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ORIGINAL RESEARCH ARTICLE



First record of the Great Crested Grebe (*Podiceps cristatus*) from Sundarban Tiger Reserve, West Bengal, India

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ABSTRACT

This is the first occurrence report of Great Crested Grebe (*Podiceps cristatus*) from Sundarban Tiger Reserve, West Bengal, India. A Great Crested Grebe was observed at a river in the Sajnekhali Wildlife Sanctuary, while conducting the annual biodiversity survey within the Sundarban Tiger Reserve in November 2020. The species is a winter migrant to mostly man-made reservoirs at the northern districts of the state, and compared to the previous records, this is the southernmost occurrence report from West Bengal. The discovery of *Podiceps cristatus* at an undisturbed and favorable habitat inside a well-protected mangrove ecosystem within the Sundarban Tiger Reserve may prove significantly informative for the possible range extension and future conservation approaches of the species.

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INTRODUCTION

Grebes, a group of specialized waterbirds belonging to the family Podicipedidae (order Podicipediformes), are almost entirely dependent on wetlands and waterbodies for their movement, feeding and reproduction (Fjeldså, 2004). Among the 22 species of grebes found all over the world, only five, Great Crested Grebe (*Podiceps cristatus*), Black-necked Grebe (*P. nigricollis*), Horned Grebe (*P. auritus*), Red-necked Grebe (*P. grisegena*), and Little Grebe (*Tachybaptus ruficollis*) occur in India. Great Crested Grebe usually breeds between April to early September in Europe, throughout the year in Africa and from November to March in Australasia, in solitary or dispersed pairs or in colonies in extensive feeding areas (del Hoyo and Collar, 2017), and locally dispersing to large lakes and reservoirs to undergo a moulting period (Llimona *et al.*, 2020). This species has been reported to feed predominantly on invertebrates like molluscs, crustaceans and insects as well as on fishes and amphibians (Rouibi *et al.*, 2013). The courtship rituals of Great Crested Grebes, which include elaborate calling, movement and advertising, have attracted numerous scientific researches for more than a century (Brooke, 2014; Simmons, 2009). The nest is generally built

attached to reed stalks or branches but also can float on water, and usually, 3 to 6 eggs are incubated for around 1 month before hatching. Young chicks are often found on the back of their parents during the early weeks of their lives until they are self-sufficient, independent and able to fly from around 7 weeks (Pomeroy *et al.*, 2003).

Great crested grebes are found across wide areas of the Palearctic, Africa and Australasia. They are considered as a widely distributed, but locally occurring species in most of Europe and central Asia, with scattered colonies throughout Africa, from Egypt and Tunisia in the north up to a few colonies in central and South Africa, with three subspecies (*P. c. cristatus* - Palearctic, *P. c. infuscatus* - Africa, and *P. c. australis* - Australia) recognized till date (Fjeldså, 2004). Great Crested Grebes are migratory in nature and are considered as opportunistic breeders showing considerable variations in their dispersal and reproduction. Wintering individuals have been reported in eastern and northern Australia (del Hoyo and Collar, 2017), parts of southern Asia, and up to a few areas of northern, north-eastern and southern India (Railla, 2014). In India, the estimated range of wintering of these birds spans from northern India to north-eastern India (Assam and Manipur), western and central India

(Gujarat, southern Rajasthan and Madhya Pradesh) and eastwards to Chhattisgarh and Orissa (Grimmett *et al.*, 2016; Rasmussen *et al.*, 2012). Sporadic breeding populations have been reported in Gujarat (Mundkur *et al.*, 1986), Andhra Pradesh (Railla, 2014), and Ladakh (Tak *et al.*, 2008).

The first occurrence report of the Great Crested Grebe from inside the protected habitat of the Sundarban Tiger Reserve (STR) may initiate a new course of conservation action in the region, as anthropogenic activities such as predation, hydro-electric development, water-based recreational activities, plume trade and introduction of exotic species are accounted as the most cardinal threats resulting in the decline of the species (BirdLife species factsheet, 2021). As most of the earlier reports on the occurrences of *P. cristatus* in the state of West Bengal is predominantly from man-made water bodies like artificial lakes, barrages and dams (Basu *et al.*, 2018; Dey, 2020; Sengupta, 2015; Sinha *et al.*, 2011), this finding may prove instrumental in future investigations of the distribution, range-extension and conservation of the species.

MATERIALS AND METHODS

Field survey and study area

An adult Great Crested Grebe was recorded from STR, India on 24 November, 2020, while undertaking a bird count as a part of

the Annual Biodiversity Survey inside the protected area. The annual surveys are being conducted since 2018, organized by ANUBHAB- Expedition for Better Tomorrow, a non-profit organization from Kolkata, India. In 2020, the survey was being operated from a motorized boat by doing point counts and observation transects for a span of 4 days, starting from 22 November, 2020. The bird was opportunistically observed at the mouth of a small stream, Khanakhali Khari, in between Panchamukhani and Pirkhali (Five) forests, in the Sajnekhali Wildlife Sanctuary at 22.0218°N, 88.7616°E (GPS accuracy \pm 15m, Garmin eTrex 22x, WGS84 datum). The area is situated in the northern part of the STR (Figure 1). The observations were made between 1150 h and 1205 h, during a low tide.

