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Short Paper

First nesting record of Western Reef-Heron *Egretta gularis* (Bosc, 1792) on the South-Western Indian coast

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Abstract The Western Reef Egret (*Egretta gularis*) is a predominantly coastal-breeding bird species, with its breeding grounds primarily observed in Gujarat, India. The study presents a noteworthy observation, as for the first time, the nesting of Western Reef Egret is reported from the southwest coast of India. Regular heronry surveys across various regions of India have contributed significantly to our understanding of water bird nesting patterns. The nesting of Western Reef Egrets on trees within an urban multi-species heronry, situated amid a densely populated human settlement is documented. The white morph was observed in the heronry, where the pair laid three eggs and left the nest with the three white morph hatchlings eventually. This report highlights an unusual nesting behaviour of Western Reef Egrets in an urban setting, emphasizing the importance of such unique habitats for bird conservation efforts.

Keywords: breeding, *Egretta gularis*, nesting, Western reef heron white morph, urban heronry

1 Introduction

The Western Reef Heron (WRH) or Western Reef Egret (*Egretta gularis*) is a medium-sized heron found almost exclusively in coastal areas. It has a distribution that spans from western Africa, encompassing Mauritania to Gabon, to Eastern Africa, extending southward to Kenya and Tanzania, and northward to the Red Sea, Persian Gulf, and India (del Hoyo *et al*. 2020). These birds are resident in India, mainly on the west and south-east coasts (Grimmett *et al*. 2011). Initially considered a subspecies of the little

Egret (*E. garzetta*) (Turner 2010), the WRH is known to interbreed at times (Kayser *et al*. 2000; Qninba *et al*. 2011).

During the breeding season, WRH exhibit long, thick bills that are somewhat decurved at the tip, displaying varying proportions of yellow and black. Their legs appear duller brown, with a yellowish tinge on the foot, extending to the middle of the thigh. Some individuals may develop blackish bills and legs during the breeding season, with yellow feet and lower tarsus that transition to orange or red during the height of courting (Dubois and Yesou 1995). WRH are known to breed in coastal wetlands (Grimmett *et al*. 2016) with peak nesting occurring in the summer. In contrast, Little Egrets breed at Gujarat Coast in India during the monsoon season. The differences in their breeding timing reduce the chances of possible introgression between these closely related species (Naik *et al*. 1981). However, instances of WRH breeding in mixed heronries during the monsoon have also been reported (Ali 1954).

The nesting distribution of the WRH remains poorly understood (Naik *et al*. 1981) and it has been suggested that the bird "possibly migrates locally to special areas" for breeding (Ali and Ripley 1968). Breeding reports within the Indian subcontinent have primarily been documented in Karachi (Eates 1926), Kutch, Gujarat (Ali 1954), Nellore, Andhra Pradesh (Kirkpatrick 1961), and Sri Lanka (Henry 1971). Subsequently, numerous additional nesting incidences were reported in Gujarat and Andhra Pradesh (Naik *et al.* 1981, Dharmakumarsinhji 1984, Parasharya and Naik 1988, Naik and Parasharya 1987, Parasharya and Naik 1990, Prasad 1992, Subramanya 1996, Tere 2004).

These herons are observed nesting exclusively (Naik *et al*. 1981) or in groups alongside other Ciconiiform birds (Parasharya and Naik 1990). Nesting sites include mangroves and trees in creeks, lakes, and salt pans (Ali 1954, Kirkpatrick 1961, Naik and Parasharya 1987, Tere 2004) and have even been reported in urban areas (Eates 1926, Naik *et al*. 1981, Dharmakumarsinhji 1984). Despite the widespread presence of WRH along the coastal areas of Kerala, no breeding records have been reported to date. The present study aimed to document nesting observations of Western Reef-Heron in selected heronries on the South-Western Indian coast.

2 Material and Methods

2.1 Study area

Vaddy heronry is situated in and around Vaddy fishing harbor (8°52'49.66 N, 76°34'58.14" E) in the heart of Kollam city, Kerala, India. Adjacent to the coastal line, a four-lane coastal highway runs, while on the opposite side lies a densely populated human settlement, housing numerous nesting trees for heronry birds. This site serves as a mixed-species heronry, accommodating Little Egrets and Indian Pond Herons (*Ardeola grayii*) during the nesting season (Sarlin *et al*. 2022, 2023).

Neendakara heronry, on the other hand, is found in and around the Neendakara fishing harbor at coordinates 8°56'18.32" N, 76°32'33.78" E, situated on the city limits

of Kollam. Notably, heronry birds, such as Little Egrets and Indian Pond Herons, exhibit colonial nesting behavior (Sarlin *et al*. 2022), occupying nearly every tree in the vicinity, which often leads to nuisances for residents and commuters due to their droppings.

2.2 Methodology

These studies were conducted as part of the Annual Heronry Survey of Kerala conducted in Kollam since 2019 (Roshnath *et al*. 2020), employing the cold search method (Sutherland *et al.* 2004). To observe the nest and its occupants, a Nikon D500 DSLR camera equipped with a Sigma 150-600 mm tele lens was used, positioned on the rooftop of a nearby building. The WRH nests were observed thrice a week or more frequently during the breeding season in 2022.

