



Research Paper

MAMMALS IN THE THATTEKKAD BIRD SANCTUARY, ERNAKULAM DISTRICT, KERALA

Mumthaz, K.M. and John George M.

PG Department of Zoology and Research Centre,
Mar Thoma College,
Thiruvalla,
India.

Abstract

Thattekkad bird sanctuary is the first bird sanctuary in Kerala, which owe its significance to the world famous ornithologist, Dr.Salim Ali. A total of 39 species of mammals were identified from the sanctuary, including major forms like elephant to the smaller ones like rats, mongoose, otter etc. The present study in the human inhabited areas of Thattekkad bird sanctuary listed 13 species of mammals belonging to 7 orders and 10 different families. The crop raiding by large mammals caused Human-Wildlife conflict resulting in the loss of crop production for farmers. Therefore suitable measures should be adopted both for the bio-diversity conservation as well as the prevention of animal intrusion into the human inhabited areas of the sanctuary.

INTRODUCTION

Biodiversity is fundamental to the existence of life on the earth. Its significance cannot be underestimated. There are varieties of living things that exist in a given physical environment. These are interdependent and interrelated in the form of an ecosystem. The importance of biodiversity conservation is recognized through its values, performance, communication and engagement. The values of diversity are enormous. Apart from guaranteeing food security and medicinal sources, it maintains the balance in ecosystem and environmental health. The indirect use value of biodiversity derives from many functions performed in providing services which are crucial to human wellbeing. The conservation of biological diversity has become a global concern. There are basically two main types of conservation options, in-situ and ex-situ conservation. The biodiversity of the Western Ghats is the main component of the biodiversity of Kerala. The entire State is blessed with year-round greenery. Evergreen forests are its main biological treasure house. Favourable climate and soil conditions and other affable physical factors are responsible for the biological richness. In Kerala humidity is very high at an average of 70 percent. Structurally, Kerala has different geo-physical areas such as forests, marshes, mangroves, ponds, seashores and deltas.

The forests of Kerala accounts for 1.26 percent of the total forest area of India and 24 percent of the land area of the State. They are distributed in three distinct altitudinal zones: low, intermediate and high. Kerala has six National parks and 16 Wildlife Sanctuaries, Of which, Thattekkad Bird sanctuary is one of the famous ones. The sanctuary falls between 10°7' and 11°N' latitude and 76°40' and 76°45E longitude and is situated in the Kothamangalam taluk of Ernakulam District in Kerala. It has considerable ecological, faunal, floral, natural and zoological significance with a 25.16 sq.km area lying on the northern bank of River Periyar. Thattekkad Bird Sanctuary is the first bird sanctuary in Kerala and is a haven for nature lovers and Bird watchers with a wide variety of flora and fauna. World famous ornithologist Dr. Salim Ali. Recognized the species richness of this sanctuary and declared the richest one he had ever seen, during his survey in 1933 in which found about 167 species of birds. Recently, Dr. Sugathan recorded 270 species of birds, which is now upgraded to 284 species.

A total of 39 species of mammals were identified from the sanctuary, including major forms like elephant to the smaller ones like rats, mongoose, otter etc.,. The species include 2 endemic species to Western Ghats(spiny Dormouse & Striped Squirrel), Malabar Giant squirrel, wild Boar, Mouse Deer, Bonnet Macaque, Barking Deer, Jackal, Slender Loris, Travancore flying squirrel, Indian Pangolin etc.,.A total of 8 species of mammals are protected under schedule I of WLPA, which include Slender Loris, Tiger, Leopard, Indian Elephant, Mouse Deer, Indian Pangolin, Sloth Bear and Spiny Dormouse. Another 8 species listed under schedule II of WLPA including an endemic species, the Jungle Striped Squirrel is also seen here.16 species are included in the various Appendices of CITES. Density of elephants in the sanctuary was found to be 1.22/sq.km and further investigations reveals that elephant density was more in natural forest(1.89/sq.km) than the plantation(0.5698/sq.km).

STUDY AREA

The study area selected for the present study is inhabited land area within the Salim Ali bird sanctuary cultivated, with diverse kinds of crops, spread in around 9 kms. Six plots of three hectares , lying on the selected transect was selected with different cultivated crops

METHODOLOGY

Direct observation and line-transect methods were involved and observations were made once in a week in the morning hours (8am -10am) for 3 years (March 2015-April 2018) in six plots. These plots were having different cultivations like nutmeg, cocoa, papaya, guava, mango, jackfruit tree, coconut, pepper, etc.

