

## Ayanikkad Heronry: a new addition to the heronries of Kerala, India



### Breeding Indian Pond Heron

Heronries are defined as the breeding place for water birds. Heronries are formed by the aggregation of a large number of colonial breeders belonging to various families. In Kerala, large as well as small colonies composed of mixed species were recorded earlier (Subramanya 2005; Sashikumar et al. 2015). Kerala has about 15 species of resident and breeding water birds nesting in various heronries. Protection from predators, food availability are considered to be the major driving forces behind the communal breeding (Sashikumar et al. 2015). Heronries are noisy with foul smell, causing disturbances to the humans and provoke the public to deter the breeding communities. As the number of nests and the breeding

population provides an indication of the aquatic health, continuous efforts are needed to monitor the heronries. Along with that, documentation of the heronries provides information regarding the species breeding within an area, its current status and their existence. Earlier, heronry based studies were conducted throughout Kerala by Subramanya (2005) and Sashikumar et al. (2015). Later on Sashikumar et al. (2007, 2008, 2011) and Roshnath et al. (2013, 2015) monitored the status of heronries of Kannur and northern Kerala. Avifaunal studies of Kole wetlands of Thrissur (Sivaperuman & Jayson 2000), avifauna of Mangalavanam Bird Sanctuary (Jayson 2001), the status of Kumarakam heronry (Narayan et al. 2007),

assessment of Little Egret heronries in Malappuram, Palakkad, and Waynad districts (Seedikkoya et al. 2012 ) were the other major works carried out in the past. The aim of this study was to identify the breeding water bird species, population structure, nest abundance, preference to the nesting trees and threats posed by the breeding community of birds towards the inhabitants of Ayanikkad Island and vice versa.

### Study area

The Kole Wetlands is one of the largest, highly productive and threatened wetlands in Kerala and has

been declared a Ramsar Site (2002), Important Bird Area since 2004 and a High Value Biodiversity Area since 2009 and it comes in Central Asian Flyway of migratory birds. The Kole wetlands lies between 10.333–10.666°N and 75.966–76.183°E Thrissur District, Kerala, India. The Ayanikkad Island or 'Ayanikkad thuruthu' (10.536°N & 76.127°E) is located near Chittilapilly (5km) in the northern part of Thrissur Kole wetlands (Fig. 1). This heronry is a land area (about 4ha) surrounded by Kole wetlands. The southeastern part of the land area is composed of coconut and plantain plantations and

other area has 32 human settlements.

### Methodology

Heronry survey was carried out during June 2016 to October 2016 and June 2017 to December 2017. Direct observation method (Altman 1974) was adopted and counting was done with the help of binoculars (10x40) and a spotting scope. The heronry was visited twice every month and the species were identified using standard field guides (Ali 2003; Grimmet et al. 2011).

The information on the species of nesting bird, number of nests of each species, number of nesting trees, nesting tree species, position of the nest, nest height, DBH of nesting trees and geographical coordinates of the location using global positioning system were also recorded from the heronry. Secondary data regarding various aspects of heronry was collected from the local people.

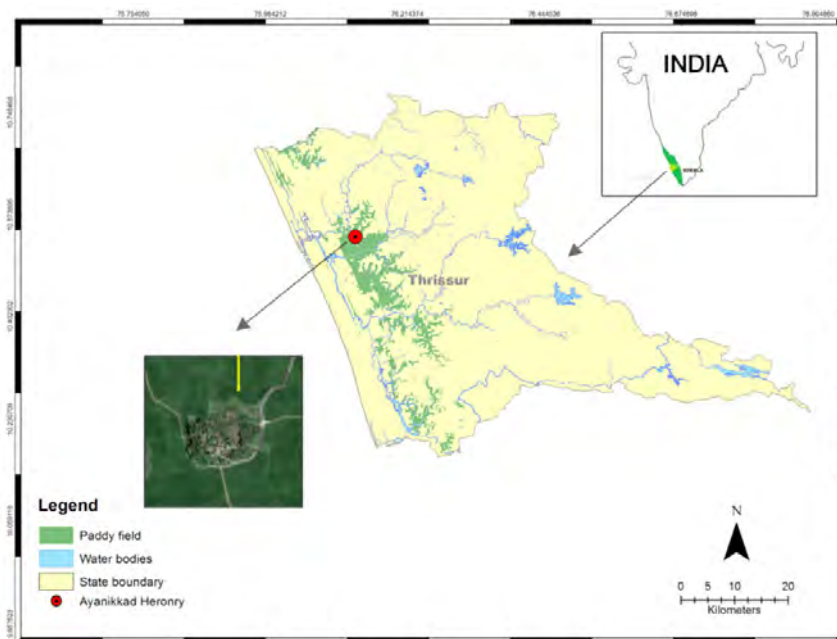


Fig. 1. Location of Ayanikkad heronry in Thrissur District.

