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BREEDING AND ECOLOGICAL ASPECTS OF GREAT EGRET (*ARDEA ALBA*) IN NORTH AND NORTHEASTERN BANGLADESH

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ABSTRACT: The nesting and breeding ecology of the Great Egret was studied in north and northeastern Bangladesh from 2017 to 2023. Out of 199 colony sites, 111 (55.78 %) were actively breeding, 38 (19.10 %) served as night roosts, and 50 (25.12 %) were abandoned. The active breeding colony sites covered a total of 92.12 hectares, with the majority situated on private land (89.92 ha) and only a small portion on government land (2.20 ha). The highest number of active breeding colonies occurred in Naogaon (n = 22), followed by Sylhet (n = 14) and Habiganj (n = 9), while Bogura, Natore, Rajshahi, and Jamalpur each had only one (n = 1). Of the 5,755 nests counted, the largest proportion was in Naogaon (20.94%), followed by Netrokona (17.74%) and Sylhet (7.91%), with the lowest in Bogura (0.21%). Active breeding colonies were predominantly in paddy field-dominated habitats (71.17%, n = 79), with smaller proportions in wetlands (9.91%, n = 11), mixed agriculture (9.01%, n = 10), tea gardens (4.50%, n = 5), orchards (2.70%, n = 3), and homestead areas (2.70%, n = 3). Breeding occurred from April to September, with colony sizes ranging from 2 to 302 nests. Nesting occurred on 1,258 plants across 34 species, with a preference for *Bambusa* spp. (40.31%), followed by *Mangifera indica* (15.57%), *Swietenia mahagoni* (8.98%), and *Tamarindus indica* (8.06%); the average nesting height was 10.39 ± 2.41 m (range 5.2-16.41 m, n = 1,258). Clutches averaged 2-4 eggs (mean 2.78 ± 0.71, n = 18), laid over 4-9 days. The incubation period lasted 23–28 days, chicks fledged after 40-55 days, and overall breeding success was 74%.

Key words: colony, nesting site, population, nest, habitat, nesting tree, egret, breeding, ecology.

INTRODUCTION

The Great Egret (*Ardea alba*) is widely distributed throughout temperate and tropical regions of the Americas, Europe, Africa, and northern Asia, typically avoiding arid desert environments (BirdLife International 2016). It has an

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uncertain population trend and is categorized as Least Concern globally (IUCN 2016). Although the country's population hasn't been evaluated, Bangladesh is likewise regarded as Least Concern (Thompson 2015). Great Egrets migrate in different ways depending on their locations. In response to rainfall patterns, tropical populations either exhibit partial migratory or typically stationary (Brown *et al.* 1082). Populations in the Palearctic and Nearctic migrate seasonally between breeding and wintering regions (Flint *et al.* 1984; del Hoyo *et al.*1982). Interestingly, some individuals stay within 50 km of their breeding sites, and post-breeding dispersal distances are very modest, averaging about 100 km (Wlodarczyk *et al.* 2020). The Great Egret shows post-breeding dispersal from nesting locations in Bangladesh; however, its migratory routes are yet unknown. A wide range of inland and coastal wetlands, such as croplands, waterways, salt flats, muddy flats, coastal marshes, mangrove islands, estuaries, aquaculture wetlands, and water bodies, are home to this species (del Hoyo *et al.* 1992; Kushlan and Hancock 2005). There is regional variation in the breeding season's timing (del Hoyo *et al.* 1992). Breeding usually takes place in the spring or early summer in temperate regions, coinciding with times when food supply is at its highest. on the other hand, breeding may take place at any time in tropical places, where food supplies are more reliably accessible year-round and is frequently driven by rainfall patters rather than seasonal variations (del Hoyo *et al.* 1992; Smith 1997; Powell and Powell 1986; Perrose *et al.* 2008). As a colonial nester, the Great Egret frequently establishes mixed-species colonies (del Hoyo *et al.* 1992; Kushlan and Hancock 2005). Nesting usually takes place in plants or tress, mainly in places that have been altered by humans, like urbanized swamps, farms, and farming ponds. April to September is the breeding season. The simple oval nest made from twigs and foliage, and one to fifteen meters above water (Brown *et al.* 1982; Kushlan and Hancock 2005). Typically, a clutch contains three to five pale blue eggs (Muzaffar 2008). The incubation period, which lasts roughly 25-26 days, is shared by both parents (Voisin 1991). Numerous studies have documented the Great Egrets breeding biology in great detail, offering through insights into aspects like nesting behavior, reproductive success, and ecological factors influencing breeding patterns (Palmer 1962; Pratt 1970, 1972; McCrimmon 1974; Tomlinson 1976; Wiese 1976; Maxwell and Kale 1977; Mock 1978; Voisin 1983; Pratt and Winkler 1985; Wallace *at al.* 1992; Neinayaz *et al.* 2011). However, there is a dearth of information regarding the Great Egret' nesting distribution and breeding ecology in Bangladesh. A thorough analysis of the literature revels a substantial research vacuum about the Great Egret's nesting distribution, breeding ecology and reproductive performance in Bangladesh. Although Kabir *et al.* (2019) reported that there were 80 Great Egret nests (70 active and 10 dormant) in northern Bangladesh, particularly in Saidpur, the colony has since been abandoned. Thus, the purpose of this study is to examine the Great Egret's breeding ecology in Bangladesh, with an emphasis on factors such as colony dispersion, population size, breeding ecology, preferred nesting plants, and conservation status. Comprehending these aspects is essential for filling in current information gaps and developing successful conservation plans for the species.

