

## Prey Preferences of Spotted Owlet *Athene brama* in G.V.I.S.H. Campus, Amravati, Maharashtra, India

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**Abstract:** We analysed 52 pellets of Spotted Owlet, *Athene brama* (Temnick 1821), collected daily from October 2010 to March 2011. Pellet collection was done from three different roosting sites (GPS location- 20° N 58° latitude and 77° E 50° longitude) in the GVISH campus, district Amravati. Percent relative frequency of occurrence of various food remains in the pellets of the owl indicate that the insects (78.84 %) occupy the most preferred position followed by small mammals (38.46%). Five species of small mammals namely *Mus musculus*, *Mus booduga*, *Sunchus etrescus*, one unidentified *Mus* species and one small mammal identified upto family level were represented in the bony remains of the pellet. Four orders of insect preys namely Coleoptera (Beetles), Dermaptera (Earwigs), Hemiptera (Bugs) and Orthoptera (Grasshoppers) were represented in the food of the owl. Beetles were preyed upon most heavily among the insect preys.

**Key words:** Spotted Owlet • Pellets • Amravati • Maharashtra • *Athene brama*

### INTRODUCTION

The spotted owl *Athene brama* is a common nocturnal raptor distributed throughout Southeast Asia including India [1]. It survives in all possible types of biotopes, adapts to the changing environment both natural and man made and usually is absent on high mountains [2]. It is common in open habitats including farmland and human habitation and has adapted to live in crowded cities also [3].

With regard to their diet, insects have been reported to form a significant part of the owl's diet [4-6] besides rodents, birds, reptiles and amphibians are also eaten in different proportions [7-10]. Owl pellets are accumulations of the undigested portions of prey which are regurgitated and ejected through the mouth in compact units. Strigidae (typical owls) prey mainly upon small rodents or insects and usually prey of a suitable size are swallowed whole. Their ability to digest bone is poor and pellets contain a good skeletal record of the small mammals consumed. Owl pellet analysis serves two primary purposes. Foremost, pellet analysis serves as a nondestructive means of diet determination. Obtained diet information can include prey species eaten [11-18], preferences of prey species [19-21]

and estimates of contributions of prey biomass. Owl pellet analysis also is a useful method for gaining additional insight into small mammal communities and distribution [22-24, 14].

Very little is known about the food habitat of this most common resident owl *Athene brama* [3,25]. Hence, the present study documents the information about prey preferences of spotted owl *A. brama* in the campus of Government Vidarbha Institute of Science and Humanities (G.V.I.S.H.), Amravati.

### MATERIALS AND METHODS

The present study was carried out in the G.V.I.S.H. campus which covers an area of 165 acre and is located at a distance about 7 km. from the Amravati city (GPS location- 20° N 58° latitude and 77° E 50° longitudes).

A total of 52 pellets of the spotted little owl *Athene brama* were collected from three different roosting sites located in the GVISH Campus. First roosting site (A) was located near the East boys hostel (GPS location- 20° N 56° latitude and 73° E 47° longitude), second roosting site (B) was located behind the West boys hostel (GPS location- 21° N 57° latitude and 74° E 49° longitude) and the

roosting site (C) was located behind the Zoology department of GVISH campus, Amravati (GPS location- 22° N 60° latitude and 79° E 52° longitude).

Bird was noted to regurgitate parts of food in the form of pellets, such pellets were collected, bagged and kept in an oven at 70° for 24 h in order to kill infesting insects and then stored. Later, the pellets were subjected to 8% NaOH treatment and the osteous and chitinous pellet contents were separated and then washed for further identification [26]. Different food remnants like bones, feathers and remnants of insect body parts were cleaned under a dissecting microscope from a disentangled content of owl pellets.

The diet composition of the spotted owl was studied by the analysis of materials found in the pellets. Some insects were identified by their wings and others by their body parts i.e. head, elytra, limbs etc. that were left behind in the pellet after eating the rest of the body. The skull, cranial bones and the dentary bones were used to identify the small mammals upto the species level. The identity of small mammals was further confirmed by experts from Central Zone Regional Station, Zoological Survey of India, Jabalpur.