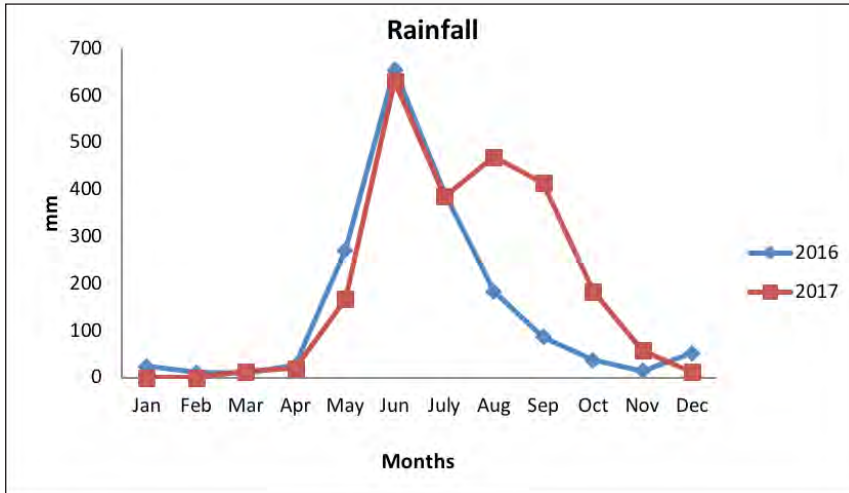


Fig. 2. Rainfall during the years 2016 and 2017 (Source: Kerala Agricultural University).

**Results**

Ayanikkad heronry has two species of water birds: Little Cormorant *Phalacrocorax niger* belonging to *Phalacrocoracidae* and Indian Pond Heron *Ardeola grayii* to *Ardeidae*. Little cormorant was the most abundant species with 61 nests in 2016 and 77 nests in 2017 while Indian Pond Heron as the least one with six and 48 nests in 2016 and 2017. In 2016, Little Cormorant population was highest with 61 nests (July) (Fig. 3) and with a population of 149 individuals (August) (Fig. 5). Little cormorant was found throughout the survey period but as in the case of Indian Pond Heron, it was seen only during the mid of June to September. A population

of 19 individuals of Indian Pond Heron (September) (Fig. 5) with nine nests (August) (Fig. 4) was recorded from this heronry; in 2017 heronry census, 77 nests (October) (Fig. 3) of Little Cormorant with a population of 163 individuals (Fig. 6) were recorded. Both Little Cormorant and Indian Pond Heron was found throughout

the survey period. Similarly, Indian Pond Heron population was highest during October with 81 individuals (Fig. 6) and with 48 nests in September (Fig.4).

Most nests of Little Cormorants were found during July and August (in 2016) and during September and October (in 2017) (Fig. 3). Whereas maximum number of nests of Indian Pond Heron was spotted during July and August (2016) and September and October (2017) (Fig. 4). Abundance of birds in the heronry during various months of breeding season in 2016 and 2017 are given above (Fig. 5 & Fig. 6). Usually with the advent of South-west monsoon, the waterbirds initiate breeding. The increase in water level in