MATERIAL AND METHODS

The study was conducted in northern and northeastern regions covering 24 administrative districts of Bangladesh (Fig. 1), during March 2017 and December 2023. Multi-stakeholder Focus Group Discussions (FGDs) were conducted at upazila and union levels following Krueger (1998), and nesting sites were identified through extensive field visit, newspapers, eBird, social media with support from local activists, youth conservation groups, and union parishad chairmen. Breeding pairs were considered separate colonies if ≥400 m apart or divided by a significant habitat gap (Watts and Watts 2018). Field observations employed binoculars (10×42), GPS, laser rangefinder (Trupulse 200X), camera traps (GardePro, Scout Guard), drone, and digital camera. The use of drones, which are an efficient tool for the detection, inventory of breeding sites and monitoring of nests (Zbyryt 2019). Nests with young chicks or at least one adult were classified as active (Bibby *et al.* 2000). Population estimates were based on active nest counts conducted during the peak breeding period to assess nest (pair) numbers and distribution. Observers systematically recorded each nest tree's number, nest height, and total nests, tagging it with a unique number and paint to indicate it had been counted. Nesting heights were calculated through a Trupulse 200x laser rangefinder. Population trends were assessed using a minimum of four years of monitoring data by comparing annual counts of individuals or breeding pairs across multiple years for each colony. Trends were categorized as increasing, stable, or decreasing (gradual or rapid) based on the direction and magnitude of change. Colonies exhibiting a consistent increase in numbers were classified as *increasing*, those showing little or no interannual variation as stable, while colonies demonstrating a moderate decline (15–20% annual decrease) were considered gradual decreases, and those with a pronounced decline (20–50% annual decrease) were classified as rapid decreases. The six main habitat types are paddy fields (rice farming), mixed agriculture (varied dryland crops), homesteads (settlements), orchards (mango-dominated areas), tea gardens, and wetlands (ponds, rivers, marshes, lakes). For habitat classification, satellite imagery was reclassified and clipped to a 5 km buffer to analyze land cover types preferred by the Great Egret for colony formation, with each type assigned a unique identifier and its area and percentage calculated (Sundar *et al.* 2019). For regular monitoring, we marked 18 nests on five plant species: *Bambusa* spp., *Mangifera indica*, *Diospyros discolor*, *Artocarpus heterophyllus*, and *Dalbergia reniformis*, of which seven nests were monitored with trap cameras at three colony sites- Chanpukur Mission and Alidewna in Naogaon, and Lilapara in Khadimnagar, Sylhet. Each nest was equipped with a GardePro or Scout Guard camera for approximately 60 days, recording motion-triggered photos (one nest) and videos (six nests) at 4-minute intervals for detailed information on nest building, incubation, hatching, fledgling, etc. Data on nesting biology were collected in accordance with Brave *et al.* (2020). A nest was deemed successful if it produced at least one nestling or hatched one egg. Hatching success refers to the proportion of eggs that hatched (Kour and Sahi 2013; Katuwal *et al.* 2022). Fledgling success is the proportion of nestlings or chicks that successfully fledged (Cornell *et al.* 2011; Soliman *et al.* 2021). Breeding success means the proportion of eggs and hatched nestlings/chicks or fledgling that successfully fledged (Jaman *et al.* 2012; Katuwal *et al.* 2022). Coordinates of all nesting sites were mapped using ArcGIS 10.5 software.

