

Full Length Research Paper

# Preliminary study in diet composition of Indian pond Heron during breeding season

R. Roshnath

Center for Wildlife Studies, Kerala Veterinary and Animal Sciences University, Pookode, Wayanad, Kerala.  
E-mail: roshnath.r@gmail.com

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Indian Pond Heron (*Ardeola grayii*) diet consisted of *Channa* sp. (25%), *Trachypauchen* sp. (25%), *Puntius mahecola* (14%) and *Mystus vittatus* (8%). It preferred medium sized prey of sizes 4-7 cm. In terms of biomass *Channa* sp. and *Trachypauchen* sp. constituted greater percent (51%). Scavenging behavior of Indian Pond Heron was observed. The prey fish species such as *Mystus vittatus* and *Etroplus maculatus* are economically important species and are of human interest but considering size of fishes in observed prey item it is having negligible economic value. But, continued predation of a particular size class may later affect the population structure of the prey species.

**Key words:** Diet composition, Indian pond heron, prey, predation, heronry.

## INTRODUCTION

Indian Pond heron (*Ardeola grayii*) also called paddy bird is a small bird in the family Ardeidae with earthy brown in colour during rest with glistening white wings tail and rump flashing into prominence during flight. In breeding season it acquires maroon hair like plumes on back and long occipital crest (Ali, 2003). In Kannur Indian Pond heron showed observable colour variation during breeding season (Roshnath and Jose, 2014). Indian Pond Heron was the higher in abundance during 2013 Heronry survey in Kannur (Roshnath *et al.*, 2013). During the survey it was also noted that most of the heronry sites were present in town areas where there is high disturbances. Herons were reported to show minimal response to human disturbances (Vos *et al.*, 1985). Many studies have documented feeding ecology of Indian pond herons (Kirkpatrick, 1953; Sodhi, 1986; Mathew *et al.* 1978; Andrews and Mathew 1997; Seedikkoya *et al.*, 2012). Indian pond heron had highest niche width when compared with other herons (Sodhi, 1992). The primary food of these birds includes crustaceans, aquatic insects, fishes and amphibians (Mathew 1978; Sodhi, 1986). Indian pond heron feeding on dragonflies (Santharam, 2003), bees (Prasad and Hemanth, 1992), earthworms (Raza, 1993) were recorded. The adult heron delivers same size and composition of prey to nestling that they themselves consumes (Kushlan, 1978). Hence dietary composition during breeding season can reflect the prey selection by the bird. This study aims at

documenting a preliminary data on the dietary composition of Indian Pond Heron in the study area.

## MATERIAL AND METHODS

### Study site

Kannur District in north Kerala (India) lies along the coast of Arabian Sea experiencing humid tropical monsoon climate. Diet composition of birds was studied at Valapattanam (Figure 1) The Valapattanam heronry (11°55'42.13"N; 75°21'33.01"E) was located in a small mangrove islet in Valapattanam River. Main mangrove species of the islet were *Bruguiera cylindrica*, *Acanthus ilicifolius*, *Aegiceras corniculatum*, *Kandelia candel* and *Rhizophora mucronata*. The sites were selected owing to accessibility and ease of direct observation as the parent birds fed their young in the nests. Valapattanam heronry had isolated mangroves forest patches and thus birds could be studied without much human disturbance in their natural environment.

### Method

Diet composition of nesting birds was studied by analysis of regurgitated pellets and also by direct observation. Harris and Wanless (1993) suggested that regurgitation

