

FOOD HABITS OF MAMMALIAN PREDATORS IN PERIYAR TIGER RESERVE, SOUTH INDIA

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Introduction

Very little information is available on the food habits of major mammalian predators in the tropical wet evergreen habitats of India, though some published data is available on the topic for other habitats of the subcontinent (Schaller, 1977; Mc Dougal, 1977; Johnsingh, 1983). Rice (1986) based on his observation in the Eravikulam National Park, has given a scanty account of the prey predator relations. But a systematic study on the topic was not conducted so far in the habitat.

The above studies show that Tiger (*Panthera tigris*), Leopard (*Panthera pardus*) and the wild Dog (*Cuon alpinus*) are the major mammalian predators in India. Their main prey species comprise the Chital (*Axis axis*) the Hog Deer (*A. procinus*), the Sambar (*Cervus unicolor*) and the Swamp Deer (*C. duvanceli*). The Barking Deer (*Muntiacus muntjac*), the Nilgai (*Boselaphus tragocamelus*), the Wild Boar (*Sus scrofa*), the Gaur (*Bos gaurus*), the Porcupine (*Hystrix indica*) and the Blacknaped Hare (*Lepus nigricollis*) are also preyed on by the above predators. Tiger in addition to the above, was reported to prey on the Elephant (*Elephas maximus*) calves, the Common Langur (*Presbytis entelles*)

and domestic livestock. Leopard's prey included Nilgiri Langur (*Presbytis johnii*) and the Nilgiri Tahr (*Hemitragus hylocrius*), Wild Dogs were reported to prey on Mouse Deer (*Tragulus meminna*) also.

A study on the food habits of the major mammalian predators, the Tiger, the Leopard and Wild Dogs were carried out in Periyar from September 1991 to December 1994. The objective of the study was to identify the prey species of the major predators and to find out the proportion of different prey species consumed by the major predators in the reserve where the common prey species Chital, Hog Deer and Swamp Deer are totally absent.

Methods

Studies were centered around 4 localities in Periyar Tiger Reserve. These places were selected on the basis of habitat types. Four transects, each were held in the forest three localities and 2 in the fourth. These transects having an average length of 8 km were covered once every month.

Two data collectors and 2 local tribesmen assisted throughout the study. Direct sightings of Tiger, Leopard and Wild Dogs and indirect evidences of their

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Table 1
Tiger - Frequency of occurrence of prey remains in Scats in Periyar (1991-1994)

Month and Year	Total scats	Sambar	Porcupine	Small Rodents	Mouse Deer	Nilgiri Langur	Small Indian Civet.	Black-naped Hare	Varanus	Wild Gaur	Wild Boar	Elephant	Domestic cattle	Grass
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
September 91	6	5	1	1	-	-	-	-	-	-	-	-	-	2
October "	8	4	1	3	-	-	-	-	1	-	-	-	-	-
November "	2	2	-	-	-	-	-	-	-	-	-	-	-	-
December "	7	5	-	1	-	-	1	-	-	-	-	-	-	1
January 92	8	7	1	-	-	-	-	-	1	-	-	-	-	-
February "	1	1	-	-	-	-	-	-	-	-	-	-	-	-
March "	15	13	2	2	-	1	-	1	-	-	-	1	-	2
April "	3	3	1	-	-	-	-	-	-	1	-	-	-	1
May "	6	3	3	-	-	-	-	-	-	-	1	-	-	-
June "	1	1	1	-	-	-	-	-	-	-	-	-	-	-
July "	1	1	1	-	-	-	-	-	-	-	-	-	-	-
August "	1	-	-	1	-	-	-	-	-	-	-	-	-	-
September "	2	2	-	-	-	-	-	-	-	-	-	-	-	-
October "	2	2	-	-	-	-	-	-	-	-	-	-	-	-
November "	1	-	-	-	-	-	1	-	-	-	-	-	-	-
December "	5	2	2	-	-	1	-	-	-	-	-	-	-	-
January 93	3	-	2	-1	-	-	-	-	-	-	-	-	-	-
February "	2	1	1	-	-	-	-	-	-	-	-	-	-	-

Contd...