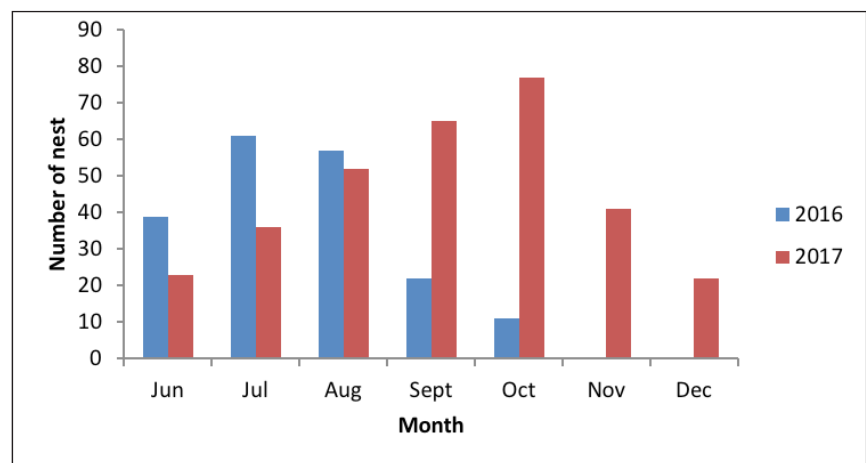


Fig. 3. Nest of Little Cormorant during 2016 and 2017.

**Table 1. Nesting tree species and number of nests during 2016 and 2017.**

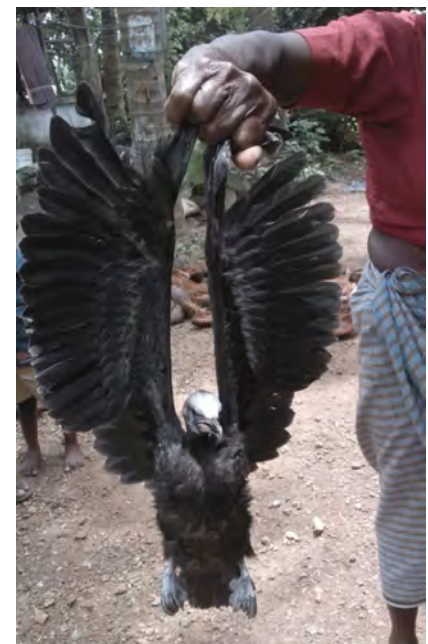
	Common name	Scientific Name	DBH	2016	2017
1	Mango tree	<i>Mangifera indica</i>	68	8	10
2	Tamarind tree	<i>Tamarindus indica</i>	34	4	8
3	Tamarind tree	<i>Tamarindus indica</i>	26	4	12
4	Mango tree	<i>Mangifera indica</i>	44	5	12
5	Mango tree	<i>Mangifera indica</i>	110	10	13
6	Jackfruit tree	<i>Artocarpus heterophyllus</i>	29	13	14
7	Takoli	<i>Dalbergia lanceolaria</i>	64	6	13
8	Tamarind tree	<i>Tamarindus indica</i>	94	1	-
9	Mango tree	<i>Mangifera indica</i>	182	-	2
10	Kaini	<i>Trema orientalis</i>	92	-	4
11	Banyan tree	<i>Ficus religiosa</i>	310	-	13
12	Mango tree	<i>Mangifera indica</i>	74	-	1
13	Kaini	<i>Trema orientalis</i>	75	-	18
14	Mango tree	<i>Mangifera indica</i>	79	16	5
		<b>Total number of nests</b>		<b>67</b>	<b>125</b>

the Kole wetlands leads to the entry of migrating fishes for breeding into the Kole wetlands and these fishes form the main constituent of the diet of breeding birds. In 2016, South-west monsoon struck Kerala during May itself and breeding started and by the end of June, the rainfall decreases, eventually leading to the end of the breeding season by October. Whereas in 2017, during May, the rains were less and this may have resulted in delayed nesting activities; breeding was initiated by the mid-June. Later, with the onset

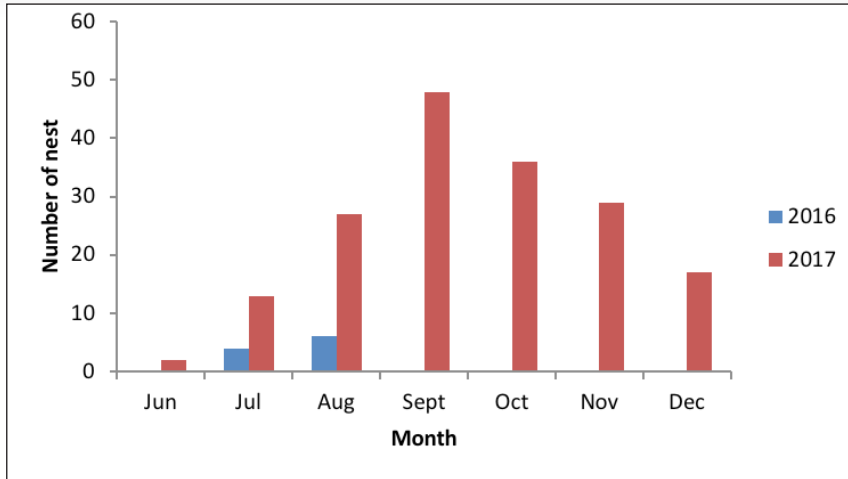
of North East Monsoon in Kerala (Fig. 2) many Little cormorants in the heronry prepared for the second breeding and several nests were spotted in October.

