GESA
GLOCAL ENVIRONMENT & SOCIAL ASSOCIATION

International Journal of Biological Innovations
http://ijbi.org.in | http://www.gesa.org.in/journals.php
https://doi.org/10.46505/IJBI.2022.4115
IJBI 4(1): 135-140 **(2022)**
E-ISSN: 2582-1032

ABANDONED SITES: BOON OR BANE FOR URBAN BIRD NESTING-A CASE STUDY FROM TIRUNELVELI, TAMIL NADU (INDIA)

Dakshin V. John[1], G. Petchidurai[2] and M. Jayashankar[3]*

[1]Wageningen University and Research Centre, Netherlands
[2]Department of Zoology, St. Xavier's College (Autonomous) Palayamkottai (Tamil Nadu), India
[3]Department of Zoology, St. Joseph's (Autonomous) College Bengaluru (Karnataka), India

**Corresponding author*: jayashankar.m@sjc.ac.in

Article Info:
Short Communication
Received
03.03.2022
Reviewed
24.03.2022
Accepted
03.04.2022

Abstract: A short duration observation on birds' nesting in an abandoned bungalow premise in the heart of Palayamkottai, Tirunelveli district in Southern Tamil Nadu is reported as a case study. Three species of water birds *namely* Black-crowned Night Heron (*Nycticorax nycticorax*), Intermediate Egret (*Mesophoyx intermedia*), and Little Cormorant (*Phalacrocorax niger*) were found to show mixed roosting. Recently infrastructural modification of the premise was undertaken, which influenced the nesting site of these colonial birds, considering their high sensitivity to disturbance.

Keywords: Abandoned sites, Nesting, Tirunelveli, Urban birds.

Cite this article as: John D.V., Petchidurai G. and Jayashankar M. (2022). Abandoned sites: Boon or bane for urban bird nesting-A case study from Tirunelveli, Tamil Nadu (India). *International Journal of Biological Innovations*. 4(1): 135-140. https://doi.org/10.46505/IJBI.2022.4115.

