



Monotonous diet composition of Indian Eagle Owl (*Bubo bengalensis*)

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Abstract:

The study on food habits of the Indian Eagle Owl, (*Bubo bengalensis*) by analysing their regurgitated pellets. The diet composition of Indian Eagle Owl was studied at Junagadh out scouts Gujarat, India (21°33'59"N, 70°37'25"E). Samples were collected from nesting site of Indian Eagle Owl and analysis of 58 regurgitated pellets yielded 89 prey items. The results of the present study indicated that Indian Eagle Owl are opportunistic nocturnal predators for controlling of rodent and especially totally depended on one species Indian Gerbil (*Tatera indica*) as monotonous diet. They used stones for digestion or unknown reason. They are survived with monotonous diet and breed successfully. This article is one of the warm evidence for Owls are as bio-control agents because they control rodent population which are harmful for agriculture.

Key Words: Pellet, Indian Eagle Owl, Monotonous, Stone, Diet

Introduction:

Owls (Aves: Strigiformes) play an important role in ecosystem by maintenance of natural balance since they are at the apex of trophic levels in aquatic and terrestrial ecosystems (Sergio, 2008). They are commonly found near human inhabitation, agriculture fields and in forest zones. Owls are also known for their important role in bio-control agents and eats number of harmful insects and pests like small mammals' species like rodents and insectivores (Paunikar et al., 2015). The Genus *Bubo* comprises some of the world's largest species of owls. Most if not all of which are tertiary consumers and an excellent indicator of ecosystems they reside. The Indian Eagle Owl (*Bubo bengalensis*) is also known as the Indian Great Horned Owl, Bengal Eagle Owl, Rock Horned Owl and Rock Eagle Owl, and till recently they considered as a subspecies of *Bubo bubo* (Patki et al., 2014). The Eagle Owl is the largest owl in the world (1500-3500g) with a wide distribution range across Europe, Asia and North Africa (Sandor and Ionescu, 2009). The Pharaoh Eagle Owl in Azraq N. R. feeds on a wide range of available prey species and depends mainly on mammals to ensure its food requirements (Shehab and Ciach, 2008).

Owls feed on small mammals such as squirrels, bats, rats, mice, etc. Owl pellets are accumulations of the undigested portions of prey which are regurgitated and ejected through mouth in compact forms. They regurgitate undigested food material from the mouth in the form of oval and greenish coloured are known as pellets. Pellets contain many things like



broken parts of skulls, mandibles, vertebrae, pectoral and pelvic girdles, limb bones (Talmale and Pradhan, 2009). Owl pellet analysis serves mainly two primary purposes. Foremost, pellet analysis serves as non-destructive means of diet determination. Obtained diet information can include prey species eaten, preferences of prey species and estimates of contributions of biomass of prey. Owl pellet analysis also is a useful method for gaining additional insight into communities and distribution of small mammal. Driver (1949) reported that teeth and teeth sockets are very significant characters for identification of small mammals. They give some clues from their shape, size and arrangement.

In India, several studies have been carried out on the food habits of different species of owls by Neelananarayan & Kanakasabai (2004), Pande (2004), Ramanujam (2006), Zade (2011) and Nerlekar (2014).

Materials and Methodology:

During the study food habit of Indian Eagle Owl (*Bubo bengalensis*) were observed by collecting and analysing their regurgitated pellets from their roosting and nesting sites (Figure 1). Samples were collected from Junagadh out-scout, Gujarat, India. (21°33'59"N, 70°37'25"E). The fresh pellets were collected randomly in different periods and packed in polythene bags carefully along with labelling before transferred to the laboratory. Total 58 Pellets were collected, bagged and kept in an oven at 70° for 24 h for incubation and in order