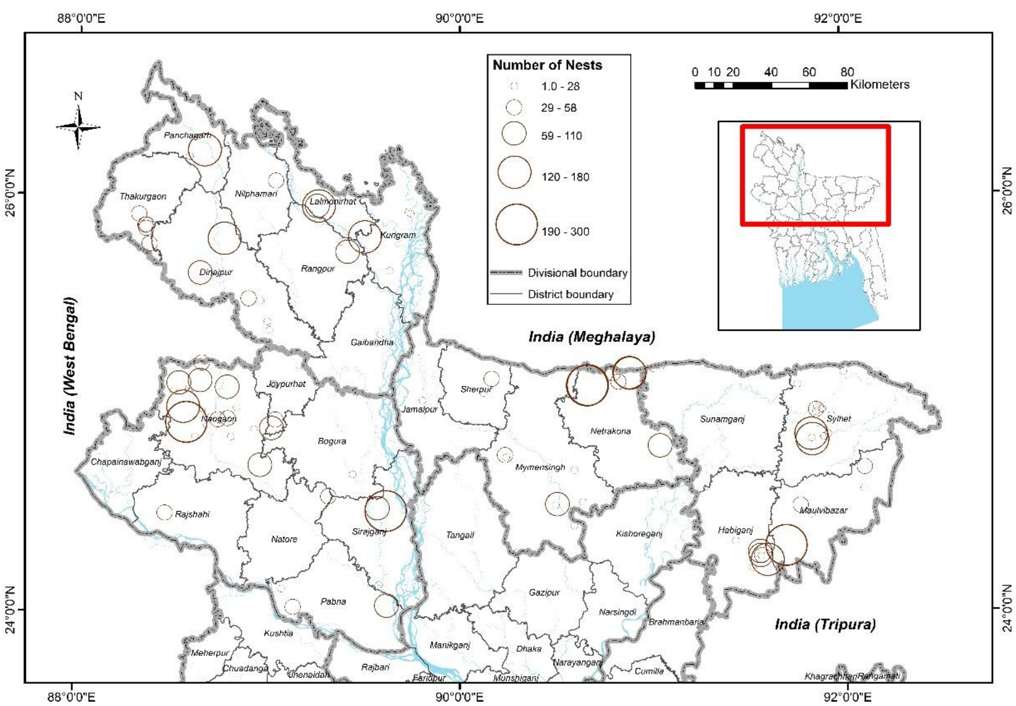

Fig. 1. GIS-based distribution map of the nesting sites of Great Egret in the study area (24 districts of Rajshahi, Rangpur, Mynensingh, and Sylhet division)

RESULTS AND DISCUSSION

Status and distribution: A total of 199 colony sites were identified of which 55.78% (n=111) were active breeding colonies, 19.10% (n=38) were night roosting, and 25.12% (n=50) were abandoned. The total area of active breeding colony sites was 92.12 hectares, predominantly situated on private land (89.92 ha), with a minimal presence on government land (2.20 ha). These colonies exhibit site fidelity, returning to the same nesting locations annually, provided the habitats remain suitable and undisturbed. The highest number of active breeding colonies was observed in the Naogaon district (n = 22), followed by Sylhet (n = 14) and Habiganj (n = 9), while Bogura, Natore, Rajshahi, and Jamalpur each hosted a single colony (n = 1) (Fig. 2A). A total of 5755 nests was counted and the highest percentage of nests was found in the Naogaon district (20.94%, n=1205 nests), followed by Netrokona (17.74%, n=1021 and 7 colonies), Sylhet (7.91%, n=455), and the lowest in Bogura (0.21%, n=12) (Fig. 2B). Active breeding colonies were identified in mixed species colonies alongside egrets, herons, cormorants, darters, storks, and ibises. All the nesting sites were associated with human settlements. Colony sizes varied in the study area, and ranging from 2 to 302 nests (51.85 ± 61.04) (Fig. 1). A declining population trend was observed in the majority of colonies (51.45%), comprising gradual decreases (37.86%) and rapid decreases (13.59%). Population stability was noted in 42.72% of colonies, while an increase was recorded in only 5.83% of colonies. The colony size shaped by number of available nesting plants and the safety.

A spatial concentration of breeding colonies suggests strong regional variation in colony density, likely driven by habitat availability, foraging opportunities, and disturbance regimes. Similar observations in other mixed-species heronry systems show that colony formation and persistence are strongly influenced by local habitat factors and human disturbance (Mashiko and Toquenaga 2018). The notably high concentration of Great Egret colonies in Naogaon District reflects the ecological suitability of the region's extensive rice fields, which provide abundant foraging opportunities and comparatively low levels of disturbance. These agricultural wetland ecosystems provide important feeding habitats, supporting available prey for the species breeding performance. Such habitat characteristics likely play a pivotal role in shaping the local density and spatial distribution of Great Egret colonies in the region.