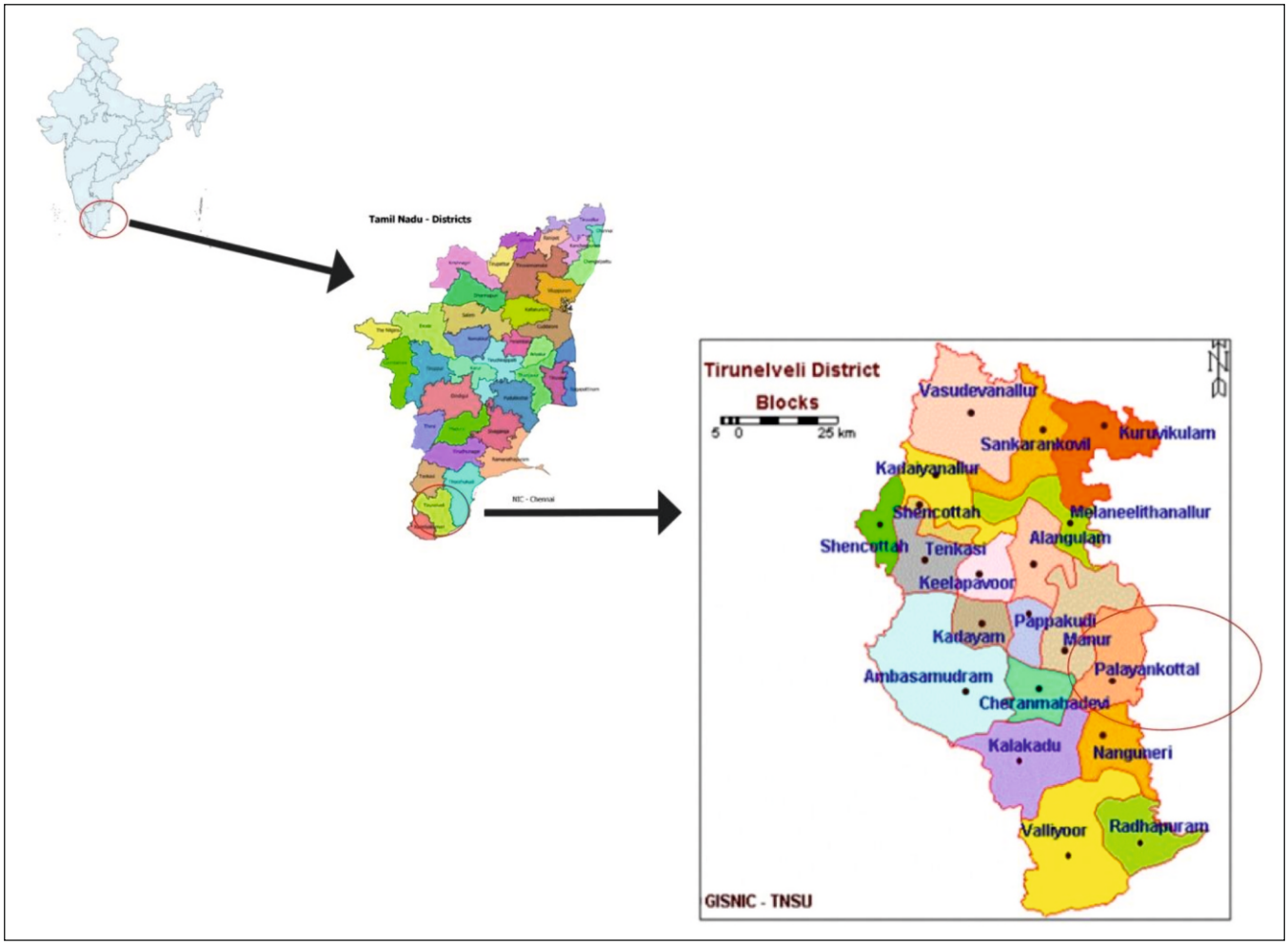
INTRODUCTION

Birds, the masters of air are warm-blooded egg-laying vertebrates characterized by the presence of feathers and modification of forelimbs as wings for flight (Verma and Prakash, 2020). Urban habitats and landscapes are markedly diverse from non-urban 'natural' habitats. The significant difference is the transformation of landscapes to anthropogenic structures from natural green areas (Isaksson, 2018). To survive in urban habitats, birds are forced to accept or avoid the new conditions. Out of 10,000-plus bird species, around 2000 (nearly 20%) species occur in metropolia (Aronson *et al.*, 2014). Birds in urban geographies inhabit abandoned structures to make their nests. Plantations of invasive plant species, managed lawns, and removal of the mid-story canopy are considered signs of urbanization (Luck and Smallbone, 2010; Aronson *et al.*, 2014). Urbanization is a remarkably complex phenomenon with various dimensions (Hussain and Imitiyaz, 2018). Due to this complexity, urban avifauna is often reported to display contrasting behaviour, physiology, and morphology compared to rural conspecifics (Isaksson, 2018). Behavioural plasticity is critical to permit species to coexist with humans. Based on their dependency on human resources, birds are divided into three groups: urban avoiders, urban (suburban) adapters, and urban exploiters (Blair, 1996; Diogo *et al.*, 2017).

Anthropogenic activities badly influence both the flora and fauna (Prakash and Verma, 2022) including bird populations both small scale (construction, pollution, hunting) and large scale (climate change). Despite challenges, the persistence and expansion of avifauna in urban centres offer opportunities to understand adaptation to urban living and the development of urban spaces as conservation areas (Reynolds *et al.*, 2019). Also, urban habitats are deemed as environs for studies of population divergence, evolutionary responses, and speciation in real-time (Isaksson, 2018). A number of literature related to threats, initiatives, and adaptation to nesting in birds are available from different parts of the country (Prakash and Verma, 2016a, 2016b; Surya, 2016; Verma and Prakash, 2016, 2021; Sohil and Sharma, 2020; Panda *et al.*, 2020).

BIRDS NESTING IN ABANDONED SITES

The present case study is concerned with an abandoned Mayor Bungalow premise (coordinates 10.8627492, 75.6564881) in the heart of Palayamkottai, Tirunelveli district in Southern Tamil Nadu, India (Map 1). The community has numerous water bodies that attract local avifauna and migratory species.



