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FOOD HABITS OF THE SPOTTED OWLET, *ATHENE BRAMA*

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Four hundred and twenty -one pellets of the Spotted Owlet *(Athene brama)* were collected fortnighty from the campus of the University of Agriculture, Faisalabad from August, 1984 to July, 1985. Examination of the cuticular patterns of the scales of the hairs found in these pellets, revealed presence of 10 species of small mammals of which rats and mice were the staple items. Remanents of insects in the pellets indicated consumption of members of eight orders of insects among which coleopterans and lepidopterans were predominant. The insects predominated in the spring and summer diet whereas small mammals in the fall and winter diet.

INTRODUCTION

Of the several resident species of owls in the Punjab, the Spotted Owlet *(Athene brama)* is perhaps the commonest. In some localities almost every groove holds a resident pair or two of these diminutive raptors. It is widely distributed almost all over the lowlands of Pakistan. In Baluchistan and northward along the Afghan frontiers, *Athene brama* is replaced by its congener, *Athene noctua. Athene brama* is largely crepuscular and nocturnal and can often be seen perched on fence posts and other points of vantage waiting patiently for the quarry and sallying occasionally to the ground ir its pursuit. The present study documents information about the food habits of the Spotted Owlet *(Athene brama)* on the Campus of the University of Agriculture, Faisalabad.

MATERIALS AND METHODS

Four hundred and twenty -one pellets of the Spotted Owlet were collected fortnightly from the Campus of the University of Agriculture, from August, 1984 to July, 1985. All the pellets, in each fortnightly samples, were soaked in water before being pulled apart. Bones, hairs, feathers and fragments of insects were sorted out under the low power of a binocular microscope. These remanents of the owlet's food were dried and their weights and volumes, in each of the fortnightly samples, were approximated. Wings, legs and heads of insects in the pellets facilitated their identification to order and family levels.

Before mixing the contents of the individual pellets, three hairs were randomly taken from each pellet, washed in warm water, cleaned in alcohol and dried on a blotting paper. A thin film of commercial glue "Pan-fix" was made over a slide and the hairs were placed on the film immediately thereafter. After about two minutes they were lifted from one end with the helpof forceps. Impressions of cuticular covering of the hairs thus formed were examined under high power of a microscope and compared with reference impressions of the hairs of known species of small mammals.

RESULTS

Pellet Types: Like other owls, the Spotted Owlet swallows its prey whole, digests the soft parts then disgorges the bones wrapped in hair as a compact pellet. The Spotted Owlets were noted to regurgitate three types of pellets. Large-sized pellets (Fig.1a) were predominant in winter, less in spring and fall, and least in summer samples. The proportion of the medium sized pellets (Fig.1b) in the seasonal samples varied very little. The seasonal variations in the abundance of small pellets (Fig.1c) were, however, inversely related to those of the large pellets; the former being predominant in summer,

less abundant in spring and fall, and least in the winter samples. The large pellets mainly contained hair and bones, whereas in small pellets the proportion of insects was relatively greater. The medium - sized pellets did not show evidence of seasonal predominance of any particular type of food remanents.

Food Remanents: The pellets of the Spotted Owlet comprised mainly small bones, hairs, feathers and fragments of insects which contributed 17, 28, 3, and 34% of the dry weight and 12, 42, 4, and 28% of the volume of the pellets, respectively. Changes in the volume and weight of both hairs and bones in the seasonal samples were inversely related to that of insect remains. The bones and hairs had the largest volume and weight in the winter samples, less in fall, lesser in spring, and the least in the summer samples, wheresas the volume and weight of insect remains measured maximum in the summer, less in the spring, lesser in the fall, and the least in the winter samples. Feathers were represented in all the fortnightly samples but always in small numbers.

Small Mammals: Ten species of small mammals were represented in the pellets of the Spotted Owlet (Table 1). Of these, the Indian gerbille (*Tatera indica*) was consumed most intensively throughout the year. The other abundantly consumed species, in order of decreasing importance, were the soft–furred field rat (*Rattus meltada*), the bandicoot rat (*Bandicota bengalensis*), the house shrew (*Suncus murinus*), the house mouse (*Mus musculus*) and the field mouse (*Mus booduga*). The remaining four species, namely, the palm squirrel (*Funambulus pennanti*), the house rat (*Rattus rattus*), the short-tailed mole rat (Nesokia indica) and the small Indian mongoose (*Herpestes auropunctatus*) were consumed only sparingly but during all the four seasons.

Insects: Insects were eaten throughout the year. As judged from their weight (34%) and volume (28%) in the pellets, they were the best consumed animals. Remains of members of eight orders of insects were represented in the pellets (Table 2). Coleoptera, the most intensively consumed order, was represented by four families, all in fairly good numbers. Carabids and scarabids were strongly represented in all the seasonal samples excepting that of the winter in which they were lacking. The dytiscid and coccinellid beetles were consumed throughout the year; the former was eaten intensively during winter and fall whereas the latter during winter and spring.

Lepidopterans were the second best consumed insects. Their maximum consumption was evidenced in the fall and summer samples. The members of the orders, Odonata, Dermoptera and Hymenoptera were consumed moderately round the year, whereas orthopterans and homopterans were lacking in the winter and summer samples. Isopterans were consumed during the summer season only.