**Figure 1.** Map showing the location of heronry study sites in Kannur district of Kerala.

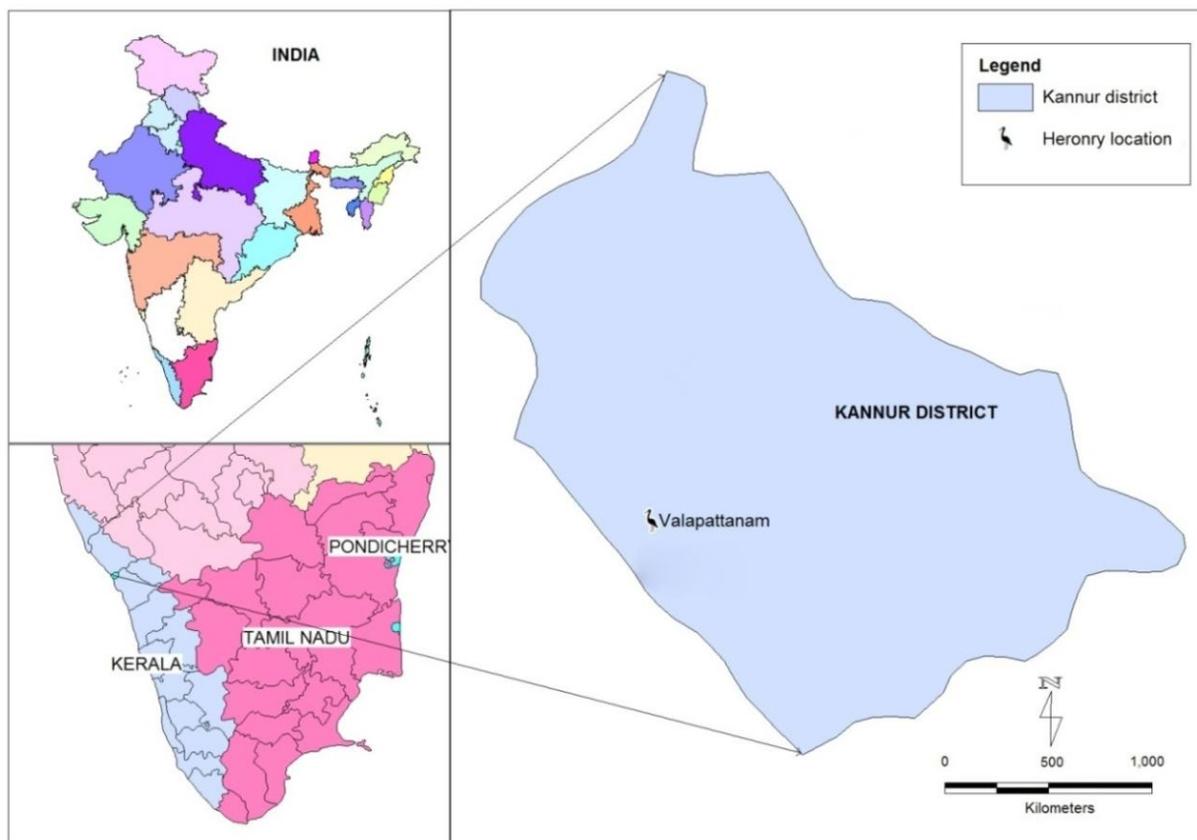


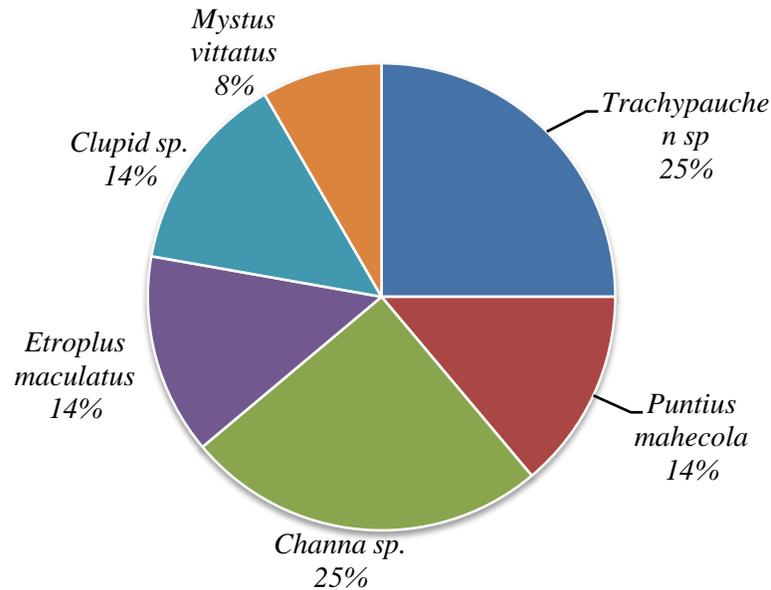
Figure 1a. Google map showing location of Valapattanam Heronry in Kannur District (yellow arrow)

can be used to describe the diet of chicks of water birds. The heronries at Valapattanam were observed from morning 6:00 am to 6:00pm twice a week during the breeding season. Fallen fish samples from the nests were collected within a one meter radius plot directly below the nest. The information such as number, size and weight of the fish samples were recorded and species were identified with the help of literature and standard field guide (Day, 1875). The percent composition of different prey items of bird species was estimated.