Identification

A digital SLR camera (Canon EOS 7D equipped with Sigma 150-500 mm F/5-6.3) was used to photograph the specimen. The individual was identified as a Great Crested Grebe with the help of a field guide (Grimmett *et al.*, 2016) and confirmed by the presence of a conspicuous black crest on the crown, chestnut ruff, pointed uniformly pinkish bill and a relatively long and thin whitish foreneck with a narrow darker hindneck-stripe. The bird was swimming low with its neck held in an erect position. In flight, the bird appeared slender, elongated with much white in its underparts and secondaries (Figure 2).

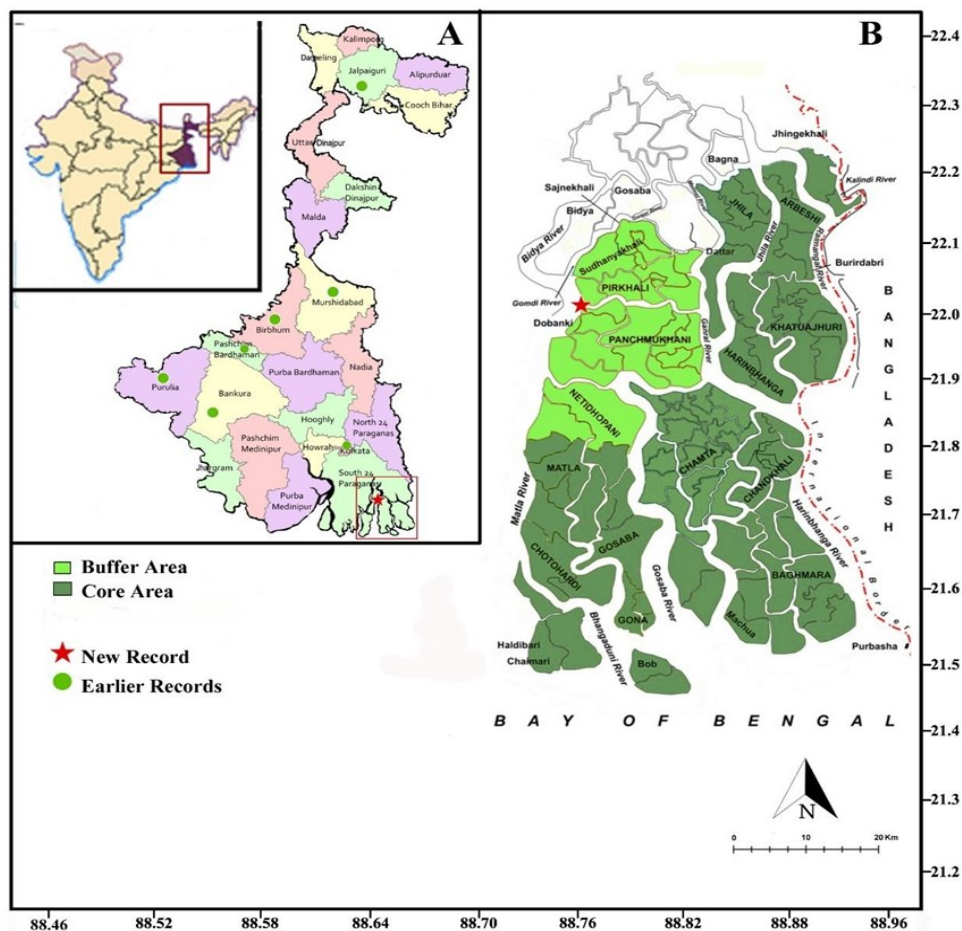


Figure 1. Location of the new record and earlier records of Great Crested Grebe, *Podiceps cristatus* in West Bengal, India. A. Map with earlier records, green dot; The New record, red star. B. Detailed map of Sundarban Tiger Reserve showing the location of the new record, red star.