Colony sizes in our study exhibited substantial variation among sites, consistent with comparative studies from different geographic regions that have also documented considerable differences in colony size and breeding population dynamics (Osborn 1978; López-Ornat and Ramo 1992; Marion 2009; Kabir *et al.* 2019; Zbyryt 2019; Shuford 2020; Rajni 2025). Our finding that many colonies are abandoned (25.12 %) yet many still remain active over years indicates a dynamic colony system. The reuse of the same nesting location annually given suitable habitat and low disturbance has been documented in mixed-species heron/egret colonies (Mashiko and Toquenaga 2018, Sadik *et al.* 2024). The fact that many of our colonies persist suggests good fidelity; however, the high abandonment rate indicates that when habitat suitability decreases or disturbance increases, colonies relocate or cease. Arboreal nest sites on private lands may thus be vulnerable to tree-felling, human encroachment, or other disturbance which can trigger abandonment (Erwin 1995). The overwhelming majority of private land that is home to active colonies highlights the need for management frameworks to include privately held properties in conservation efforts. Legally protected areas are important, but they may not include all of the colonial wader breeding locations. According to a South African assessment, many colonies are located outside of official reserves, making them vulnerable to erratic hazards such human disturbance, tree cutting, and nest loss (Harebottle 2019). Furthermore, the large percentage of colonies close to settlements poses a risk (disturbance, poaching, predation) as well as an opportunity (access to water and foraging). It is concerning when more than half of active breeding colonies are declining, since these patterns frequently point to decreased recruitment, distriburbance, or habitat deterioration. Colonies outside of protected networks and without wetland restoration were more likely to diminish, according to similar findings in Greece (Kazantzidis *et al.* 2024). Our findings support this pattern and highlight how vulnerable colonies on private property close to populated areas are in the absence of focused management or protection.

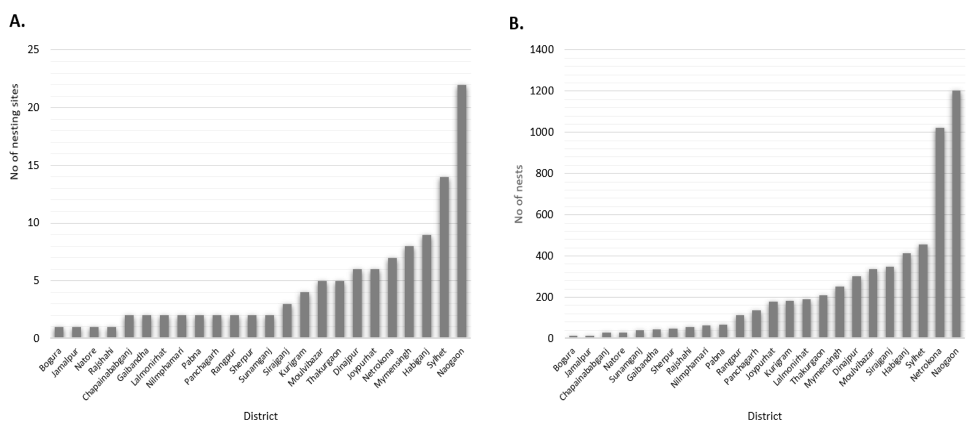

Fig. 2. No. of active breeding colonies/nesting sites (A) and no. of nests (B) among districts

Habitat and nesting tree/plant preferences: They build their nests in different habitat types depending on food availability and safe nesting places. The colonies' most preferred habitat or surrounding area was the paddy field.

About 71.17% (n=79) of active breeding colonies were located in paddy field-dominated habitats, followed by wetland-dominated habitats (9.91%, n=11), agriculture mixed (9.01%, n=10), tea garden (4.50%, n=5), less preferred habitat was the orchard (2.70%, n=3) and homestead areas (2.70%, n=3). The number of nesting pairs or bird population were recorded to be highest in paddy field-dominated habitat (8174 individuals and relative abundance 71.02%), followed by agriculture mixed (1204 and 10.46%), wetland (946 and 8.22%), tea garden (612 and 5.32%), orchard (372 and 3.23%) and the lowest preferred habitat was homestead (202 and 1.75%). Great Egrets nest in various plant types, with height preferences influenced by environment and human activity. A total of 5755 active nests were observed among 1258 plants of 34 species. They primarily favored Bamboo (*Bambusa* spp.) (40.31%), followed by Mango (*Mangifera indica*) (15.57%), Mahagoni (*Swietenia mahagoni*) (8.98%), Indian Tamarind (*Tamarindus indica*) (8.06%), and least preferred Chaste tree (*Vitex peduncularis*) with one nest (Table 1). Most plant species had relatively few individuals (median = 10), but some, such as *Bambusa* spp., had exceptionally high numbers, which increased the overall mean (37). The number of nests also varied widely (1–2320), indicating strong species-specific preferences or effects of tree availability. Tree species per nesting sites were generally few (median = 2), although a few species were utilized by many colonies (up to 63). Generally, Great Egrets nested on trees of varying heights, ranging from 5.2 to 16.4 m (10.39 ± 2.41, n =1258) (Fig. 3). The lowest height of the Great Egrets nesting was 3 m observed for a colony at a Bamboo cluster (*Bambusa* spp.), and the highest height was 22 m observed for the colony at an Indian Tamarind (*Tamarindus indica*), but most nests built between 9 m and 12 m, suggesting a preference for moderately tall trees offering safety and accessibility.