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
March 93	1	1	-	-	-	-	-	-	-	-	-	-	-	-
April "	5	-	3	-	-	-	-	2	-	-	-	-	-	2
May "	4	2	1	-	1	-	-	-	-	-	-	-	-	-
June "	1	-	-	-	1	-	-	-	-	-	-	-	-	-
July "	1	1	-	-	-	-	-	-	-	-	-	-	-	-
August "	3	1	-	-	1	-	-	-	-	-	-	-	1	-
September "	5	3	2	-	-	-	-	-	-	-	-	-	-	2
October "	2	2	-	-	-	-	-	-	-	-	-	-	-	-
November "	3	2	1	-	-	-	-	-	-	-	-	-	-	-
December "	1	1	-	-	-	-	-	-	-	-	-	-	-	-
January 94	2	2	-	-	1	-	-	-	-	-	-	-	-	-
February "	4	3	1	-	-	-	-	-	-	-	-	-	-	-
March "	5	3	2	1	1	-	-	-	-	-	-	-	-	-
April "	3	2	-	-	-	-	1	-	-	-	-	-	-	1
May "	2	2	-	-	-	-	-	-	-	-	-	-	-	-
June "	1	1	-	-	-	-	-	-	-	-	-	-	-	-
July "	1	-	1	-	-	-	-	-	-	-	-	-	-	-
August "	2	2	-	1	-	-	-	-	-	-	-	-	-	-
September "	1	1	-	-	-	-	-	-	-	-	-	-	-	-
October "														
November "														
December "														
Total	121	81	27	10	6	2	3	3	2	1	1	1	1	12
Percentage	66.9%	22.3%	8.26%	4.9%	1.6%	2.4%	2.4%	1.6%	8%	8%	8%	8%	9.9%	

Table 2

Leopard - Frequency of occurrence of prey remains in Scats in Periyar (1991-1994)

Month and Year	No. of scats collected	Sambar Langur	Nilgiri	Rodents	Flying-Squirrel	Mouse Deer	Small Indian Civet
September 91	2	-	2	-	-	-	-
October "	2	-	2	-	-	-	-
November "	2	-	2	-	-	-	-
December "	3	-	3	-	-	-	-
January 92	7	-	6	-	1	-	-
February "	8	2	6	-	-	-	-
March "	6	2	4	-	-	-	-
April "	7	2	6	-	-	-	-
May "	2	-	2	-	-	-	-
June "	2	-	2	-	-	-	-
July "	3	-	3	-	-	-	-
August "	5	-	5	-	-	-	-
September "	3	1	2	-	-	-	-
October "	2	-	2	-	-	-	-
November "	2	1	1	-	-	-	-
December "	2	1	2	-	-	-	-
January 93	5	-	4	-	-	-	-
February "	4	-	-	-	1	3	1
March "	2	1	2	-	-	-	-
April "	3	-	3	-	-	1	-
May "	1	-	1	-	-	-	-
June "	1	1	-	-	-	-	-
July "	1	-	1	-	-	-	-
August "	2	-	2	-	-	-	-
September "	1	-	1	-	-	-	-
October "	2	1	1	-	1	-	-
November "	2	-	2	-	-	-	-
December "	1	-	1	-	-	-	-
January 94	3	1	2	1	-	-	-
February "	2	-	1	-	-	1	-
March "	3	1	2	-	-	-	1
April "	1	-	1	-	-	-	-
May "	2	-	2	-	-	-	-
June "	1	-	1	-	-	-	-
July "	1	-	1	-	-	-	-
August "	-	-	-	-	-	-	-
September "	1	-	1	-	-	-	-
Total	97	14	79	2	3	6	2
Percentage -	14.43%	81.44%	2.06%	3.09%	6.18%	2.06%	

Table 3

Wild Dog - Frequency of occurrence of prey remains in Scats in Periyar (1991-94)

Month and Year	No. of scats	Sambar	Mouse Deer	Barking Deer	Nilgiri Langur	Rodents	Porcupine.	Grass
September 91	6	6	-	-	-	-	-	-
October "	8	6	1	-	1	1	-	1
November "	6	5	1	-	-	-	-	-
December "	9	6	-	1	2	2	-	-
January 92	6	4	-	-	-	1	-	2
February "	5	5	-	-	-	1	-	-
March "	4	4	-	-	-	-	-	-
April "	3	3	-	-	-	-	-	-
May "	5	5	-	-	-	-	-	-
June "	3	3	-	-	-	-	-	-
July "	4	4	-	-	-	-	-	1
August "	3	3	-	1	-	-	-	-
September "	9	8	1	-	-	-	-	-
October "	5	5	-	-	-	-	-	-
November "	6	6	-	-	-	-	-	-
December "	5	4	-	1	-	-	-	2
January 93	4	4	1	-	-	-	-	-
February "	7	5	1	-	-	-	-	-
March "	9	8	1	-	-	-	-	4
April "	5	5	-	-	-	-	-	3
May "	10	9	1	-	-	-	-	-
June "	7	7	-	1	-	-	-	-
July "	3	3	-	-	-	-	-	-
August "	6	4	1	-	-	-	1	-
September "	4	3	1	-	-	-	-	1
October "	5	5	1	-	-	-	-	-
November "	3	2	-	1	-	-	-	-
December "	6	5	1	-	-	-	-	-
January 94	5	5	-	-	-	-	-	1
February "	4	3	-	1	-	-	-	-
March "	8	6	2	-	-	-	-	2
April "	9	8	-	-	-	-	-	-
May "	5	4	-	-	-	1	-	-
June "	3	3	-	-	-	-	-	-
July "	2	2	-	-	-	-	-	-
August "	6	5	1	-	-	-	-	1
September "	3	3	-	-	-	-	-	-
Total	201	176	14	6	3	6	1	18
Percentage	87.56%	6.96%	2.98%	1.49%	2.98%	0.49%	8.95%	

