ON THE PREY OF THE SPOTTED OWLET *ATHENE BRAMA* (TEMMINCK) IN A FORESTED RAVINE IN AUROVILLE, PONDICHERRY

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ABSTRACT

Pellets of a pair of Athene brama *and their young were gathered outside their nesting cavity during the breeding season (January to April) in two consecutive years (2002 & 2003). 2,122 prey items were identified in 197 pellets. Basic food (> 20%) consisted of beetles and hymenopterans; constant food (5-20%) of termites and othopterans; supplementary food (1-5%) was scorpions, spiders, cockroaches, ant lion larvae, moths, lizards and mice; and chance food (< 1%) of snails, centipedes, dragonflies, mantids, bugs, flies, insectivorous bats and shrews.*

KEYWORDS

Athene brama*, Auroville, prey, Spotted Owlet*

Unlike other Indian owls, the prey of *Athene brama* has been analysed in some detail in rural environments (Ali & Ripley, 1969; Kumar, 1985; Mason & Lefroy, 1912). This report concerns the prey base of *Athene brama* in a forested ravenous habitat in the Auroville green-belt close to Pondicherry. As this study was part of a larger one concerning the Indian Eagle Owl *Bubo bengalensis*, it simply aimed to discern the prey base of a closely related secondary predator; hence, no in-depth ecological impact investigations, namely, prey biomass and seasonal fluctuations, were undertaken.

METHODS

Aranya ($11^0$58'N & $79^0$46'E), a site for rain-fed reforestation programmes in Auroville, lies in the close vicinity of Ousteri Lake (a wintering ground for thousands of migratory waterfowl) and ca. 12km west of Pondicherry City. It is flanked by extensive ravines whose naturally occurring floral elements include *Ficus bengalensis*, *Dodonaea viscosa*, *Memecylon umbellatum*, *Ziziphus oenoplia* and grasses (eg., *Aristida* sp., *Paspalum* sp. and *Heteropogon contortus*); the critically endangered liana *Derris ovalifolia* also occurs here.

The wall of one such ravine (ca. 9m deep) has a cavity that is the habitual nesting site for a pair of spotted owlets who occupy it only during the breeding season. For two consecutive years 2002 and 2003 - 197 pellets were collected outside this nesting cavity during the months January to April.

A binocular microscope and established literature on insects (Borror, 1992; Heinrich, 1994; Mani, 1990) allowed an analysis of all arthropod remains. Vertebrates were identified by their distinctive cutaneous, dental, cranial and other skeletal characteristics (Errington, 1930); specific identification of rodents and bats was based on specialized literature (Agrawal, 2000; Bates & Harrison, 1997).

The percentage of particular components of food of *Athene brama* was divided into four categories according to a pre-established frequency of occurrence (Kumar, 1985; Verzhutskii & Ramanujam, 2002) - basic food - prey species occurring with a frequency above 20%; constant food - prey species occurring with a frequency between 5-20%; supplementary food - prey species occurring with a frequency between 1-5%; chance food - prey species occurring with a frequency below 1%.

RESULTS

Coleoptera (beetles) and Hymenoptera (ants, bees & wasps) comprised the basic food. Even within these some groups predominated aver others - among the 471 beetles consumed 454 were Scarabaeidae, and among the 447 Hymenoptera 441 were Formicidae (ants).

Constant food comprised of Isoptera (termites) and Orthoptera (crickets, mole-crickets & grasshoppers). Scorpionidae (scorpions), Araneae (spiders), Blattaria (cockroaches), Myrmeleonidae (ant lion) larvae, Heterocera (moths), Lacertilia (lizards) and *Mus* spp. (mice) comprised the supplementary food. Chance food included a single specimen each of Mollusca (snail), Scolopendridae (centipede), Odonata (dragonfly),

Table 1. The prey of* Athene brama *in Aranya Jan. - April 2002 and Jan. - April 2003.

Prey	No. consumed	%	Category
Mollusca	1	0.04	OF
Scolopendridae	1	0.04	OF
Scorpionida	22	1.03	SF
Araneae	87	4.09	SF
Odonata	1	0.04	OF
Blattaria	98	4.61	SF
Mantodea	1	0.04	OF
Isoptera	422	19.88	CF
Orthoptera	332	15.64	CF
Hemiptera	13	0.61	OF
Neuroptera 1	51	2.40	SF
Coleoptera 2	471	22.19	BF
Lepidoptera 3	50	2.35	SF
Diptera	1	0.04	OF
Hymenoptera 4	447	21.06	BF
Lacertilia	40	1.88	SF
Chiroptera 5	5	0.23	OF
Insectivora 6	1	0.04	OF
Rodentia 7	78	3.67	SF
Total	2,122		

Prey: 1 Myrmeleonidae larvae; 2-5 Elateridae; 6 Curculionidae; 2 Staphylinidae; 3 Cerambycidae; 1 Chrysomelidae; 454 Scarabaeidae; 3 - Heterocera; 4-5 Vespoidea; 1 *Apis florea*; 441 Formicidae; 5-3 *Pipistrellus coromandra*; 2 *Hipposideros ater* 6- *Suncus murinus*; 7- *Mus* spp.
BF - Basic food (>20%); CF - constant food (5-20%); SF -supplementary food (15%); OF - chance food (<1%)

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Mantodea (mantid), Diptera (fly) and *Suncus murinus* (Musk Shrew); also 13 Hemiptera (bugs) and five microchiropteran bats (Table 1).

