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URBAN SKY ROOSTS: THE UNCONVENTIONAL ADAPTATION OF SPOT-BILLED PELICANS TO ANTHROPOGENIC STRUCTURES

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Urban Sky Roosts: The Unconventional Adaptation of Spot-billed Pelicans to Anthropogenic Structures. Raul, E., Pattnayak, S. P., Jena, P. & Prusty, B. A. K. — The expansion of urban areas has raised significant concerns about its impact on the bird community, particularly wetland-dependent species. The transformation of natural habitats into urban areas presents unique challenges and alternatives for these species, requiring a reassessment of conventional conservation paradigms. Among these species, the Spot-billed Pelican (classified as 'Near Threatened' by the IUCN and listed under schedule-IV of the IWPA) is a wetland-dependent bird indigenous to India. Instead of preferring natural habitats (wetlands), it now prefers urban habitats for roosting and nesting. The species has also been observed to prefer telecom towers for roosting and courtship during the breeding season. This observation is one of the first to lead to an understanding of the behavioural plasticity of wetland bird species towards adaptation in an anthropogenic setting. This suggests an early warning sign of habitat degradation in their historical breeding and feeding grounds in neighbouring states. The likely reason for the congregation's selection of these anthropogenic structures may be related to resource availability, adjacent feeding grounds and/or habitat suitability. Records of this type should open up avenues for addressing the problem and developing strategies for careful management of breeding sites in artificial structures.
Key words: breeding, behaviour, Spot-billed Pelican, threatened species, urban areas.

Introduction

The Spot-billed Pelican *Pelecanus philippensis* (Gmelin, 1789), belonging to the family Pelecanidae, is monophyletically related to the cormorants, darters, frigate birds, and gannets, placed in the order Pelecaniformes (Cracraft et al., 2004; Del Hoyo et al., 1992). Owing to the decrease in species population during the mid-20th century(Kennedy, 2000), the IUCN Red List has categorized this species as 'Near Threatened' (Birdlife International 2017). The geographic distribution of the Spot-billed Pelican's population primarily lies in Southeast Asia and largely in the coastal areas of India, Sri Lanka, southern Cambodia, and Sumatra. In contrast, the resident breeding population is confined to Sri Lanka, parts of south-eastern India, and Cambodia (Johnsgard, 1993; Stattersfield et al., 2000; Birdlife International, 2004). In India, the species is distributed mainly in the southern and north-eastern states (Kannan & Pandiyan, 2013). In addition, sporadic records of the resident populations in Odisha are from Chilika Lake and Bhitarkanika (Vagrant et al., 1868; Hussain et al., 1983; Kar, 1991; Johnson et al., 1993; Pandav, 1997; Balachandran et al., 2002). In India, their breeding generally starts in October, while in the tropics, the breeding occurs from December till April. However, the breeding season in eastern India coincides with the monsoon months (June to August).

Material and Methods

While conducting routine monitoring of coastal birds along the Ganjam coastline, on 18th August 2023, at noon, a clear day with an ambient air temperature of around 32 °C, a flock of about 25 Spot-billed Pelicans were seen roosting on telecom towers in one of the suburban localities of Berhampur city in Odisha. The avian communities were seen around 40 mt above the ground on the three telecom towers (fig. 1). The landscape constituted a mosaic of agricultural farms with human settlements and a few small aquatic bodies. Sighting of this species is new and uncommon in this area, and this unusual form of roosting of waterbirds high up on telecom towers is unique to their behavioural records. In addition, we made regular visits to observe the behaviour of the species (fig. 2) using binoculars. Furthermore, a spotting scope and DSLR camera were used to monitor and capture the flock's behaviour. A range finder (SNDWAY Laser Range Finder SW-600A) was also used to measure the height of their roosting. The observations were made daily from 0600 hrs till 2000 hrs from a distance of around 30 m to record their behaviour.

Results

The flocks were identified as adults and were confirmed to be in their pre-breeding period due to condition-dependent sexual signals, i.e., the prominent pink colour in the gular pouch and the plumage colour, which was grey dorsally and white ventrally with a long brownish-grey crest (the colour which becomes dull, with a diminished crest in non-breeding period). The Spot-billed Pelicans, were observed using several different social signals, both vocal and visual, including bowing, head swaying, bill clapping, head-turning, and various moaning, grunting, and high-pitched yipping noises, all of which are the displays during courtship (Johnsgard, 1993; Terres, 1980). Most of their sighted activity was preening and resting with heads twisted back and tucked in their feathers (fig. 2). The courtship activity continued for 10 days, and the pelicans were observed roosting on the same towers for around next 15 days.

