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Pathissery John Sarlin[1], Sancia Morris[2], Amal Krishnan S[3], Oygan J[1], Savio Morris[4], Sandie Morris[5] & Polycarp Joseph[5]*

[1]Department of Zoology, Fatima Mata National College (Autonomous), Kollam, University of Kerala, India.
[2]Institute of Chemical Technology Mumbai, IOC Bhuvneshwar Odisha, India
[3]Mar Ivanios College (Autonomous), Thiruvananthapuram, India
[4]Trinity Lyceum, Kollam, India
[5]Kollam Birding Battalion, Kerala, India
**email: sanciamorris@yahoo.com*

Abstract

The Grey Heron *Ardea cinerea* is a large wading bird indigenous to temperate areas of Europe, Asia and Africa; it plays a vital role as an environmental indicator due to its status as a top predator in freshwater ecosystems. Despite the presence of numerous heronries in India, breeding records for this species are notably limited. This study reports the first successful urban nesting of the Grey Heron in South Kerala, India. Observations were carried out at Ashtamudi Lake, recognized as a Ramsar Wetland of International Importance, where a pair successfully raised three fledglings on a *Samanea saman* tree in a busy urban setting. This breeding event, which occurred outside the conventional monsoon season and in an urbanized area, emphasizes the species' adaptability and potential for successful synurbanization. The findings offer insights into the breeding ecology of the Grey Heron, its nesting behaviours in urban environments, and its resilience in the context of human-induced changes.

Introduction

The Grey Heron *Ardea cinerea* is a large, long-legged wading colonial bird native to temperate Europe, Asia and Africa. It belongs to the heron family Ardeidae (Ogorek et al. 2022). This species serves as an important 'indicator species' for environmental monitoring of pesticides and other pollutants due to its role as a top predator in freshwater ecosystems (Cooke et al. 1982, Scharenberg 1989, Newton et al. 1993). The big, abundant and gregarious piscivorous bird species is viewed as a pest by aquacultural interests in some countries (Martínez-Vilalta et al. 2020). While the Grey Heron is typically solitary, it occasionally forms small colonies, but during nesting, it displays gregarious behaviour (Ali & Ripley 2001). The colonial breeding habit, with nests often prominent in the canopy of tall trees, facilitates the counting of heron nests, making it relatively straightforward. For example the Heronries Census, conducted in the UK since 1928, provides the longest continuous time-series for any breeding bird (Marchant et al. 2004).

The Grey Heron has four subspecies (Martínez-Vilalta et al. 2020) of which two occur in India (Rajeevan et al. 2004) *Aredea cinerea cinerea* and *Ardea cinerea restirostris (=jouyi*). Martínez-Vilalta et al. (2020) considers that the Indian and Sri Lankan population belongs to the nominate subspecies *Ardea cinerea cinerea.* In India, the breeding period for the Grey Heron is not uniform; it spans from March to June in Kashmir, from July to October in the northern regions, and from November to March in the southern areas (Ali & Ripley 2001). Grey Herons breed in Kerala (state in Southwestern India), during the southwest monsoon season in June-August (Rajeevan et al. 2004, Roshnath et al. 2014).

Despite the fact that there are many heronries in India, there are few reported breeding records of Grey Heron (Subramanya 1996, 2005a, 2005b). Only 20 (5.5%) of the 360 locations studied throughout all of India had Grey Herons with breeding records (Subramanya 1996). It nests at several sites in Gujarat (Trivedi & Parasharya 2019). It is known to breed in Rajasthan (Sharma 1996; Bhatnagar & Shekhawat, 2014), Maharashtra (Kurhade 2004, Pande 2002), Karnataka (Subramanya 2005a) and Kerala (Rajeevan et al. 2004, Roshnath et al. 2014, Venugopalaprabhu et al. 2022). The paper reports photographic evidence of the Grey Heron breeding in South Kerala, India, provides descriptions of the characteristics of the urban heronry, and discusses differences in the breeding season.

Observation

A solitary pair of Grey Heron was found nesting on a Rain Tree *Samanea saman* overhanging the Ashtamudi Lake (area 61 km^2), a Ramsar Wetland of International Importance in Kerala, India (Ramsar Sites Information Service 2002). The tree grew on the lake shore with its canopy above the Thevally Bridge (8°54'14.53"N, 76°34'45.51"E). This bridge crosses the lake on the busy Kollam-Theni National Highway. The lake supports fishing activities, tourism and a ferry service. Visitors undertake trips into the backwaters in specially constructed wooden slow boats or houseboats because of the lake's mesmerising picturesque splendour and the surrounding foliage.

The nesting site of the Grey Heron is in the middle of the city of Kollam, a populous urban agglomerate, on the southwest coast of India (Pathissery et al. 2022). Within 250 m of the nest-site is a busy pilgrim centre with roadside fish vendors doing brisk business, a school, several tourist cottages and hotels.

On 19 January 2023, five Grey Herons were seen on the tree, of which a pair was seen mating on a partially built nest. On our subsequent visit, three days later, the birds and the nest were missing. On 3 February 2023, a pair of Grey Herons were observed building a nest on a different branch. It could not be ascertained if it was the previous pair renesting (Figure 1). A platform was built of twigs on the fork of a branch by 9 February, and four eggs were laid by 16 February. Three chicks (Figure 2) could be seen on the nest by 17 March, the fate of the fourth egg was unknown. All the three fledglings left the nest by 14 April 2023. The activities of the birds were observed from the bridge, at eyelevel, with binoculars and important stages in their breeding were photographed.

Discussion

This is the first report of successful nesting of Grey Heron from South Kerala, India. Though a nest was reported in 2022 from the same tree, the breeding attempt failed due to disturbance. This is the first record of the bird breeding in an urban location in India. The breeding of this species in Kerala was previously recorded only from

Figure 1: A Grey Heron *Ardea cinerea* on the partially built nest in a Rain Tree *Samanea saman* in Kollam, India.

Figure 2: Grey Heron chicks venturing out of their nest in a Rain Tree *Samanea saman* in Kollam, India.

Koduvally mangroves in Kannur district during the monsoon season (June–August) (Rajeevan et al. 2004, Roshnath et al. 2014). The breeding record reported here was in January–March, outside the monsoon season, and in an urban context.

Synurbanization refers to the way in which species have adapted to the hazards to which they have been exposed as a result of urbanization (Birnie-Gauvin et al. 2016). The Grey Heron is a species in which progressive synurbanization, has been observed (Zolkos et al. 2010). For example. in Europe, it has been recorded breeding and foraging close to human residences and at fishponds (Cramp 1998, Manikowska-Slepowronska et al. 2010, Zolkos et al. 2010). Cities can be an unused ecological niche for this species, offering both access to many feeding grounds on water reservoirs and watercourses, as well as convenient nesting sites, e.g. old, species-diverse woodlands (Przymencki et al. 2019).

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