



PREY PREFERENCES OF BARN OWL *TYTO ALBA* FROM MELGHAT TIGRE RESERVE, DISTRICT AMRAVATI, MAHARASHTRA, INDIA

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Abstract:

The diet of the Barn Owl (*Tyto alba*) was studied for the first time in the forest habitat of Melghat Tiger Reserve in Maharashtra, India, from 1 January 2015 to 28 February 2015. Regurgitated pellets were analysed to understand the dietary composition and Prey preferences. The major portion of diet comprised of small mammals viz. *Mus booduga* Gray (75%), *Mus saxicola ellioti* (68.3%), The diet didn't show presence of insects like Coleopterans and Orthopterans.

Keywords: Barn Owl, *Tyto alba*, Melghat tiger reserve, Owl Pellet, Owl Prey.

Introduction –

The Barn Owl *Tyto alba* is a cosmopolitan species inhabiting both hemispheres and is well adapted to the subtropical and the temperate areas of the world. [1] It is the most widespread landbird species in the world, occurring in every continent except Antarctica. Its range includes all of Europe (except Fennoscandia and Malta), most of Africa apart from the Sahara, the Indian subcontinent, Southeast Asia, Australia, Pan Pacific Islands, North, Central and South America[2]. It is a widely distributed, resident, nocturnal raptor in entire Indian Union, Bangladesh, Pakistan, Sri Lanka, and Myanmar [3].

It inhabits among the Grasslands, roosts in the agricultural fields, old and tall trees and pastures [4-7]. It is considered to be [sedentary](#), and indeed many individuals, having taken up residence in a particular location, remain there even when better foraging areas nearby become vacant [2]. This owl preys primarily on small mammals, and occasionally on other vertebrates and/or insects [8-10]. These owls feed on wide variety of prey and their preference varies from place to place [11]. 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 is 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 [12-19], preferences of prey species [14-16] 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 [20-22]. Published reports on this bird are limited to descriptions prey of preferences near human habitations and agricultural croplands [23, 24] However, no study has been done to evaluate the prey preferences of these owls Forest habitat. Hence this study tries prey preferences in above mentioned habitat.

Materials and Methods –

The present study was carried out in Melghat Tiger Reserve (MTR), Vidarbha, Maharashtra which lies between 21°29'96"N and 077°12'33.8"E coordinates. MTR is located at southern offshoot of Satpuda hill range in Central India also called as Gawilgarh hill range in Maharashtra. The forest area of MTR is tropical dry deciduous, dominated with teak plantations (*Tectona grandis*).

The Pellets of Barn owl were collected from a cliff in the Narnala Fort which is surrounded by Dense forest on one side, Valley on the other side and the habitat also has Grassland nearby. The collection were done from 1 January 2015 to 28 February 2015.

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 NaOH treatment and the osteous and chitinous pellet contents were separated and then washed for further identification [25]. Different food remnants like bones, feathers and insect parts were cleaned under a dissecting microscope from a disentangled content of owl pellets.

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 one of the author (SST). The Insect identification was carried out with the help of their chitinous remnants found in the pellets of spotted owl.

Prey Biomass - The importance of each prey species is more realistically expressed by bulk rather than by number [26] The average body weight of each of the mammalian prey was estimated [27, 28]. Magurran [29] was followed to assess and compare the diversity in the diet of two owl species by using species richness (S), Shannon's index (H) and Evenness index (E).

Results –

The average pellet length was found to be 4.45 ± 1.05 cm and width 3.1 ± 0.4 . The average dry weight of the pellet was found to be 3.25 ± 0.65 gm. The regurgitated pellet consisted of hair & small pieces of vertebrate bones. The following taxa of small mammals viz. *Mus booduga*, *Mus saxicola ellioti*, *Suncus murinus*, *Gloounda ellioti Gray*, *Mus species*, *Suncus etruscus*, *Millardia meltada*, *Suncus species*, *Bandicoota bengalensis*, *Tatera indica* could be recorded. (Table 1, Figure 1 and 2)

The Diversity indices which were calculated from the above data are shown below. (Table 2, Figure 3)

Discussion –

The average length and width of the pellets of Barn owl and Spotted owl were similar to those reported by Patki et al [30]. The pellet analysis of the barn owl showed presence of small mammals as major constituents in the

diet. This was according to the Marti [31]. According to the study of Mohammad and Santhankrishnan [27] numerically *Suncus murinus* dominated the prey composition, however in the present study species *Mus booduga* dominated the prey composition which implies the owl is an opportunist.

The presence of insects in the diet of the Barn Owls has been described by many authors in different locations [24], However in the present study no insects were observed in the diet of barn owl, this is in corroboration with the findings of Patki et al [30]. The low evenness index found in the Barn owl diet was largely due to their concentration on mammal prey. Similarly the low diversity indices in barn owl show that the diet was based upon the large number of small mammal species most of which were rodents. These results are in corroboration with those of Travaini et al [32].