The diversity of Great Egret is supported by varied habitats, with nesting often selecting among available plant species, especially preferring tall trees for enhanced safety; while food availability within secure nesting environments plays a crucial role in habitat selection. In our research, we found that the paddy field or agricultural rice-dominated habitats are highly favored, supporting approximately 71.17% of colonies and 71.02% of the population. The herons and egrets in northwestern Italy obtained 80% of their food from agricultural habitats and hosted 76% of the waterbird population (Fasola and Brangi 2010). This information strongly supports our study. Rice fields are important wildlife habitats; however, intensive agricultural practices have reduced the population of farmland birds. As a high-level consumer, the Great Egret serves as an indicator of the overall biodiversity of rice fields (Choi 2025). Great Egrets primarily nest on a few dominant tree species. *Bambusa* spp. (bamboo) serves as the main substrate, providing about one-third of all nesting trees and roughly

40% of nests. *Mangifera indica* (mango) and *Swietenia mahagoni* (mahogany) are also important, each supporting hundreds of nests and together accounting for a large share of colony-level nesting. The primary nesting substrates in the study area are these common species. Extremely high nest densities per tree were supported by certain tree species. There were 57 nests on one *Melia azedarach* tree and numerous nests on two *Bombax ceiba* trees. Similar patterns were seen in *Ficus religiosa*, *Trewia nudiflora*, *Albizia procera*, *Terminalia arjuna*, and *Ficus benghalensis*, indicating that egrets prefer to congregate on large or structurally adequate trees. Patterns of disproportionate use can be found by comparing each species' percentage of accessible trees with its percentage of total nests. A few of species, such as *Melia azedarach*, *Ficus benghalensis*, *Tamarindus indica*, *Ficus religiosa* and *Bombax ceiba* maintain a disproportionately high number of nests despite contributing relatively few trees. This suggests that, in relation to their abundance, these species are especially significant nesting substrate, with a few high value trees supporting several nests and being crucial to the general structure of the colony. Nesting patterns seemed to be significantly influenced by tree height and canopy features. Tamarindus indica supported large number of nests per tree due to its tall structure and wide canopy, indicating that height and canopy structure are significant factors in nest-site selection. Bambusa spp., on the other hand maintained the greatest number of nests overall while having a relatively low average height. This contrast indicates that both tree availability and structural features such as height, canopy size, and accessibility jointly shape the nesting preferences of Great Egrets in different ways.

In Saidpur, Nilphamari the Great Egret nested in a Sacred Fig Tree (*Ficus religiosa*) at height of 32-34 feet or 9.75-10.36m and located in very close to human settlements (Kabir *et al.* 2019). Baker *et al.* (2015) reported the Great Egret nested on *Eucalyptus* spp, *Quercus agrifolia*, *Aesculus californica*, *Pinus radiata*, *Sequoia sempervirens*, *Cupressus macrocarpa*, *Quercus lobata*, *Pinus muricata*, Shrub that 0.5-5 m in height, *Schoenoplectus* or *Typha* spp, Snag in Northeastern South Dakota. Usually, the colonial waterbirds including Great Egrets preferred the nesting trees having strong branches with heavily forked. Similar observation by Naher (2014), Little Cormorants typically nest in closely spaced trees or plants with abundant forks.

Breeding: Breeding occurred between April and September but nest construction occurs from late April to July. Adult birds often form pairs, and both sexes take part in building simple oval nests on tall plants using twigs, sticks, and various plant materials. They typically lay 2-4 eggs (mean 2.78 ± 0.71 SD, n=18), and clutch size was completed in 4-9 days (Fig. 4: A, B, C). Incubation begins with the first egg laid and it took 23-28 days (mean 24.82 ±

1.60 SD, n=11) to hatch (Fig. 4: D, E, F) and both parents share the duty, but mostly by the female. Nesting success was 100%, with hatching success 88%. After hatching, the chicks were altricial, and needed warmth for 10 to 14 days (mean 11.78 ± 1.39, n=9) (Fig. 4: G, H, I). They remained in the nests until 18 to 22 days old (mean 19.79 ± 1.37, n=14) and started venturing out over the next 5 to 7 days. By around 30-35 days (mean 31.21 ± 1.53, n=14), they were rarely seen at the nest, but would return for parental feeding (Fig. 4: J, K, L). Both parents feed the chicks by regurgitating partially digested food into their mouths. Fledgling survived 84.09% and the breeding success was 74%. Fledgling became independent after about 40-55 days (mean 44.79 ± 4.32, n=14). So, the total duration of breeding time required for a pair were 99 to 118 days, but approximately 153 days spend in breeding sites.