DISCUSSION

The data suggest that the Spotted Owlets of the present study area depended mainly on insects and mammals for their food; the former predominated in the spring and summer diets and the latter in the fall and winter diets. This temporal rise and fall of a given group of prey in the diet of the owlet was related to its availability and preferences of the owl. A less preferred prey species may become the main item of the diet of a predator if the preferred species, for some reason, become scarce and difficult to capture (Klopfer, 1964). It is also possible that a potentially suitable prey may be present in the habitat in relatively large numbers but it may elude in the predator by virtue of its particular mode of life. Sub–terranean species of rats like *Nesokia Indica* and *Bandicota bengalensis* are less likely to fall prey to the owl than *Tatera indica*, *Rattus meltada* and *Mus musculus* which forage above-

Table 1. Relative abundance of different species of mammals as judged from the occurrence of their hair in the pellets of the Spotted Owlet

	Spring	Summer	Fall	Winter	Total
No. of pellets	100	90	110	121	421
No. of hairs examined (@ three hairs from each pellet)	300	270	330	363	1263
Relative abundance of hairs of different species					
Suncus murinus	11(32)*	10(28)	13(43)	8(29)	10(32)
Herpestes auropunctatus	4(11)	5(13)	2(8)	4(13)	4(55)
Funambulus pennanti	3(9)	5(10)	2(5)	1(4)	3(28)
Rattus meltade	11(32)	18(48)	16(53)	20(71)	16(204)
Rattus rattus	2(7)	3(8)	4(12)	5(17)	4(44)
Mus musculus	7(22)	10(25)	13(42)	10(38)	10(127)
Mus booduga	14(41)	7(20)	7(23)	6(22)	8(106)
Bandicota bengalensis	11(34)	6(16)	9(31)	11(40)	10(121)
Nesokia indica	2(6)	5(10)	2(6)	4(14)	3(36)
Tatera indica	35(106)	31(24)	32(107)	32(116)	32(413)

*The values given in parentheses indicate number of hairs, while those without parentheses indicate percentages.

Table 2. Frequency of occurrence of insect remains in the seasonal samples of pellets of the Spotted Owlet

Insect taxa	Frequency of occurrence (%)				
	Fall (n = 6)	Winter (n = 6)	Spring (n = 6)	Summer (n = 6)	Total (n = 24)
Odonata	50.0	33.3	50.0	33.3	41.7
Orthoptera	33.3	0.0	50.0	83.3	41.7
Dermoptera	66.7	16.7	33.3	66.7	45.8
Isoptera	0.0	0.0	0.0	83.3	20.8
Homoptera	33.3	50.0	16.7	0.0	25.0
Lepidoptera	83.3	50.0	66.7	100.0	76.0
Coleoptera	100.0	100.0	100.0	100.0	100.0
Carabidae	100.0	0.0	83.3	100.0	70.8
Dytiscoidae	83.3	50.0	66.7	100.0	75.0
Coccinellidae	50.0	83.3	66.7	33.3	58.3
Scarabidae	100.0	0.0	83.3	100.0	70.8
Hymenoptera	50.0	33.3	66.7	50.0	50.0
Formicidae	66.7	50.0	33.3	50.0	50.0
Aphidae	33.3	16.7	50.0	66.7	41.7

ground. Further of the latter group, Tatera indica, which inhabits sparcely vegetated fields, is more prone to predation by raptors than *Rattus rattus* and *Mus musculus* which favour denser vegetation cover. Perhaps for this reason *Tatera indica* was eaten by the Spotted Owlet more intensively than any of the other mammalian preys present in the study area. Finally, the timings of foraging activity of the prey and predator is also important; *Funambulus pennanti* being diurnal in its habit is less prone to fall prey to the owlet than the nocturnal preys.

Occurrence of *Rattus rattus* and *Herpestes auropunctatus* in the food of the owlet is of special interest. The former is largely an indoor dwelling species in Pakistan. It is represented in the pellets of the Spotted Owlet because the latter also hunted around human dwellings and other buildings of the University Campus. A fully grown small Indian mongoose is too large to a prey for the Spotted Owlet. Intuitively, the owl must have preyed on the pups of the mongoose. Taber *et al.* (1967) have reported that in the Punjab the mongoose is capable of producing two to three liters in a year and its breeding is not confined to any one season. Occurrence of remains of mongoose in all seasonal samples of the pellets of the owlet may be taken to indicate round the year breeding in mongoose.

The Little Owlet (*Athene noctua*) in Denmark (Laursen, 1981) and Bulgaria (Simenov, 1983) has been reported to feed mainly on small mammals. According to Ali and Ripley (1983) the Spotted Owlet (*Athene brama*) in Indo - Pak subcontinent has a predilection for insects, mice, small birds and lizards. Thus, the results of this ivestigation are generally in agreement with those of the above cited studies.

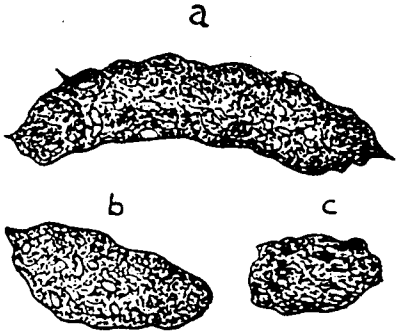

Fig. 1. Three types of pellets disgorged by the Spotted Owlet *(Athene brama)*

In the present study area the Spotted Owlet has established itself well in the agroecosystem of the Punjab. It occurs there in fairly good numbers and, in fact, may be regarded as one of the commonest raptors of the Punjab. Thus, on account of its numerical superiority and natural appetite for insects and small mammals, the Spotted Owlet must be playing an important role in inhibiting insect and murid rodent populations living in the croplands.

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