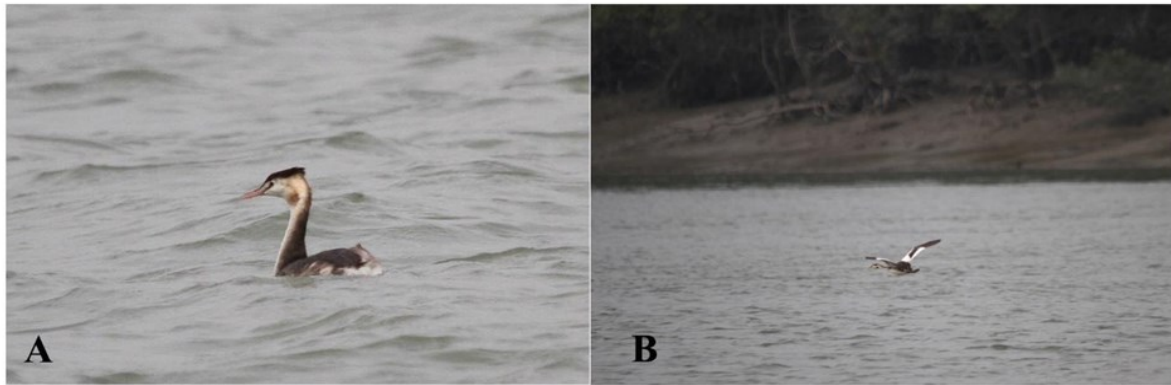


Figure 2. Great Crested Grebe, *Podiceps cristatus* in Sundarban Tiger Reserve, West Bengal, India. **A, B.** Specimen recorded at 22.0218°N, 88.7616°E. **A.** Specimen during swimming. **B.** Same specimen in flight.

RESULTS AND DISCUSSION

Sundarban is the largest mangrove ecosystem in the world, covering an area of 10284 square km, out of which 41.5% are situated in India and the rest in Bangladesh. The expansive forest comprises more than 200 islands, dissevered by 15 major rivers and a network of nearly 400 interconnected tidal streams and waterways, locally known as 'Khari'. This extensive and unique ecosystem is located at the delta created by the confluence of the Ganges, Brahmaputra, and Meghna rivers, converging into the basin of the Bay of Bengal (Chowdhury *et al.*, 2016). The STR was established in 1973 and was further designated as a Wildlife Sanctuary and a National Park in 1977 and 1984 respectively. In 1987, UNESCO declared Sundarban National Park as a World Heritage site and in 1989, it was further designated as a Biosphere Reserve under the UNESCO Man and Biosphere Programme (Sunderban Biosphere Reserve, 2021; UNESCO World Heritage Centre, 2021). The Indian part of Sundarban was designated a Ramsar site in 2019 (Ramsar Sites Information Service, 2019). This mangrove ecosystem harbours 334 floral species along with 476 spp. of arthropods, 177 sp. of birds, 7 and 59 spp. of amphibians and reptiles respectively, 49 spp. of mammals and a striking avifaunal diversity comprising 315 species (Khan *et al.*, 2021). Sundarban has been declared as a "critical tiger habitat" as well as a "Tiger Conservation Landscape" of global importance (Naha *et al.*, 2016). Earlier reports of the occurrences of *P. cristatus* from the state of West Bengal, India, are pretty scarce and usually concentrate along man-made waterbodies from the southern and south-western parts of the state. The species, previously, have been documented from Bakreshwar and Tilpara barrage, Birbhum (Mazumdar *et al.*, 2007; Sinha *et al.*, 2011), Sagardighi Ash Pond, Murshidabad (Dey, 2020), Mukutmanipur Dam, Bankura (Basu *et al.*, 2018) and a single instance at an artificial lake in Kolkata (Sengupta, 2015). In the northern parts of the state though, this species is considered as a regular winter migrant in natural as well as man-made reservoirs (Das *et al.*, 2015).

The present report of the first occurrence of Great Crested Grebe in STR is the very first scientific documentation of the species in a natural habitat in southern West Bengal, which is situated nearly 100 km south-east of the previously reported nearest earlier sightings (Figure 1). Finding the species in natu-

ral environments well within a protected area of Sajnekhali Wildlife Sanctuary in STR certainly raises new hopes for the southward range extension of the species. The vast delta and mangrove ecosystems of Sundarban may prove to be an ideal environment for Great Crested Grebe, as the favorable habitat of the species includes large open lakes of fresh or brackish waters, backwaters, slow-flowing rivers, reservoirs, tidal lagoons, large and open marshes, often exhibiting a preference for eutrophic lakes, with luxuriant vegetation (del Hoyo and Collar, 2017). Though considered as a species of 'Least Concern', its extent of occurrence and breeding/ passage status in India is largely unknown. Moreover, population trends all over the globe are mostly uncertain, where some populations are being reported as moderately rapidly declining (BirdLife species factsheet, 2021). The predominant threats resulting in the decline of the species seem to be anthropogenic activities like predation, hydroelectric development, water-based recreational activities, plume trade and introduction of exotic species (BirdLife species factsheet, 2021).

Conclusion

The extensive delta and mangrove ecosystems of the protected region may be considered as a favorable habitat of the species and the effectual conservation practices inside the STR may prove helpful in the conservation of the ideal ecosystems, which eventually, may offer newer undisturbed habitat and range extension of the same. Consequently, the new record of *P. cristatus* inside the Sundarban Tiger Reserve could significantly contribute to the database regarding the species' distribution with future explorations and scientific research.

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