## RESULTS

The average pellet diameter was found to be  $1.47 \pm 0.07$  cm & the average dry weight of pellet was found to be  $0.375 \pm 0.02$  gm. The regurgitated pellet consisted of hair, small pieces of vertebrate bones, pieces of insect integuments, insect appendages etc. However some of this material was so crushed that it was very difficult to identify the taxa to which they belonged. Vertebrate bones found in the Owl pellet (Plate I), formed the basis of identification of small mammals. The following taxa of small mammals viz. *Mus musculus*, *Mus booduga*, *Sunchus etruscus*, *Mus sp* & a small mammal identified upto the family level (Family:Muridae) could be recorded. The remnants of insects in the pellets of the owl comprised wings, legs, antennae and head (Plate II). On the basis of these remnants, insects belonging to the orders Orthoptera (Grasshoppers), Hemiptera (Bugs), Coleoptera (Beetles), Dermaptera (Earwig) were recorded from the pellets.

The frequency of occurrence data taken, from the examination of the owl pellets indicated that the insects were eaten most frequently (78.84%) followed by small mammals (38.46%). Table I shows the percent relative collected at three owl roosting sites A, B and C in the study area.



Plate: 1



Plate: 2

Table 1: Percent relative abundance of small mammals found in the pellet sample of *Athene brama*.

Species	N= 25 Site A	N=12 Site B	N=15 Site C
	No. (%)	No. (%)	No. (%)
<i>Mus musculus</i>	0 (0%)	0 (0%)	10 (66.6%)
<i>Mus booduga</i>	0 (0%)	1 (8.33%)	4 (26.6%)
<i>Mus spp.</i>	0 (0%)	0 (0%)	4 (26.6)
<i>Muridae</i>	2 (8%)	1 (8.33%)	0 (0%)
<i>Sunchus etruscus</i>	0(0%)	0 (0%)	1 (6.66%)

Table 2: Percent Relative abundance of insect preys found in the pellet sample of *Athene brama*.

Order	n=25 Site A	n=12 Site B	n=15 Site C
	No. (%)	No. (%)	No. (%)
Coleoptera	24 (96%)	11 (91.6%)	6 (40%)
Dermaptera	15 (60%)	3 (25%)	3 (20%)
Hemiptera	3 (12%)	0 (0%)	0 (0%)
Orthoptera	7 (28%)	0 (0%)	0(0%)

At all three localities, beetles (Insecta: Coleoptera) were found to be comprising the major food of the owl as assessed from the relative frequency of occurrence (Table 2).

### DISCUSSION

As is obvious from the percent relative frequency of occurrence, the insects represented major portion (79%) of the owl's pellet collected during the study period which points towards the fact that the insects were the most preferred food ingredient which is in agreement with other studies [5, 27,28]. Heavy dependence of the Spotted Owllet *Athene brama* on the insects is perhaps because of their easy availability and universal presence. However, the raptor has to put in a lot effort to gather small bits of biomass to fulfil its nutritional need. Micrommalia (39%) were ranked second in the food preference of the owl studies, which was also observed in other studies [5, 27,28]. The presence of Micrommalia in almost one -third of the total owl pellets, is perhaps due to the fact that a large quantity of biomass can be secured in a single attempt compared to the insects where a large number of attempts are needed to procure the same amount of food.

The proportion of the five species of small mammals identified on the basis of the body remnants in the pellets differed greatly. *Mus musculus* was found to be the most captured species at the roosting site C. *Mus booduga* along with another unidentified *Mus* species were the next ranking predated species at roosting site C, followed by *Sunchus etruscus* another uncommon species. However

the proportion of micrommalia was very low at site B and A. One explanation for this is that the encounter frequencies of the predator with the various prey species varied due to prey behavior or other factors.

At all the three roosting sites, amongst the insects, the Coleopterans (96%) were found to be the most preferred prey species, followed by the Dermapterans (60%). However the Orthopterans and the Hemipteran species had low selectivity value at all three Owllet roosting sites.

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