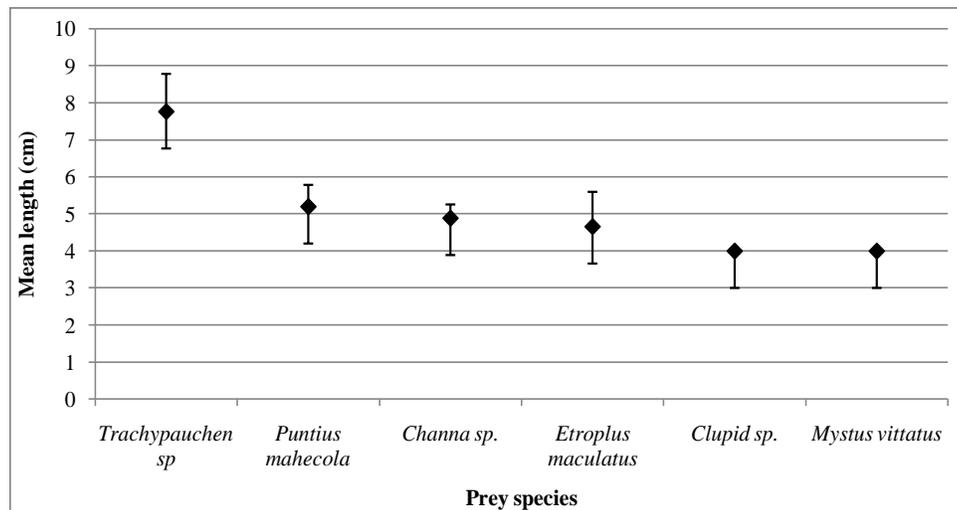
## RESULTS

A total of 36 samples of Indian Pond Herons were collected under the nests in the study site and analyzed. The regurgitated sample of Indian Pond Heron (n=36) contained six species of fish (Figure 2). Among these species, both *Channa* sp. and *Trachypauchen* sp. collectively constituted 50% of the overall diets. Other species such as *Clupid* sp., *Etroplus maculatus* and *Puntius mahecola* constituted 14% each. Five species collectively constituted 92% of the diet. Fish species

**Figure 2.** Per cent composition of different prey species in the regurgitated samples of Indian Pond Heron in Valapattanam Heronry (n=36).



**Figure 3.** Mean length and ( $\pm$  Standard error) of different prey species in the regurgitated samples of Indian Pond Heron in Valapattanam Heronry (n=36).



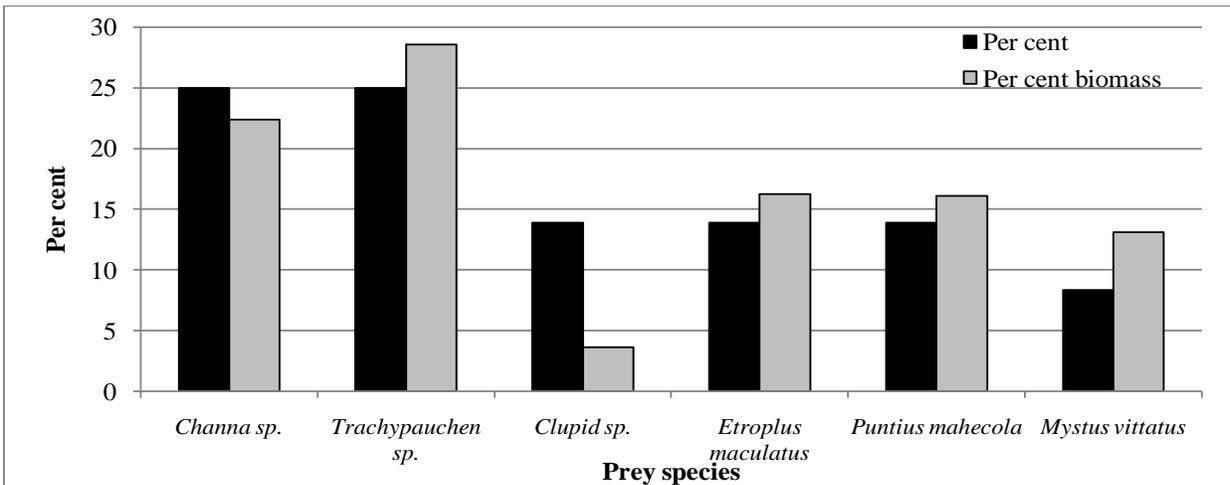
*Mystus vittatus* constituted the least percent (8%) in the overall diet. *Etroplus maculatus* and *Mystus vittatus*, both economically important fishes, constituted 22% of the diet of Indian Pond Heron.