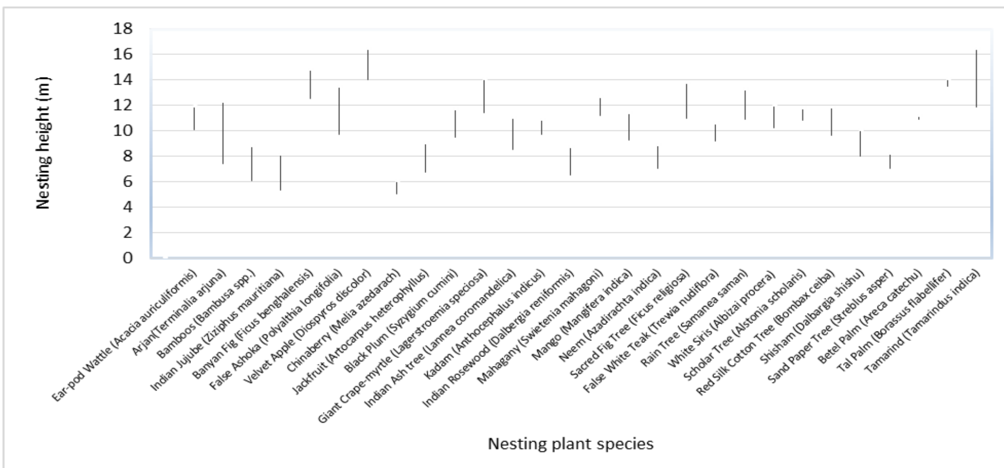

Fig. 3. Average nesting height of the Great Egret

In our observation, the breeding season of the Great Egret (*Ardea alba*) commenced in April and continued until September, with peak breeding activity occurring between June and July. A longer breeding duration (May to November) was reported by Kabir *et al.* (2019) at a single colony site in Saidpur, Nilphamari, and a similar period was also noted by Muzaffar (2008). Local environmental factors like as rainfall patterns, food availability, and habitat stability, are probably responsible for this variance in the start and extent of breeding between regions. According to Kushlan and Hancock (2005), breeding activities frequently take place during or following the rainy season, when prey like amphibians, fish and aquatic invertebrates are most plentiful. Overall, there is significant regional variance in the Great Egret's breeding season timing (del Hoyo *et al.* 1092). The results of baker *et al.* (2015) in northeastern South Dakota are compatible with the observed clutch size, which varied from 2 to 4 eggs (mean 2.78 ± 0.71). Pretelli *et al.* (2012) reported an average of 3.6 ± 0.5 eggs, while Muzaffar (2008) mentioned slightly greater clutch size, ranging from 3 to 5 eggs. The incubation duration varied from 23 to 28 days, which is line with earlier findings documented by Cadman *et al.* (2007), Watson (2012), Kabir *et al.* (2019), and Trivedi *et al.* (2025). The fledgling period, during which youngsters leave and return to the nests for feeding, ranged from 30 to 55 days in our study, which is consistent with the findings of Cadman et al. (2007) and McCrimmon *et al.* 2001. Watson (2012), on the other hand, observed a much shorter fledging period of 21 to 34 days, which contradicted our findings significantly. Our findings closely match the hatching success rate of 76% reported by Pretelli *et al.* (2012) in an Argentine Pampas wetland. On the other hand, based on 39 observed nests in Iran's Hara Biosphere Reserve, Neinavaz *et al.* (2011) reported lower hatching success rates of 0.54 in 2008 and 0.61 in 2009. The observed variation in hatching success may be explained by variations in the quality of the habitat, the availability of food, the climate, and local environmental stress such anthropogenic disturbances or predation. The fledging success per nest was 2.06, which is similar to the 1.87 fledglings per nest reported from 208 nests spread among eight colonis in the Florida Everglades (Frederick and Collopy 1989). Neinavaz *et al.* (2011), on the other hand found that fledging rates in Iran's Hara Biosphere Reserve were comparatively lower, at 0.61 in 2008 and 0.59 in 2009. In a similar vein, Baker *et al.* (2015) found that Great Egrets in northeastern South Dakota had a 50.7% fledging success rate and a 61.5% nesting success rate. These regional variances probably reflect variations in local disturbance conditions, climate trends, food availability and ecological circumstances. Compared to Neinavaz *et al.* (2011), who reported final breeding success rates of 0.50 in 2008 and 0.42 in 2009 in the Hara Biosphere Reserve, the overall breeding success seen in our study was greater. Our study area's substantially higher reproductive success could be the result of better nesting conditions, less pressure from predators, or more stable food supplies during the breeding season. While poor nesting conditions or increased nest fragility may lead to reduced reproductive success, higher reproductive success typically reflects good breeding environments and lower disturbance intensity. Variation may also result from variations in the sample size taken into account in each study, the state of individual nests, and the choice of observed nesting sites. Similar regional disparities in reproductive performance have been reported in other colonial waterbirds, underscoring the strong influence of ecological and environmental factors on breeding outcomes (Erwin *et al.* 1996; Kushlan and Hancock 2005). The onset and duration of breeding in Great Egrets are influenced by rainfall, as rainfall regulates food availability. A breeding pair typically spends about 99-118 days (n=18) in direct reproductive activities (from nest building to chick independence), but their total residency at the colony site may extend to approximately 153 days, as individuals arrive before nesting and remain after fledging. A similar observation was reported at Soor Sarovar Bird Sanctuary, Agra, India, where the nest occupation period of the Great Egret was at least 116 days, and overall nest occupancy in the heronry appeared to be regulated by rainfall (Jha 2012). The pre-egg laying period 32 days; Egg laying and incubation period 67 days; Chick rearing period minimum 84 days (Jha 2012).