RESULTS AND DISCUSSIONS

Except the wildlife census conducted during 1993, 1997, 2002 and 2011 and Elephant population estimation during 2005, 2007, and 2010, no significant scientific studies have been carried out on Mammals in the Thattekkad Bird Sanctuary. A total of

39 species of mammals were identified from the sanctuary which include 2 endemic species to Western Ghats (Spiny Dormouse & Jungle striped squirrel). Malabar Giant squirrel, Wild Boar, Barking Deer and Elephants are common besides Sambhar deer, Mouse deer, Bonnet macaque, Jackal, Slender Loris, Travancore flying squirrel etc.

Mammals constitute large group of animals in the human inhabited areas of the Thattekkad bird sanctuary. Sighting of mammals was poor in the months of South - West monsoon and most of the species were located during the summer months. About 13 species of mammals belonging to 7 orders and 10 different families were sighted during the present study, of which Bonnet macaques and Malabar giant squirrels was the dominant ones and sighted frequently during the study period. The complete list of mammals observed was provided in the Table.1. as follows:-

Table.1. List of mammals observed in the study period

Order	Family	Species name	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Proboscidae	Elephantidae	<i>Indian elephant</i>	-	-	-	1	-	-	-	-	-	-	-	-
Pholidota	Manidae	<i>Indian pangolin</i>	-	-	1	-	-	-	-	-	-	-	-	-
Primates	Cercopithecidae	<i>Bonnet macaque</i>	5	8	10	9	-	-	-	8	7	-	-	5
Carnivora	Felidae	<i>Jungle cat</i>	-	-	-	1	-	-	-	1	-	-	-	-
	Viverridae	<i>Small indian civet</i>	-	1	-	1	-	-	-	-	-	-	-	1
Rodentia	Sciuridae	<i>Indian wild dog</i>	-	-	1	-	-	1	-	-	-	-	-	-
		<i>Malabar giant squirrel</i>	9	8	8	5	5	1	10	2	2	5	7	7
		<i>Three striped palm squirrel</i>	3	3	1	2	-	-	-	-	1	2	-	1
		<i>Small Travancore flying squirrel</i>	1	-	-	2	-	1	-	-	-	1	-	-
Artiodactyla	Cervidae	<i>Spotted deer</i>	2	2	-	2	2	-	-	-	-	1	-	2
		<i>Sambhar deer</i>	4	3	-	-	-	-	2	-	-	-	-	-
	Suidae	<i>Indian wild boar</i>	-	-	-	1	-	-	-	-	-	-	-	-
Lagomorpha	Leporidae	<i>Black-naped hare</i>	2	-	2	-	-	-	1	-	1	-	1	-

Proboscids

The order proboscidae includes single family Elephantidae with only one species, Indian elephant.

Elephants (*Elephas maximus*)

With its pendant trunk, its curious dentition, and its great size, the elephant presents distinctive characters which differentiate it from all other mammals. However

remarkable these characters may be, they are the ultimate result of a gradual deviation from a standard type of mammal, a hairy creature of no great size, walking on the soles of its five-toed feet and carrying in its jaws. Elephants have very poor sight, the senses of smell and hearing are highly developed, more so than in most animals. Indian elephant formed the largest mammal in the study area and sighted only once during the study period. An indirect evidence of elephants presence was obtained by the sighting of fresh dung in the study plot near the extremity of forested area of the sanctuary. One instance of sighting fresh dung was near the electric fence of the boundary on the margin of third plot, indicated the crossing of elephants towards the human inhabited area. Third indirect evidence was made from the sighting of crop raid made by elephants in the first study plot, in the second year of study during the early morning hours which caused huge crop damage to farmers. These indirect evidences revealed that they roamed through the sanctuary and used adjacent areas also.

Pholidots

Order pholidota includes only single species, Indian pangolin (*Manis Crassicaudata*) of family Manidae.

The most distinctive character of Indian Pangolin is its armour of protecting scales on the upper part of the head, the back and sides of the body, the whole tail, and the outside of the limbs. In defence, the animal curls itself into an armoured ball, exhibiting an enormous muscular power which defies any ordinary attempt to unroll it. The scales may be regarded as hairs or rather as spines enormously enlarged and flattened. Coarse bristle-like hairs scantily clothe the undersurface of its body and few grow between the scales. Their food mainly consist of the eggs, the young, and the adults of termites and ants. Direct sighting of pangolin was made only once in the study area in late evening at 7pm in the first plot. Only indirect evidence of their presence can be made from their defecations, being nocturnal in nature.

