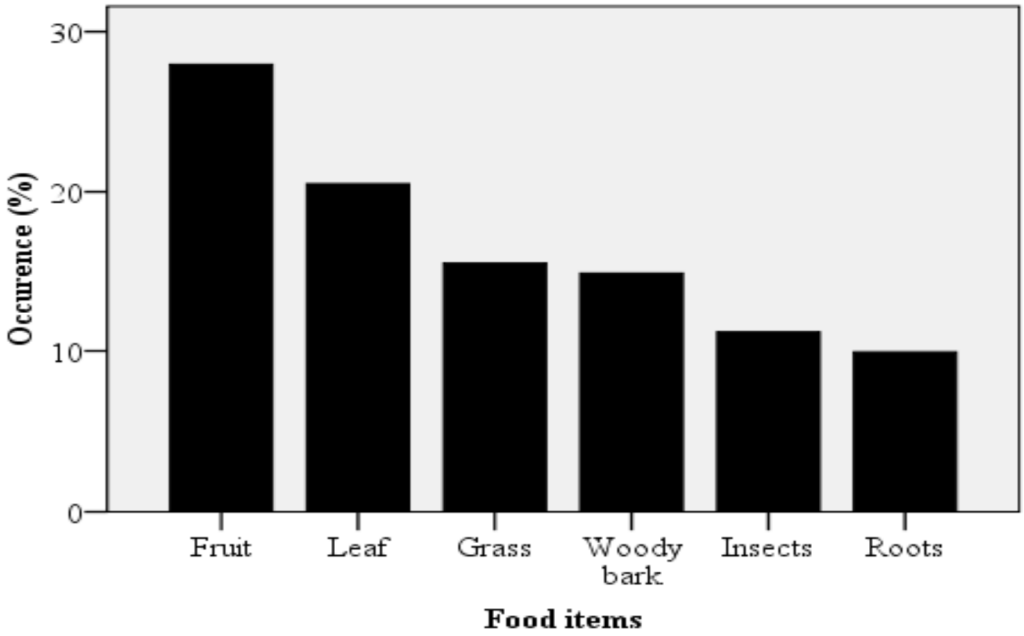


Figure 3: Percentage of food items consumed by Olive Baboons as reveled from the observation

Figure 4: A photo during data collection.