According to Patki et al. [30] the Shannons index was 1.2 in the urban habitat, however in the present study the Shannons Diversity index is more that is 1.81 particularly in the forest habitat, this may be due to the availability of variable prey species in the forest habitat.

Conclusion

The pellet analysis of Barn owl showed that it is an opportunist. The diet of the Barn owl shows that it devours small rodents exclusively and *Mus booduga Gray* is the most preferred species. The low evenness and diversity indices indicate that the owl species diet includes dominantly the rodent species only.

TABLE 1- Comparative Picture of Prey Frequencies (%) and biomass (%) consumed by Barn owl.

No.	Prey Items	% Relative Abundance	Biomass (Gm)	% Biomass
	<i>Mus booduga Gray</i>	75	787.5	15.58
	<i>Mus saxicola ellioti</i>	68.33	902	17.84
	<i>Suncus murinus</i>	40	1920	37.99
	<i>Gloounda ellioti Gray</i>	6.66	240	4.74
	<i>Mus species</i>	20	216	4.27
	<i>Suncus etruscus</i>	26.66	38.4	0.75
	<i>Millardia meltada</i>	10	330	6.52
	<i>Suncus species</i>	10	15	0.29
	<i>Bandicoota bengalensis</i>	5	480	9.49
	<i>Tatera indica</i>	1.66	125	2.47

TABLE 2 – Table showing Diversity Indices.

Index	Values
H	1.844
Hmax	2.30
E	0.81

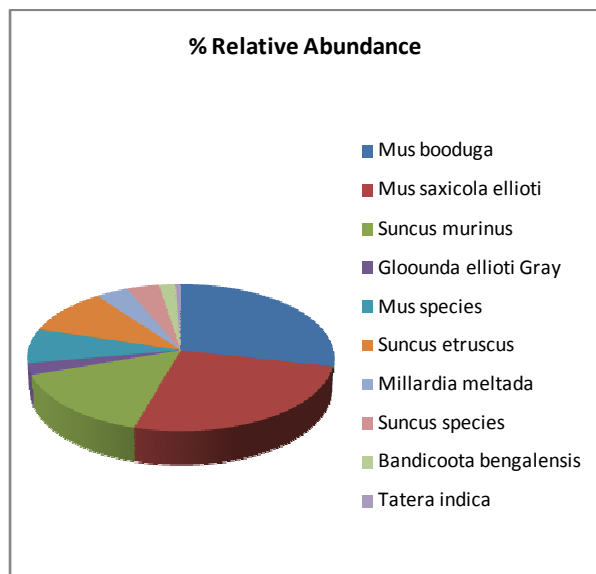


FIGURE 1 – Pie chart showing % relative abundance of prey species in the pellet.

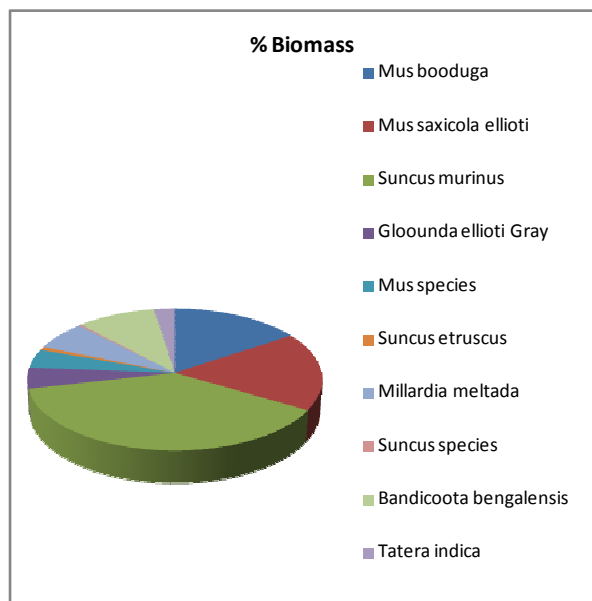


FIGURE 2 – Pie chart showing % biomass of the prey found in the pellet.

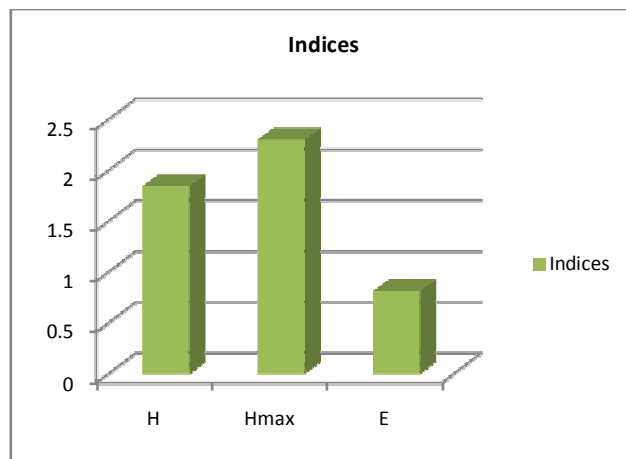


FIGURE 3 – Figure Showing Diversity Indices. (H –Shannon’s Index, Hmax - Maximum diversity possible, E - Evenness.)

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