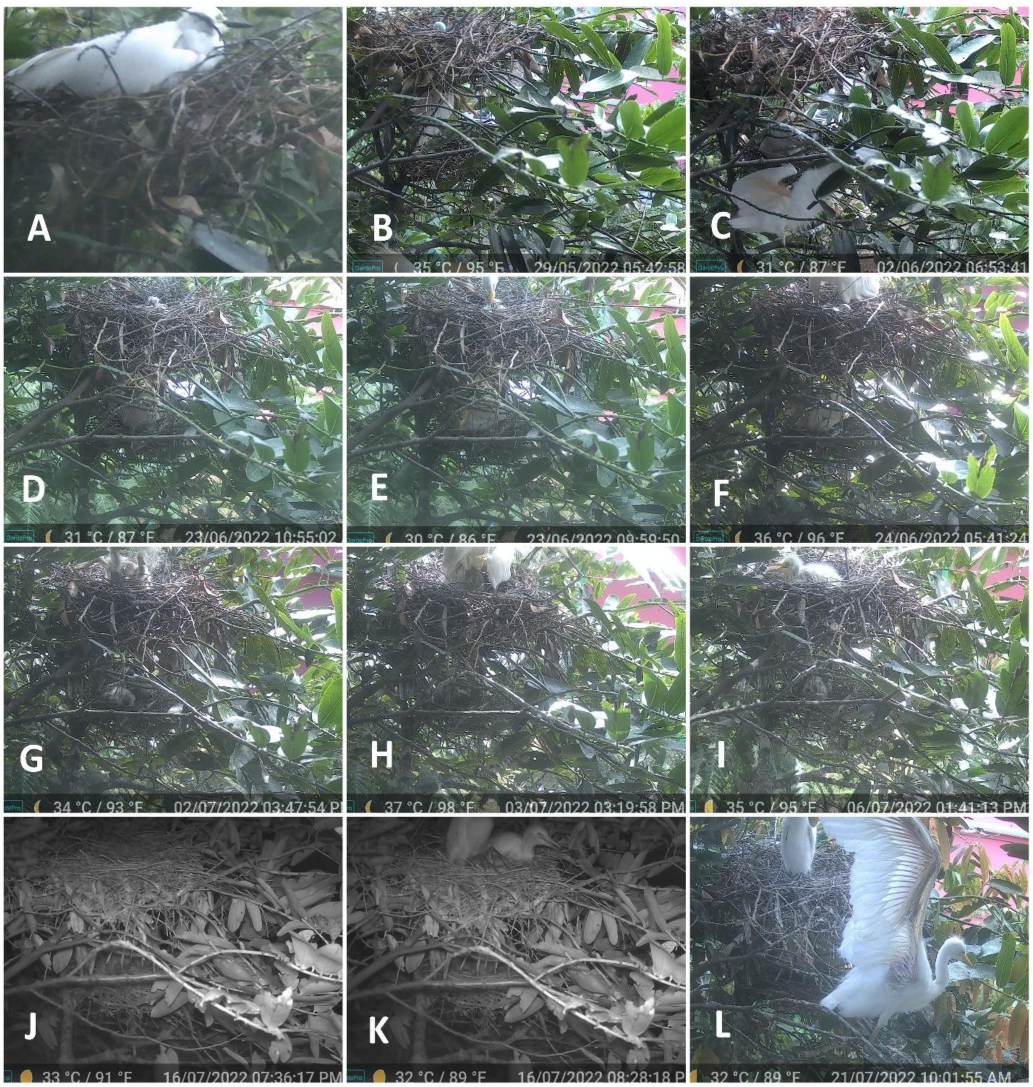

Fig. 4. Egg laying, incubation and fledgling of Great Egret captured in camera traps; Egg laying (A, B, C); hatching of eggs (D, E, F); warmth after hatching and parental care (G, H, I); fledgling movement from the nest and trying to fledged (J, K, L)