The Ayanikkad heronry comprises 14 nesting trees belonging to six species (Table 1). Little cormorants nested on all trees species except *Ficus religiosa* whereas Indian pond heron selected all the tree species. Nest occupancy (%) of Little Cormorant and Indian Pond Heron in the various trees during the 2016 and 2017

is given in Table 2. The study recorded a vertical alignment of the nesting birds in the same tree. In



**Poaching of Little Cormorant.**



**Fig. 4. Nest of Indian Pond Heron during 2016 and 2017.**

several trees where Little Cormorant and Indian Pond Heron nest together, the Indian Pond Heron nest in the lower canopy along the main branches and Little Cormorants nest in the upper canopy. Indian Pond Heron nests were recorded in the trees which are within the human settlements while Little Cormorants were seen both inside the human settlements and along the fringes of the island. Most of the Little Cormorant nests, however, are found inside the human settlements. In general, Indian Pond Heron nests are constructed ( $8 \pm 2.5$  m higher from the ground) using sticks of various sizes arranged in a peculiar fashion and kept along the main branches of the tree. Little Cormorants construct the

nest ( $10 \pm 5.7$  m above the ground) using leaves and twigs, in a circular fashion and show strong preference to the mid and top canopy. Little Cormorant population construct nests close to each other, with an inter-nest gap of  $2 \pm 1.5$  m and that of Indian Pond Heron is about  $4 \pm 2.2$  m. The presence of House Crow *Corvus*

*splendens* and Greater Coucal *Centropus sinensis* were observed in the heronry but their predation on heronry birds was not observed. By the end of October (2016) and December (2017) the waterbird nests were occupied by house crows.

The inhabitants of the Ayanikkad Island were worried of the breeding community of birds. The foul smell and remnants of fishes and frogs falling down from the nests also creates several hygienic issues for the people. Apart from this, the dead and decayed birds and left out food materials attracted several insects like ants, bees, mosquitoes etc. Several inhabitants were affected with Dengue fever



**Poaching of Indian Pond Heron.**

(n=17) and in the prevailing situation the inhabitants were forced to deter the breeding colonies from the Island. They have experimented many measures like throwing stones, cutting down the branches of nesting tree, bursting of crackers etc. But all these mitigative measures were successful only during the initial stages. Later on, the inhabitants started the consumption of eggs and chicks. Ayanikkad Heronry was not recorded in the history of heronry census conducted so far in Kerala, so we are reporting this heronry as an addition to the heronries of Kerala.

## Conclusions and Recommendations

According to Asian Waterbird

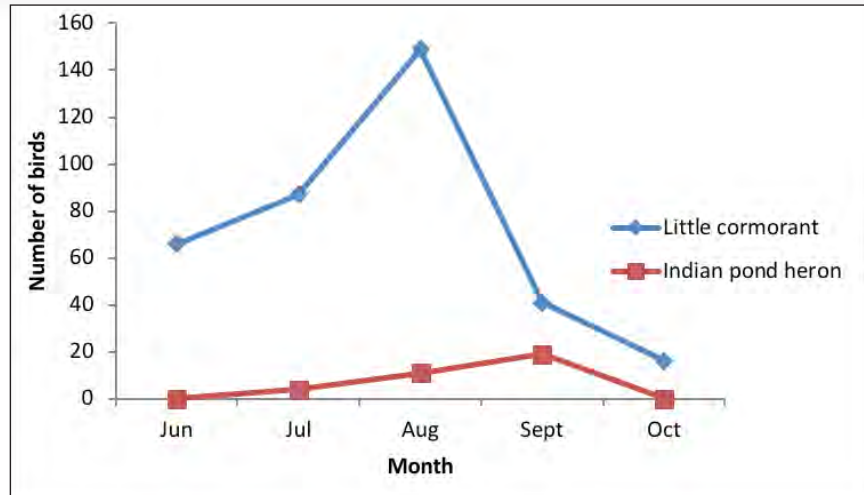


Fig. 5. Abundance of birds in the heronry during 2016.