Map 1: The location of the district of Tirunelveli in Tamil Nadu on the map of India (Source: https://consulatephuentsholing.nic.in/?2359?000, https://www.tn.gov.in/DistrictMap).

Authors saw three species of water birds *namely* Black-crowned Night Heron (*Nycticorax nycticorax*), Intermediate Egret (*Mesophoyx intermedia*), and Little Cormorant (*Phalacrocorax niger*) and decided to study as a case. Authors noticed that these birds exhibit communal/mixed roosting *viz*., nesting on trees present in the site. Of the three species, both the night heron and little cormorant roost in small (5-20 individuals) or medium in size (several tens of individuals)

and exhibit communal roosting throughout the year (Gadgil and Ali, 1974). While, Intermediate Egret is either highly colonial or nests singly, nesting in mixed-species colonies of other herons, spoonbills, ibises, and cormorants (Heron Conservation, 2022). The closest water body less than a kilometre that supports water birds is the Elanthakulam Lake (10.8581839, 75.6570304) (Fig.1). Other avifauna inhabiting the zone was also recorded during the observations made between August 18th- 31st, 2018 (Fig. 2-15). The garbage dump around the site provided a feeding niche for scavengers (House crow) and predatory raptors (Shikra).

Fig. 1: Elanthakulam Lake in Palayamkottai.

Fig. 2: Peafowl, *Pavo cristatus*.

Fig. 3: Coppersmith Barbet, *Megalaima haemacephala*

Fig. 4: Shikra, *Accipter badius*

Fig. 5: House crow, *Corvus splendens*

Fig. 6: Red-vented Bulbul, *Pycnonotus cafer.*

Fig. 7: Common Myna, *Acridotheres tristis*

Fig. 8: Spotted dove, *Stigmatopelia chinensis*

Fig. 9: Common Tailorbird, *Orthotomus sutorius*

Fig. 10: House sparrow, *Passer domesticus*

Fig. 11: Black-crowned Night Heron, *Nycticorax nycticorax*

Fig. 12: Intermediate Egret, *Mesophoyx intermedia.*

Fig. 13: Little Cormorant, *Phalacrocorax niger.*

Fig. 14: Painted Stork, *Mycteria leucocephala.*

Fig. 15: Spot-billed Pelican, *Pelecanus philippensis.*

Fig. 16: Recent renovation-construction at the site.

Three hundred seventy-seven (377) species were reported from different parts of Tirunelveli District (E bird, 2022) and a survey in 2018 reported a flock of greater flamingos at Vijayanarayanam tank near Nanguneri in the district (Anonymous, 2018). Recently in the year 2021, infrastructural modification of the premise was undertaken, which probably could impact the nesting site of these colonial birds, considering their high sensitivity to disturbance (Fig.16). Considering the fact that different birds have different tolerant levels to disturbance, the urban specialist (exploiter and adapters) species are better adapted to exploiting anthropogenic resources (food and nesting sites). However, it would be challenging for water birds to use the site under construction for ephemeral nesting in the vicinity of the water resources. Future observations will entail if they have adapted or avoided the site.

CONCLUSIONS

Existing urban areas are expected to intensify and expand in the future. Many bird populations worldwide are plummeting due to the impact of human activities. As a proactive initiative, concerned authorities and citizen scientists can monitor this shift in nesting sites in areas like the present study site expecting a change in infrastructure and land use. Additionally, creation of visual and practical guides for community-led avi-tourism to establish an emotional connection with urban wildlife is strongly suggested.

REFERENCES

1. **Anonymous** (2018). Forty-five species spotted in the bird census in the Tirunelveli district. The Times of India. February 9th, 2018
2. **Aronson M.F.J., La Sorte F.A., Nilon C.H., Katti M., Goddard M.A., Lepczyk C.A.,**

Warren P.S. *et al.* (2014). A global analysis of the impacts of urbanization on bird and plant diversity reveals key anthropogenic drivers. *Proc R SocLond* B 281:20133330. https://doi.org/10.1098/rspb.2013.3330.

3. **Blair R.B.** (1996). Land Use and Avian Species Diversity along an Urban Gradient. *Ecological Applications*. 6 (2):506-519.