Indian Pond Heron's regurgitation samples contained medium size prey ranging from four to seven centimeters (Figure 3). *Trachypauchen* sp. was the largest among the prey species (6-7 cm). The medium sized fishes (4-5.5 cm) were *Channa* sp., *Puntius mahecola* and *Etroplus*

*maculatus*. *Clupid* sp. and *Mystus vittatus* had a length of about 4 cm each.

Comparison between number of prey items and biomass of different prey species of Pond Heron are shown in the Figure 4. Similar to the percent composition of different prey items, biomass also showed that *Channa* sp. and *Trachypauchen* sp. were the two major species which contributed greater percent (51%) of the diet. Though *Clupid* sp. constituted 14% in terms of number,

**Figure 4.** Comparison between percent prey items and biomass of different prey species in the regurgitated samples of Indian Pond Heron in Valapattanam Heronry (n=36).



the biomass contribution was only 4%. Similarly, percent contribution was low for *Mystus vittatus*, whereas biomass was high (13%). Though there was no change in the percent composition and biomass of primary prey species, there was variation in other species contribution. It was observed that fewer samples fell down during regurgitation. Also, it was too difficult to collect samples due to the pestering crows as soon as the prey items fell from the nest, crows picked them up. Indian Pond Herons feeding the nestlings with small sized *Rasbora sp.* and *Puntius sp.* was observed directly.

**DISCUSSION**

Indian Pond Heron is a sit and wait predator. It is chiefly a solitary ground feeder, feeding on animal matter, mainly aquatic in nature (Ali and Ripley 2001). Pond Herons were observed to forage on six different species of fishes, in which *Channa sp.* and *Trachypauchen sp.* constituted major percent (50%) in the diet. These two species were found in the marshy areas. *Channa sp.* is air breathing fishes (Hughes and Munshi, 2009) which might make them easy prey for herons. Similarly, diverse prey selection including fishes, insects, tadpole, arachnids, and crustatians by herons has been reported by Seedikkoya *et al.*, (2012).

Indian Pond Herons were observed to scavenge also. During the survey, a Pond Heron in the Stadium heronry located in middle of Kannur city were found to feed chicks with marine fish – Threadfin beam (*Nemipterus japonicus*). The bird might have scavenged the dead fishes from the nearby Ayikkara fishing harbor. In the harbor, many egrets and Pond Heron were seen regularly foraging on garbage that was thrown away from fishing boats. Seedikkoya *et al.*, (2012) also recorded scavenging behaviour of Pond Heron on Sardine heads.

Major foraging grounds of these birds were believed to be in paddy field, river banks, ponds and other water sources but now these birds are well adapted to garbage dumps in town, waste water canals *etc.* Increase in food source (insects, bugs and worms) may have attracted these birds to garbage.

The mean prey species length of Pond Heron was 5.4±0.38cm and the prey size ranged from four to seven centimeters. As Indian Pond Herons are chiefly opportunistic feeders, prey availability and temporal and spatial variation composition of prey might have resulted in the difference in the prey size. Earth worms were found in the stomach contents of a dead nestling in Lakshmpuram heronry. Thus pond heron diet consists of wide range of prey. More detailed study on diet composition is needed to know the prey species preference of the Indian Pond heron.

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