Table 1. Nesting tree/plant species preferences based on the total count of nests and no. of plants

Tree/plant species	No. of trees	No. of nests	Nesting sites	Average nesting height	Nests Per tree/plant	Nests Per site	Trees proportion	Nests proportion
Acacia auriculiformis	26	41	2	14.45	1.58	20.5	0.02	0.01
Terminalia arjuna	16	96	1	10.6	6	96	0.01	0.02
Vitex peduncularis	1	1	1	10.2	1	1	0.001	0.0002
Aegle marmelos	1	3	1	9.5	3	3	0.001	0.001
Bambusa spp.	459	2320	63	7.06	5.05	36.83	0.36	0.40
Crateva religiosa	1	2	1	9.7	2	2	0.001	0.0003
Ziziphus mauritiana	4	20	2	5.65	5	10	0.003	0.003
Ficus benghalensis	12	104	7	13.9	8.67	14.86	0.01	0.02
Polyalthia longifolia	14	23	1	12.2	1.64	23	0.01	0.004
Diospyros discolor	2	10	1	14.6	5	10	0.002	0.002
Melia azedarach	1	57	1	5.2	57	57	0.001	0.01
Artocarpus heterophyllus	75	198	12	7.63	2.64	16.5	0.06	0.03
Syzygium cumini	11	35	7	10.43	3.18	5	0.01	0.01
Lagerstroemia speciosa	5	13	1	14	2.6	13	0.004	0.002
Lannea coromandelica	27	60	1	9.5	2.22	60	0.02	0.01
Anthocephalus indicus	5	20	3	10.57	4	6.67	0.004	0.003
Phoenix dactylifera	6	2	1	10.5	0.33	2	0.005	0.0003
Limonia acidissima	2	3	1	8	1.5	3	0.002	0.001
Dalbergia reniformis	22	49	2	7.9	2.23	24.5	0.02	0.01
Swietenia mahagoni	200	517	16	12.08	2.59	32.31	0.16	0.09
Madhuca longifolia	1	2	1	12	2	2	0.001	0.0003
Mangifera indica	186	896	28	10.35	4.82	32	0.15	0.16
Azadirachta indica	12	47	2	7.9	3.92	23.5	0.01	0.01
Ficus religiosa	14	198	10	12.35	14.14	19.8	0.01	0.03
Trewia nu	7	73	4	9.9	10.43	18.25	0.01	0.01

Tree/plant species	No. of trees	No. of nests	Nesting sites	Average nesting height	Nests Per tree/plant	Nests Per site	Trees proportion	Nests proportion
diflora								
Samanea saman	25	210	8	12.26	8.4	26.25	0.02	0.04
Albizai procera	15	129	6	11.52	8.6	21.5	0.01	0.02
Alstonia scholaris	3	11	2	11.5	3.67	5.5	0.002	0.002
Bombax ceiba	2	47	1	10	23.5	47	0.002	0.01
Dalbargia shishu	9	36	1	8.5	4	36	0.01	0.01
Streblus asper	4	11	2	7.3	2.75	5.5	0.003	0.002
Areca catechu	41	46	2	11	1.12	23	0.03	0.01
Borassus flabellifer	7	11	2	13.5	1.57	5.5	0.01	0.002
Tamarindus indica	42	464	14	33	11.05	33.14	0.03	0.08

CONCLUSION

The Great Egret has received little attention in Bangladesh and faces significant threats within the study area. Over the past five years (2019–2023), 50 nesting sites have been abandoned. Only a tiny percentage (2.39%) of nesting were on government land; the majority (97.61%) were found inside or close to private and human settlements. This trend is indicative of widespread habitat degradation brought on by hunting, chick poaching, adult bird poisoning, and the felling of nesting trees. Of the colonies that were documented, 54% were lost as a result of various human disturbances, and 46% were abandoned owing to habitat loss. Protecting the vital nesting sites and educating the local people about the value of birds are two aspects of effective conservation. The local communities suggested a number of conservation measures, such as protecting habitat, compensating for damages to resources, installing billboards and signage at colony sites, enforcing laws prohibiting poaching and bird hunting, hiring wildlife watchers to guard the nesting sites, and building shelters under nesting trees during the breeding season. the development of focused conservation plans can be influenced by these insights.

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