4. **Diogo S.M.S., Blumstein Daniel T., Mario D., Tomas G., Ibáñez-Álamo Juan Diego., Jukka J., Kunter T., Gábor M., Piotr T. and Pape M.A**. (2017). Rural-Urban Differences in Escape Behavior of European Birds across Latitudinal Gradient Frontiers. *Ecology and Evolution*. 5. 10.3389/fevo.2017.00066

5. **E-bird** (2022). Tirunelveli, Tamil Nadu. https://ebird.org/region/IN-TN-TI. Accessed on 6th March 2022.

6. **Gadgil M. and Ali S.** (1974). Communal roosting habits of Indian Birds. 1974. Communal Roosting http://ces.iisc.ernet.in/hpg/envis/mg/pdfs/mg018.pdf.

7. **Heron Conservation** (2022). The IUCN-SCC Heron Specialist Group. https://www.heronconservation.org/herons-of-the-world/list-of-herons/intermediate-egret/. Accessed on 6th March 2022

8. **Hussain M. and Imitiyaz I**. (2018). Urbanization Concepts, Dimensions and Factors. *Int J Recent Sci Res*. 9(1): 23513-23523.

9. **Isaksson C.** (2018). Impact of Urbanization on Birds. In: Tietze D. (eds) Bird Species. Fascinating Life Sciences. Springer, Cham. https://doi.org/10.1007/978-3-319-91689-7_13.

10. **Luck G.W. and Smallbone L.T.** (2010). Species diversity and urbanization: patterns, drivers and implications. In: Gaston KJ (ed) Urban ecology. Cambridge University Press, Cambridge.

11. **Panda B.P., Mahapatra B., Sahoo A.A., Ray S.S., Parida S.P. and Pradhan A.** (2020). Habitat Use of Urban and Periurban Birds in a densely populated City of Eastern India. *Asian Journal of Conservation Biology*. 9(2): 290-297.

12. **Prakash S. and Verma A.K.** (2016a). Impact of awareness programme on growth and conservation of vulnerable avian species *Grus antigone antigone* in and around Alwara lake of District Kaushambi (Uttar Pradesh), India. *The Journal of Zoology Studies*. 3(2):1-5.

13. **Prakash S. and Verma A.K.** (2016b). Studies on use of local medicinal flora in nest building by threatened bird, *Grus antigone antigone* in and around Alwara lake of district Kaushambi (U.P.), India. *Journal of Applied Life Sciences International*. 5(3):1-7. doi:10.9734/jalsi/2016/26383

14. **Prakash S. and Verma A.K.** (2022). Anthropogenic activities and Biodiversity threats. *International Journal of Biological Innovations*. 4(1): 94-103. https://doi.org/10.46505/IJBI.2022.4110.

15. **Reynolds S.J., Ibáñez-Álamo J.D., Sumasgutner P. and Mainwaring M.C.** (2019). Urbanization and nest building in birds: a review of threats and opportunities. *J Ornithol* 160:841-860.https://doi.org/10.1007/s10336-019-01657-8.

16. **Sohil A. and Sharma N.** (2020). Assessing the bird guild patterns in heterogeneous land use types around Jammu, Jammu, and Kashmir, *India. Ecol Process*. 9: 49. https://doi.org/10.1186/s13717-020-00250-9.

17. **Surya S.** (2016). Biodiversity and Bird-Friendly Design in Urban Areas for Sustainable Living. *Indian Journal of Science and Technology*.9(5):1-7. 10.17485/ijst/2016/v9i5/87224.

18. **Verma A. K. and Prakash S.** (2016). Selective behaviour of Indian Sarus Crane in choosing plant species for nest construction in and around Alwara Lake of district Kaushambi (U.P.), India. *International Journal of Zoology and Research*. 6 (3):1-6.

19. **Verma A.K. and Prakash S.** (2020). Status of Animal Phyla in different Kingdom Systems of Biological Classification. *International Journal of Biological Innovations*. 2 (2): 149-154. https://doi.org/10.46505/IJBI.2020.2211

20. **Verma A. K. and Prakash S.** (2021). Nesting Behaviour and Current threats to the Indian Sarus Crane around Alwara Lake of District Kaushambi (U.P.), India. *International Journal of Biological Innovations*. 3 (1): 127-133. https://doi.org/10.46505/IJBI.2021.3111