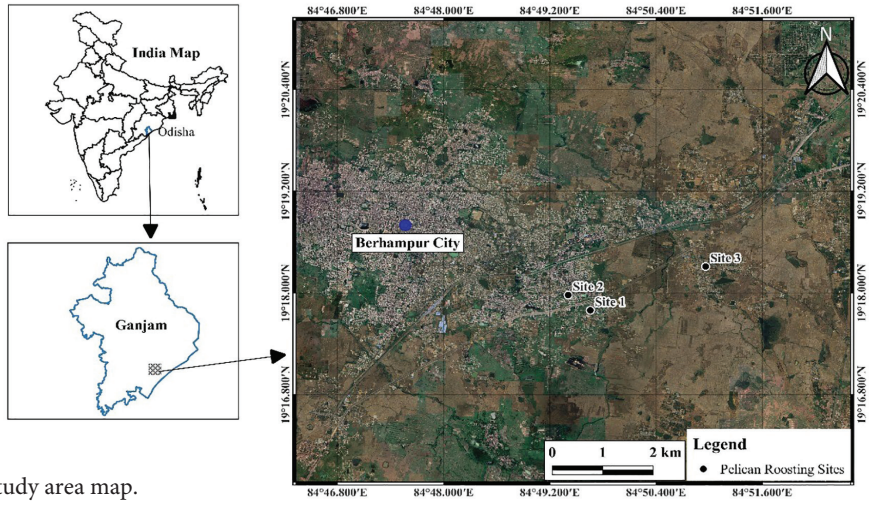

Fig. 1. Study area map.

Fig. 2. Colony of Spot-billed Pelicans on telecom towers displaying social and courtship signals during breeding season.

Discussion

As per the historical context, although documented in the state's Chilika Lake late in the 1990s, as a crucial foraging ground for the Spot-billed Pelicans, however, this species has never been recorded in the coastal patch at the southern end of the state. Such distribution records might also be associated with the proximity of the state of Andhra Pradesh, which is one of the known strongholds for this species (Kannan & Pandiyan, 2013). Kannan & Manakadan (2005) found 03 subpopulations of the species in Andhra Pradesh, among which, Telineelapuram was a prominent breeding location (fig. 3). As these pelicans are known to be potentially engaged in local migration towards Chilika Lake from the breeding sites in Andhra Pradesh, it is possible that they came across the present study area, which offered suitable conditions and resources for nesting and roosting, thereby pelicans could have used this presently reported area as a stop-over site. It might also be speculated that the pelicans observed in the present study might have been compelled to seek out nearby feeding and nesting habitats due to modifications and degradation occurring within their original territory (either in Andhra Pradesh or areas near Chilika Lake).

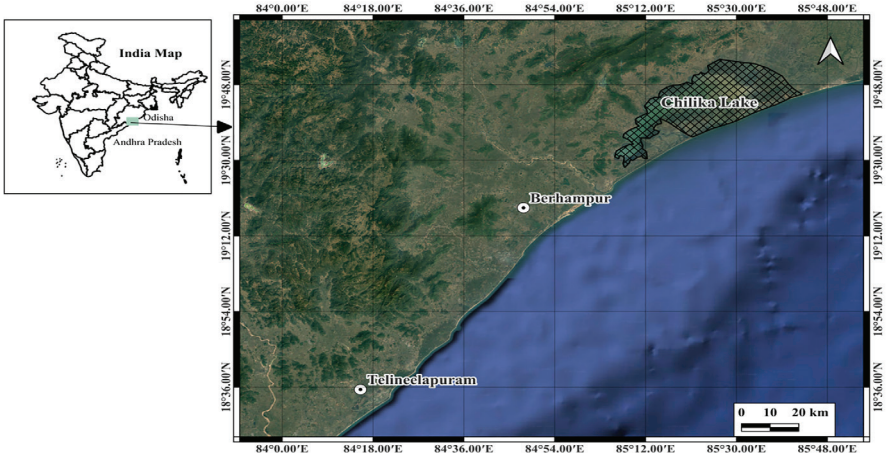

Fig. 3. Map showing two known Spot-billed Pelican colonies (Chilika Lake and Telineelapuram) in South Odisha and Andhra Pradesh.

The findings also indicate that the pelicans might have adapted due to the limited availability of natural and undisturbed nesting habitats, by utilizing artificial structures such as telecom towers for roosting. This observation signifies an alteration in their behaviour and highlights an adaptive change in their overall reproductive patterns. This adaptability is indicative of the species' willingness to explore and exploit new ecological niches in urban landscapes. Nevertheless, this is the first observation of such behavioural plasticity, possibly linked with habitat suitability (better foraging sites and safer breeding grounds). The telecom towers are located 02–07 km from the possible feeding grounds (undisturbed wetlands with > 2.25 ha area) and 08 km from the coast. The species prefers lowland freshwater, brackish, and marine wetland areas for roosting and feeding on fish (Taher, 2007). This might have made the tower suitable for roosting and nesting due to its proximity to the feeding grounds.

Conclusion

Documentations reveal that the pelicans depend greatly on the unprotected wetlands for food during the non-breeding season, hence necessitating studies on its' key foraging sites and their habitats. As per the avifaunal surveys, conducted in and around Berhampur, there have been no reports about the roosting of pelicans in the study area, thereby making this discovery noteworthy. Since this observation is the first of its kind, the record would invariably aid in considering protection of breeding landscapes to conserve the threatened species. This species' foraging grounds are under a multitude of increasing pressures, which, if not addressed, could result in the decline or extinction of the species. Since the loss of natural habitats can trigger the adaptation to anthropogenic alterations, careful management of the breeding sites is crucial for protecting this species. Records of this type should pave the way to address the reasons for new habitat exploration and dependence amidst anthropogenic alterations.

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