occurrence such as pug-marks, kills and scats were recorded on these transects. While walking, alarm calls of Sambar, Nilgiri Langur and Squirrels were listened and their possible causes investigated. This helped to get more information on predators and their prey species.

Details of kills such as teeth, antlers and bones were recorded to determine the approximate age and health of prey species. Scat samples were collected, washed well in hot water and their contents dried.

The hairs in these samples were compared with fresh hair samples collected from kills, carcasses and zoo animals, which were used as reference materials. The reference materials were processed using methods suggested by Adorjan and Kolensky (1980) and Koppikar and Sabinis (1976).

Results and Discussions

Studies conducted over a period of three years show, Sambar constituted 66.9% and Porcupine 23.3% of the prey consumed by Tiger in Periyar (Table 1). The Gaur, the Wild Boar, the Elephant (Calf?), the Nilgiri Langur, the Blacknaped Hare, Rodents, the Small Indian civet and the Varanus are also preyed on by Tiger here.

The Leopards in the Reserve preyed mostly on the Nilgiri Langur (81.44% Table 2). Other prey species of Leopard consisted of the Sambar (14.43%), the Large Flying Squirrel and Rodents.

Sambar is the major prey species of Wild Dogs (87.56%) in Periyar (Table 3) Wild Dogs here also preyed on Barking Deer (2.98%), Mouse Deer (6.96%), Nilgiri Langur and Rodents. Grasses in good quantity were observed in 2 Wild Dog scats.

Wild Dogs were once observed chasing a Wild Boar to the lake in an unsuccessful attempt to prey on the animal. It is hence likely that the Wild Dogs may also prey on Wild Boar here as observed by Johnsingh (1983) in Bandipur.

The available data show some interesting pattern in the prey-predator relations. The absence of major prey species such as Chital, Hog Deer and Swamp Deer in Periyar seems to be compensated by taking a large proportion of Sambar and Porcupine and other prey species like Small Indian Civet, Nilgiri Langur and Varanus by Tiger. In this connection it may also be noted that Sambar formed 11.7% of the prey species of Tiger in Kanha, 29.3% in Royal Chitwan, Nepal and 31.1% at Bandipur whereas the proportion of Sambar prey in Periyar is 66.9% for Tiger. Consumption of a higher proportion of Porcupine (22.3%) is worth mentioning.

Regarding Leopard the Nilgiri Langur comprises 81.44% of its prey in Periyar. This is a higher percentage when compared with the data of Rice (1986) in whose study area at Eravikulam the Nilgiri Tahr formed a major prey of Leopards.

The number of scats collected however will not be enough to make any conclusion in this case. But it may be noted that the Nilgiri Langur has a wide distribution in Periyar and is an easily available prey species for Leopards here. The Nilgiri Tahr occurs only in very small numbers here and that too, in isolated pockets. Though Leopards also prey on Sambar they may have to compete with Tiger and Wild Dogs for this species.

Sambar formed the major prey species

of Wild Dogs in Periyar (87.56%). At Bandipur Sambar constituted 14%, Chital 50% and Blacknaped Hare 13% of the prey

species of Leopard. The increasing frequency of Wild Dogs preying on Sambar in Periyar may be due to the absence of Chital here.

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SUMMARY

This study has identified new prey species of the major mammalian predators in Periyar Tiger Reserve; Nilgiri Langur, Elephant and Varanus for Tiger and Flying Squirrel for Leopard. The proportion of different prey species taken by these predators is also interesting.

पेरियार बाघ आरक्षित क्षेत्र, दक्षिण भारत में स्तनि शिकारी पशुओं की भोजन आदतें
के०के० श्रीवास्तव, ए०के० भारद्वाज, सी०जे० अब्राहम व वी०जे० जकरियास

सारांश

इस अध्ययन में मुख्य स्तनि शिकारी पशुओं के लिए पेरियार बाघ आरक्षित क्षेत्र में कुछ नई शिकार बनने वाली जातियों को बताया गया है - नीलगिरि लँगूर, हाथी और बेदार छिपकली बाघ के लिए तथा उडती गीलहरी तेन्दुए के लिए। इन शिकारी पशुओं द्वारा ग्रहीत शिकार जातियों का समानुपात भी रोचकता भरा है।

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