Figure 1: Pellets arranged size wise (Photograph by Ravi Patel)

to kill infesting insects and then stored. Length of the pellet material was measured by using Vernier caliper (Patki et al., 2014). Different food remnants like bones were cleaned under a dissecting microscope from. The diet composition of Indian Eagle owl was studied by the examination of materials found in the



pellets. The skull, cranial bones and the mandible bones were useful for identify the small mammals upto the species level (Paunikar et al., 2015). Mammalian prey items (skulls and mandibles) were identified up to species level following the key by Talmale & Pradhan (2009)

Result and Discussion:

In present study 58 pellets of Indian Eagle Owl (*Bubo bengalensis*) were collected and incubated at 70°C for 24 hours. We found monotonous diet of Indian Gerbil (*Tatera indica*) by Indian Eagle Owl. Among 58 regurgitated pellets of the Indian Eagle Owl, 9 pellets were large sized. The measurements of large sized pellets were 12.5 ± 1.5 cm in length, 3.2 ± 0.7 cm in width and 18-gram weight. The 31 pellets are average, size of pellets was 7.8 ± 2.1 length, 3.2 ± 0.5 width and 9-12 grams; While 18 pellets were small sized. The measurements of small sized pellets were 4.3 ± 1.8 cm in length, 2.9 ± 0.4 cm width and 5–7-gram weight.

The regurgitated pellet consisted of hair, fur, small parts of vertebrate bones. Vertebrate bones found in the Indian Eagle Owl pellet, formed the basis of identification of small mammals.



Figure 2: examination of One large sized pellet with three skeletons and stones (Photograph by Ravi Patel)



Figure 3: Undigested bones of 58 pellets: 1. Skull 2. Scapula 3. Radius & Ulna 4. Femur 5. Tibia & Fibula 6. Ribs 7. Vertebrae 8. Unidentified ©Ravi Patel

According to Pande and Dahanukar (2011) the Indian Eagle Owl is a dietary generalist, which corresponds with published literature, their study showed that the abundance and total biomass of different groups of prey in diet where in the rodents were the most preferred prey followed by birds and bats. They also observed that insect prey was very high. Birds and Reptiles have been listed as prey items in diet of the Indian eagle owl. The Pharaoh Eagle Owl's diet contained a wide variety of prey items that comprised mainly of small mammals (Benamor et al., 2021).



In present study we examined total 58 regurgitated pellets of Indian Eagle owl. We found that their diet is totally depended on Rodents and especially they eat Indian Gerbil. So, it is monotonous diet preferred by Indian Eagle Owl. There were 1-2 whole skeleton found while examine the large sized regurgitated pellets of Indian Eagle Owl. While examination of large sized regurgitated pellet, we found 3 skeletons and small stones from it. It is one of the abnormal and rare things that Indian Eagle Owl used stones for digestion or unknown reason. (Figure 2). Throughout the collection of regurgitated pellets near the nesting site we observed that there was female hatching the eggs and two owlets were successfully grew (Figure 4).

Conclusion:

From the present study it is observed that Indian Eagle owl (*Bubo bengalensis*) can be considered as biological pest controller in agricultural habitat because Indian Eagle owl is a dietary generalist relying mostly on the rodents for their food. Being at the apex of trophic levels in terrestrial and aquatic ecosystems, the owls play an important role in maintaining natural balance and also help biologically in controlling harmful insect pests' as well as small mammalian pests like rodents and insectivores (Pande & Dahanukar, 2011a, 2011b).



Figure 4: Nesting site of Indian Eagle Owl with two owlets. (Photograph by Gaurang Bagda)

In the present investigation, the feeding habits of the Indian Eagle Owl were studied by analysing their regurgitated pellets. After identification of bones of body parts found in the pellets that revealed only one species Indian Gerbil (*Tatera indica*). Indian Eagle owl totally



depended on this monotonous diet. So, according to this observation and analysis Indian Eagle Owls can survive with monotonous diet of Indian Gerbil (*Tatera indica*) and breeding is also successful with this diet (Fig. 4).

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