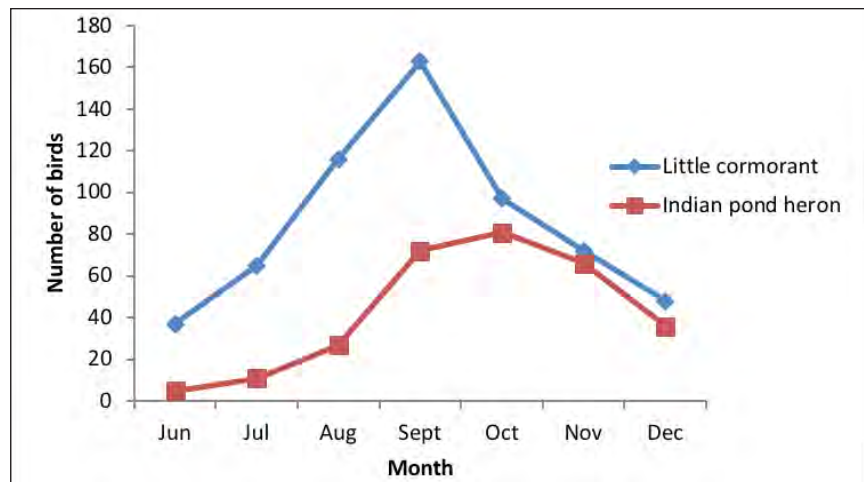


Fig. 6. Abundance of birds in the heronry during 2017.



Young one of Little Cormorant.

Census data regarding the past three decades, Little Cormorants as well as Indian Pond Heron population is on decreasing trend in Kole wetlands (Nameer et al. 2015). Monsoon does impact the breeding cycle of waterbirds and the water level of Kole wetlands is also having an important effect on the breeding of waterbirds. In

**Table 2. Nest occupancy (%) in different trees during the 2016 and 2017.**

	Tree species	2016		2017	
		Little cormorant	Indian Pond heron	Little cormorant	Indian Pond heron
1	<i>Dalbergia lanceolaria</i>	9.84	0.00	15.58	2.08
2	<i>Tamarindus indica</i>	11.48	33.33	20.78	8.33
3	<i>Mangifera indica</i>	57.38	66.67	38.96	27.08
4	<i>Tremaorientalis</i>	0.00	0.00	11.69	27.08
5	<i>Ficus religiosa</i>	0.00	0.00	0.00	27.08
6	<i>Artocarpus heterophyllus</i>	21.31	0.00	12.99	8.33

2017 the intensity of rain was heavier than in 2016 and also with the timely intervention of environmentalists, illegal fishing in monsoon flood plains were decreased and the fish population was more compared to the past (Greeshma P., pers. obs.). Thus the waterbirds were able to undergo second breeding. Indian pond heron population had increased compared to cormorant population in the Ayanikkad heronry (n=81). Trees (exclusively Banyan tree and tamarind tee) with thick canopy serve as the best nesting place for the pond herons. The major part of the heronry tree species is composed of *Mangifera indica* (42.86%). As most of the mango trees are within human settlements both species show highest affinity

to these trees for breeding. Bird droppings with foul smell contaminate all the water sources inside the island and the people were forced to cover all the wells. The leaves of vegetables and plantain were covered with the dropping and people

were not able to use these leaves for cooking purposes. People opined that, the acid in the bird droppings lead to the wilting of several plants and leaves of coconut trees. In order to deter the birds, inhabitants practiced several techniques. Consumption



**Leaves contaminated with the dropping of breeding birds.**

of eggs and chicks are the major anthropogenic disturbances faced by the breeding community, which in turn leads to the population reduction. Irrespective of all these disturbances, 2017 heronry census data proved that waterbirds can withstand the anthropogenic stress and hindrances. Awareness programmes and incentives to the inhabitants should be initiated for the betterment of the conservation of the heronry and also effective hygienic and health care measures should be taken to decrease the problems due to the breeding birds.

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