3 Results and Discussion

On July 31, 2022, at the St. Sebastian's Church premises of Neendakara heronry, two pairs of white morph Western reef herons were observed constructing nests alongside Little Egrets in teak (*Tectona grandis*) trees. Similarly, on September 10, 2022, another nest was discovered in a *Melia dubia* tree at the Vaddy heronry. Unfortunately, all these nesting attempts were unsuccessful due to adverse weather conditions. Heavy rains caused the destruction of the former nests, and the latter one was predated by a House Crow (*Corvus splendens*). Notably, all the observed birds exhibited yellow coloration extending beyond their tarsus.

Earlier on 02.09.2022, a nesting pair of WRH was found in another *Melia dubia* tree that was already hosting two Little Egret nests. The male WRH displayed a deep yellow colour on its feet, extending most of the tarsus (Figure 1), while the female exhibited less extended yellow coloration.

The pair was observed inspecting the vertical fork of a branch. The male bird was seen collecting twigs and passing them to the female, who then used them to construct the nest. We were able to identify the male and female birds based on the extent of yellow coloration on their tarsus, which we witnessed during mating. Multiple copulations occurred on September 3rd, 5th, and 6th, as shown in Figure 2, throughout the nest-building process.

The female would perch on the nest and received branches/twigs from the male on its beak. The female would then carefully place the collected materials on the forked branch. To create a platform, it used its beak and legs to twist or interlock the sticks, securing the nest's structure (Ali and Ripley 1987, Parasharya and Naik 1988). Similar division of labour during nest building has been observed in other Ardeidae species (Meanley 1955, Lamba 1963, Ali and Ripley 1968). This system of division of labor may have evolved to ensure the nest's continuous protection (Blaker 1969).

Fig 1. Male Western Reef Heron, at Vaddy heronry, Kollam, Kerala

Fig. 2. Mating behaviour of Western Reef Herons observed at Vaddy heronry, Kollam, Kerala

After the platform was completed, the male bird ceased to hand over nesting material directly to the female. Instead, it dropped the materials onto the platform, and the female would then pick and arranged them as needed. Approximately 6 days after the

start of nest construction, the nest was finished, and the female began incubating the eggs. The first egg was laid on September 8th, and by September 16th, three eggs were recorded in the nest. During the incubation period, the female primarily tended to the eggs, leaving the nest only for feeding purposes. Both members of the pair made sure that the nest was constantly attended to, never left unattended.

During incubation, the incubating bird occasionally left the nest but remained in proximity, likely to adjust the incubation temperature. It was often seen standing on the nest, hunched over the nest with its wings spread out like an umbrella, providing shade to shield the eggs from direct sunlight. In times of rain, the incubating bird did not leave the nest, ensuring the eggs remained protected.

Around October 4th, 2022, two chicks were observed, and two days later, on the next visit, a third chick was recorded. The exact hatching date of the third chick was unclear, whether it happened on the day of observation or earlier. The total time taken for hatching was approximately 24 days.

Fig. 3: White morph Western Reef Heron chicks perching outside the nest at Vaddy heronry, Kollam, Kerala

Even after the eggs hatched, the pair continued to build and maintain the nest. About three weeks later, around October 25th, the chicks started venturing out of the nest. At this stage, the chicks exhibited white plumage. By the 4th week, around November 3rd (as shown in Figure 3), the chicks were able to fly short distances. The male bird was responsible for fetching food for the offspring, and at times, the female would collect food from the male and feed the young ones. As the chicks grew, both the male and female took turns foraging and feeding the young ones. During the night, while the female was brooding, the male would typically sit on a nearby branch. However, male brooding during the night was a rare occurrence. All three chicks successfully fledged

and left the nest at around 5-6 weeks of age, with the first chick fledging on November 20th. All the chicks exhibited white plumage.

During the chicks' fledging period, another pair of white morph WRH was observed building a nest on the same tree. It is noteworthy that all the Reef Heron nests mentioned in this study were found in urban localities frequently visited by many people. Similar observations of WRH nesting in urban areas were also reported by Naik *et al*. (1981) in Gogha and Bhavnagar, Gujarat, India.

Naik *et al*. (1981) previously observed that nesting pairs of WRH often exhibited the same colour phase, indicating that both partners were either dark or white morphs. However, there were also instances of interbreeding between the two-colour phases. The dominance of grey forms (n=22) compared to two white forms in the salt pans of Gujarat was reported (Tere 2004). Dharmakumarsinhji (1984) noted that nesting pairs with combinations of white morphs and slaty (dark morph) pairs were common, and various combinations of white, slaty, and grey forms were observed. Moreover, he highlighted that even though both parents may be slaty, their offspring could be white or mixed, and the same was true for white parents, resulting in both slaty and white young ones in the same nest.

4 Conclusions

This study represents the first recorded instance of Western reef heron nesting in South India. Further research focusing on heronries with mixed species, especially those including white egrets could contribute to the identification of additional nesting sites and enhance our understanding of their nesting behaviour and ecology.

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