Primates

Primates constitute only single species, Bonnet macaque (*Macaca radiata*).

Bonnet macaques form the dominant primate group in the study area to their increased density within the sanctuary leading to their frequent intrusion of their pack of 4 to 7 individuals into the human inhabited area. They had caused damage to crops like turmeric, ginger, coconut trees, palm trees and other fruiting trees like cocoa, guava, plantain, rambuttan, etc.,. Their main habit was to pluck anything planted in the ground mainly vegetable, ginger and turmeric. Since they move along in groups, attack trees by plucking and throwing fruits inspite of large noise by their sounds. An average of 50 individuals were sighted each year making sum total of 150 individuals in the entire study period.

Carnivores

Carnivores include 3 species belonging to 3 different families .They were

Jungle cat (*Felis chaus*)

They come under family felidae of the order carnivore. They had sighted only twice in the study area, but an indirect evidence got from their pellets in the third plot near the pineapple cultivated area. As it is a carnivore, may feed on small mammals like rodents, deers etc,.

Small indian civet (*Viverricula indica*)

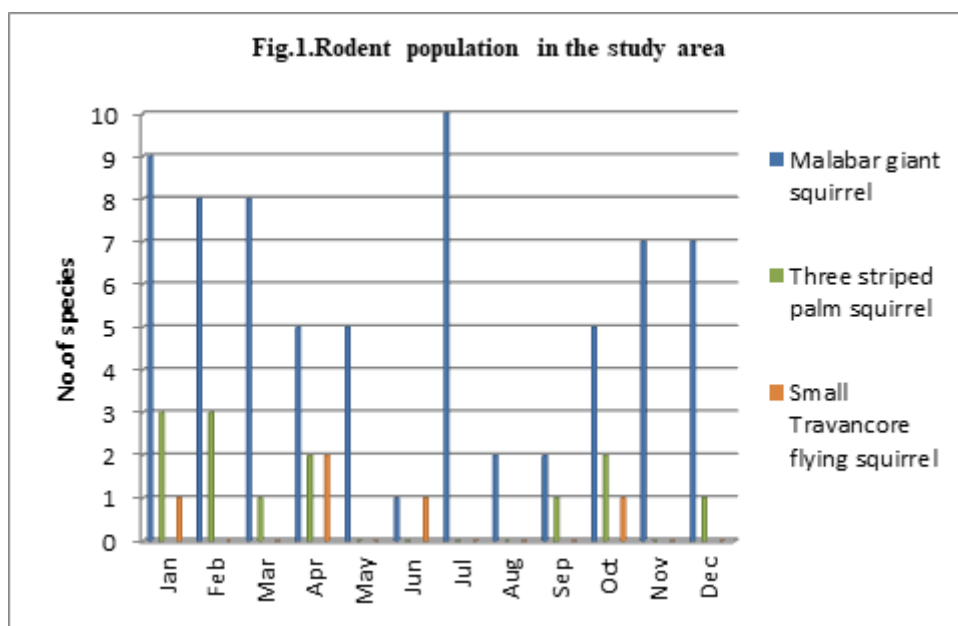
Small Indian civets come under family Viverridae of the order carnivore, which fed on other animals. They were sighted only thrice from the study area.

Indian wild-dog (*Cuon alpinus*)

Wild dogs come under canidae of order Carnivora and mainly feed on deers and small mammals. They were sighted only twice and an indirect evidence of droppings was made in the second study plott. They look similar to a domestic dog in appearance but the ears are more rounded at the tip and the bushy tail. They often cause damage to farmers, by feeding many chickens and rabbits .

Rodents

Mainly three species of rodents were sighted from the study area, of which Giant Malabar squirrels (*Ratufa indica*) formed the major group while small Travancore flying squirrel, least dominant group(Fig.1.). Malabar giant squirrels were sighted in every month of a year with maximum population during July while least number in the month of June.



Population of small Travancore flying squirrel was found less, sighted only 4 times with a maximum number in the month of April (2) and a number of 1 in the rest 3 months of January, June and October. The number of sightings of Three striped palm squirrels was more than that of flying squirrel, about 8 times in a year with maximum number in the months of January and February with a value of 3 each. No sightings were made in the 5 months of May, June, July, August and December.

Artiodactyls

Order artiodactyla consist mainly of hoofed mammals, mainly deers, boars, cattle, goats, etc,. Mainly three species were found belonging to this order, were Spotted deer, Sambar deer and Indian wild boar. Of the three species, indian wild boar was sighted only once while the rest species were the frequent visitors.