Discussion

Although biomass studies formed no part of this investigation, it must be mentioned that it is ecologically significant as it elucidates the total food mass consumed. For example, though the Scarabaeidae topped numerically with 454 individuals, they are significantly less in biomass than 78 mice. A casual calculation using the known weights of specimens (Kumar, 1985) shows the following: 454 Scarabaeidae at the estimated mean weight of 0.57g each weigh 258.78g, whereas 78 mice at the estimated mean weight of 13.30g each weigh 1037.40g.

It is interesting to compare the prey spectrum of *Athene brama* between the agricultural fields of Andhra Pradesh studied by Kumar (1985) and this biome. In Andhra Pradesh fields no precedent was recorded of the Spotted Owlet feeding on snails, dragonflies, mantids, termites, bugs, ant lion larvae, moths, flies and hymenopterans; all these were consumed here in addition to very significant quantities of termites (19.88%) and Hymenoptera (21.06%). Hence it could be concluded that the Spotted Owlet has opportunistic feeding habits - its prey varying with locality and availability of food. This trait was recognized by Kumar (1985) and could be the reason for it being the most abundant and widespread species of owl on the Indian sub continent.

References

Ali, S. and S.D. Ripley (1969). *Handbook of the Birds of India and Pakistan*. 3: 299-302. Oxford University Press.

Agrawal, V.C. (2000). Taxonomic studies on the Indian Muridae and Hystricidae (Mammalia: Rodentia). *Records of the Zoological Survey of India*, Miscellaneous Publication. Occasional Paper No. 180: 1-177

Bates, P.J.J. and D.L. Harrison (1997). *Bats of Indian Subcontinent*. Harrison Zoological Museum Publication, Kent, 258pp.

Borror, D. (1992). *An Introduction to the Study of Insects*. Harcourt Brace College Publishers, USA, 876pp.

Errington, P.L. (1930). The pellet analysis method of raptor food habits study. *Condor* 32: 292-296.

Heinrich, E. (1994). *Biology and Management of Rice Insects*, 780pp.

Kumar, T.S. (1985). The Life History of the Spotted Owlet (*Athene brama brama* Temminck) in Andhra Pradesh. Monograph of the Raptor Research Centre, Hyderabad, 241pp.

Mani, M. (1990). *General Entomology*. Oxford & IBH Publishing, New Delhi, 912pp.

Mason, C.W. and H.M. Lefroy (1912). The food of birds in India. *Memoirs of the Department of Agriculture of India, Pusa*: *Entomology Series*. Vol 3. 376pp.

Verzhutskii, B. and M.E. Ramanujam (2002). On the Prey of the Collared Scops Owl *Otus bakkamoena* (Pennant) at Auroville, Pondicherry. *Zoos' Print Journal* 17(1): 939-940.

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THE PREY OF THE GREATER FALSE VAMPIRE BAT *MEGADERMA LYRA* E. GEOFFROY AT KALIVELI, TAMIL NADU

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The prey of *Megaderma lyra* has been well documented in general (Bates & Harrison, 1997; Hill & Smith, 1984; Prater, 1993), as well as in certain areas, e.g., in Rajasthan (Advani, 1981; Prakash, 1959), central and western India (Brosset, 1962), Bihar (Sinha, 1986) and Bangladesh (Khan, 2001). This report concerns the prey spectrum of this species in the Kaliveli area of Tamil Nadu in southern India.

Kaliveli ($12^0$05'-$12^0$15'N & $79^0$47'-$79^0$59'E) is dominated by a 7.040ha lake, that is said to be one of the two most important wetlands along the Coromandel Coast of southern India (Perennou, 1987, 1989; Perennou & Santharam, 1990). Most of the surrounding land is taken up for farming, though a marginal fringe of the once widespread tropical dry evergreen forest survives in the form of sacred groves and fragmented forest blocks. Villages dot the entire region, and, in one such village - Nadukuppam ($12^0$10'N & $79^0$53'E) a colony of over a hundred *Megaderma lyra* was discovered in a disused building. The entire floor was covered with faecal matter up to a couple of centimetres deep and dead vertebrate remains littered the entire place. On 3.xii.2003 a random sample of faeces was collected for analysis (represented in Table 1) and all vertebrate remains were collected for identification (Table 2).

The percentage of prey items consumed was assessed according to a pre-established systematic that is in place for calculating trophic connections of fauna in this region (Verzhutskii & Ramanujam, 2002). This methodology recognizes four classes: basic food (>20%), constant food (5-20%), supplementary food (1-5%) and chance food (< 1%).

Diagnosis from faeces: 3,936 prey items were identified in the random sample. Of these Blattaria accounted for a staggering 1,919 specimens (48.75%), and along with Coleoptera (22.4%) comprised the basic food. Among the Coleoptera, the families Carabidae, Elateridae, Chrysomelidae, Scarabaeidae, Hydrophilidae and Curculionidae were identified. 456 Isoptera (11.58%) comprised the constant food. Supplementary food consisted of Araneae (1.62%), Orthoptera (2.18%), Diptera (2.31%), Hymenoptera (3.96%) and Lepidoptera (4.39%). Chance food included Mollusca (0.27%), Neuroptera (0.33%), Mantodea (0.35%), Odonata (0.38%), Vertebrata (0.48%) and Hemiptera (0.94%). Specific identification of vertebrates was not possible from faecal matter.

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