Indian Eagle Owl (*Bubo Bengalensis*) in Rat Management

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In agriculture, rodents are one of the major pests across the globe (Singleton & Petch 1994; Singleton *et al.*, 2010). The reason is their rapid breeding, high species diversity and adaptations to wide spread geographic distribution. Rodents in agricultural ecosystems are solely management by chemical rodenticides. Even though the rodenticides are the better option, we have concern about the human as well as animal health and environment contamination. Ecologically Based Rodent Management (EBRM) is the alternate approach understanding rodent population biology, behaviour and natural predation that is both economically and ecologically viable. One of the nocturnal raptors that is exclusively found in the Indian subcontinent is the Indian Eagle Owl, or *Bubo bengalensis*.

Owls have undergone numerous adaptations during their evolution to occupy the top of the food chain in the ecological niche. Field rats, mice, shrews, bats, birds, reptiles, frogs, crabs, scorpions, and insects make up most of an owl's diet. India's eagle Owls build their nests on the ground in rocky outcrops, shrubs, and earthen depressions. Their hunting areas are made up of rural surroundings, water reservoirs, hills, and agricultural crop fields. Undigested portions of the prey, such as bones, vertebrate animal fur, and invertebrate animal exoskeletons, can be found in the owls' regurgitated pellets. These undigested food materials are dropped in the nesting and roosting/perching areas and are oval and greenish black or grey in colour.

Pellets are usually analysed to compile the prey composition of Indian eagle owl in varies habitats over the period. The diet of the owl constitutes 65.1% of rodent prey and remaining 34.15% of other groups of both vertebrate and invertebrate animals. It was recorded that *Bubo bengalensis* consumed more than one prey per day and chiefly foraged in agricultural crop fields and consumed both small mammals and insects of agricultural importance under crop ecosystems (Siva *et al.*, 2019).

Highlights of *Bubo bengalensis*

- ✓ Despite being a generalist feeder, its diet was dominated by agricultural pests, which contributed 88% of the total prey biomass
- ✓ Out of the 13 rodent prey species, which comprised a major part of the diet, seven were identified as major agricultural pests - Lesser Bandicoot Rat (*Bandicota bengalensis*), Large Bandicoot Rat (*B. indica*), Soft-furred Field Rat (*Millardia meltada*), House Mouse (*Mus*

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musculus), Field Mouse (*M. booduga*), House Rat (*Rattus rattus*), and Indian Gerbil (*Tatera indica*)

Table 1: Description of *Bubo bengalensis*

Morphological characters	Habit	Breeding	Habitat	Distribution	Haunting tactics	Life span
Length – 50 to 56 Cm Wing length – 35 to 43 Cm Tail length – 185 – 227 Mm Height – 48 – 50 Cm Average Weight of male – 1100 g Females larger than male	Nocturnal, flies' clock to ground Usually hunt from perches Low foraging flight dive on prey Primarily on rats/mice Small birds, reptiles, frog, crab and large insects	Oct to May 2 – 4 eggs, incubate for 35 days Chick depends on adults up to six months Chick to Adult in 10 Weeks	Rocky hills with bushes Old mango orchards Earth cuttings Prefer – agriculture land than grassland and scrub land	West Himalayans, Pakistan, Kashmir, Nepal, Assam, and Burma Except – arid desert, moist evergreen forest	It flies almost parallel to ground with near silent wing beat for capture the prey Tear up the prey Feeding capacity – 61 g/ Day	25 to 30 years in wild

- ✓ The dependence of the Indian eagle owl on rodent pests was further reflected by positive correlation between rodent biomass consumed and the breeding success of the owl
- ✓ This owl is still hunted due to superstitious beliefs, scientific evidence elucidating the importance of the Indian eagle owl in agricultural pest control can be used for its conservation by educating the farming community
- ✓ Owl perches at the rate of 40-50 per/hac to enhance predation

The diet constituted 65.1% of rodent prey and the remaining 34.83% of other groups of both vertebrate and invertebrate animals. The mean percentage of prey composition was 31.15% *Millardia meltada* (Soft-furred field rat), 12.95% *Bandicota bengalensis* (Lesser bandicoot rat), 10.25% *Mus booduga* (Indian field mouse), and 10.24% of other rodent species. Of the 34.83% of non-rodent prey, the owls ingested insects (Rhinoceros beetles, 9.58%), Arachnida (Solifugae or Sun spider, *Galeodes* sp., 9.58%), reptiles (*Calotes* sp., 3.7%), amphibians (3.56%), shrews (*Suncus murinus*, 2.84%), and others (5.57%).

Ramanujam (2006) studied the prey items of the Indian eagle owl; it was found that mammals accounted for an estimated biomass of 86.93% of which rodents occupied pride of place with 64.91%. *Tatera indica* (24.96%), *Rattus rattus* (20.43%), *Bandicota bengalensis* (12.28%), *Mus spp.* (4.67%), *Bandicota indica* (2.34%), and *Funambulus palmarum* (0.15%) featured prominently among rodent food, but *Millardia meltada* (0.06%) was conspicuous by its near absence. Birds (8.28%) were the most important non-mammal food, followed by batrachians (2.75%), both of which showed distinct seasonal fluctuations. *Varanus bengalensis* (1.64%) and a single *Amphiesma stolata* were the reptiles consumed. Arthropods accounted for 0.34%, of which Coleoptera dominated with 0.24%. The venomous *Heterometrus swammerdami* and *Scolopendra morsitans* also formed part of the prey spectrum, albeit in negligible quantities (a combined biomass of 0.022%).

References

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