Spotted deers (fig.2) formed the most dominant and populated group and sighted for 6 months in a year with maximum population of 2 individuals in 5 months of January, February, April, May and December. Sambar deers formed the second dominant group made sightings in the three months of a year. Their maximum population was during the month of January (4), followed by February(3) and least in the month of July(2). Indian wild boar represented the least dominant group with only one sighting in the month of April.

Spotted deer (*Axis axis*)

Spotted deer form one of the major sighted deers in the study area. It is perhaps the most beautiful of all the deer, by its bright rufous fawn profusely spotted with white at all ages and in all seasons. The lower series of spots on the flanks are arranged in longitudinal rows and suggest broken linear markings. The graceful antlers have three set tines, a long brow tine set nearly at right angles to the beam and two branch tines at the top. The outer tine, the continuation of the beam is always longer. They were sighted for more than 10 times in each year, constituting at least of 2 individuals. They were sighted mainly from the grassy patches of rubber plantations of three study plots lying close to the forest bound area of the sanctuary. They were not sighted ever from the two study plots lying on the opposite side of the highway road, close to the water-

body. Indirect evidences of their pellets and droppings were observed from different spots of the study area.

Sambar deer (*Cervus unicorn*)

Sambar deer is the largest Indian deer which carries the grandest horns. The general body colour is brown with a yellowish or greyish tinge with paler under-parts. Females are lighter in tone. The antlers are stout and rugged with brow tine set at an acute angle with the beam. The stags clean their horns by rubbing them against trees. Sambar deers were sighted less frequent than spot deers, about thrice in a year. They were also sighted from the grassy patches of rubber plantations of the study area and thus their food mainly consists of grass, leaves and tiny wild fruits. An indirect evidence of their presence was felt by the sighting of pellets and faecal matter in the study area. Their intrusion to the human inhabited area was less may be due to the optimum availability of food from the forested area itself.

Indian wild boar (*Sus scrofa*)

They were least sighted mammals from the study area, only about once in the entire study period. But indirect evidence of their presence was made from their vocal sounds and cries they made from the thick forested area of the sanctuary. Their direct sighting was from the first plot located near to the forest region while crossing the border. People usually talk about the crop-damage they caused during their crop raid once in every year.

Lagomorphs

Lagomorphs comprise single species, Black naped hare (*Lepus nigricollis*)

Black naped hare is distinctive in having a dark brown or black patch on the back of its neck from the ears to the shoulder and upper surface of its tail is black. Large tracts of bush and jungle alternating with cultivated plains afford them ideal conditions for living. They were sighted five times in a year with a maximum number of two in one month, making about 30 individuals in the entire study period.

CONCLUSIONS

About 13 species of mammals belonging to 7 orders and 10 different families were reported from the present study. Rodents formed the most dominant group, with Malabar Giant Squirrel, the frequent visitor crop-raided most of the coconut trees causing a high depredation of coconut production. Although biodiversity is essential for the sustenance of healthy ecosystem, crop-depredation by mammals made a negative impact on farmers by the reduction of their produce leading to their difficulty to meet their two-ends of life. Therefore alternative measures should be adopted to minimize the invasion of mammals to the human inhabited areas, either by planting fruiting trees

on the borders of the forested areas of the sanctuary or by providing ample water and food supply within the deep areas of the sanctuary.

REFERENCES

- [1] Ali, S and S.D. Ripley 1983. *Hand Book of the Birds of India and Pakisthan. Bombay nat. Hist. Soc.* 737 p.
- [2] Balakrishnan. M and P.S. Easa, 1986. Habitat preferences of larger mammals in the Parambikulam Wildlife Sanctuary. *Biol. Conserv.* 37: 191 - 200.
- [3] Jayson ,E. A and P.S. Easa. 1996. Status, food and feeding habits of larger mammals in Chimmony Wildlife sanctuary, Reseach report 108, Kerala Forest Research Institute, Peechi, Thrissur, Kerala.
- [4] Ramachandran, K.K; P.Vijayakumaran Nair and P.S. Easa 1986. Ecology of larger mammals of Periyar Wildlife Sanctuary. *J. Bombay nat. Hist. Soc.* 83 (3): 505-524.
- [5] Rodgers, W.A. and H.S. Panwar 1989. Planning a Wildlife Protected area Network in India. *Wildlife Institute of India, Dehra Dun.* Vol. 1 and 2.