

At the behest of rainfall: a case of heronry formation failure in Tamil Nadu



Nesting heronry birds in the Otteri Lake (2017–2018).

Differences in climatic variables have a great influence on bird populations and it strongly affects their breeding success as well as their survival (Newton 1998; Lande et al. 2003; Fasola et al. 2010). Birds are popular indicators of environmental changes and heronry birds, in general, are good indicators for understanding the influence of monsoon and climate change on their life history (Urfi 2011). There exists a close link between heronries and monsoon pattern, and heronry birds tend to abandon breeding activities if sufficient amount of water is not available in the lake/pond (Subramanya 2005). Heronry

birds are site specific and any disturbance apart from the influence of monsoon such as anthropogenic disturbances result in abandonment of the specific site. In case of Tamil Nadu most of the heronry birds nesting coincide with the onset of the northeast (NE) monsoon (Oct–Dec) (Subramanya 2005). Heronries tend to be active once NE monsoon arrives and it varies across different districts of Tamil Nadu. If monsoon fails for a year, then the heronry birds may avoid nesting and this has been reported in a few heronries in the country (Anonymous 1980; Breeden & Breeden 1982). Here we try to



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bring out the close association that exists between rainfall and heronry birds in the Otteri Lake (heronry), Kanchipuram District between 2017–2018 and 2018–2019 period.

Otteri Lake (12.884°N, 80.084°E) is situated in the Arignar Anna Zoological Park, Vandalur, Chennai, Tamil Nadu, India. The zoo hosts a lake which serves as nesting ground for the heronry bird species. Every year, the heronry birds arrive at this lake October–December which coincides with the NE monsoon. The tank is mainly rain-fed by the NE monsoon and when there is a failure of monsoon the tank gets dried up and the nesting is totally absent in that particular year.

A total of 14 heronry birds, Eurasian Spoonbill *Platalea leucorodia*, Little Cormorant *M. niger*, Indian Cormorant *P. fuscicollis*, Little Egret *Egretta garzetta*, Intermediate Egret *Ardea*

intermedia, Cattle Egret *Bubulcus ibis*, Black-crowned Night-Heron *Nycticorax nycticorax*, Indian Pond-Heron *Ardeola grayii*, Grey Heron *Ardea cinerea*, Painted Stork *Mycteria leucocephala*, Oriental White Ibis/Black headed Ibis *Threskiornis melanocephalus*, Oriental Darter *Anhinga melanogaster*, Spot-billed Pelican *Pelecanus philippensis*, and Asian Openbill-Stork *Anastomus oscitans* were recorded out of which 12 waterbirds (except Spot-billed Pelican and Asian Openbill Stork) were found to be nesting on *Barringtonia acutangula* in the Otteri Lake during December 2017 to March 2018 (Table). Apart from the *Barringtonia* spp., a few tree species especially at the periphery of the tank also served as nesting trees. Around 50 bird species have been documented in the lake (Frank 2017-18 pers. obs.). The *Barringtonia* spp. in this particular heronry has been planted by the forest department

Table 1. Heronry bird species with the active nests and no of individuals during breeding season (2017–2018 and 2018–2019).

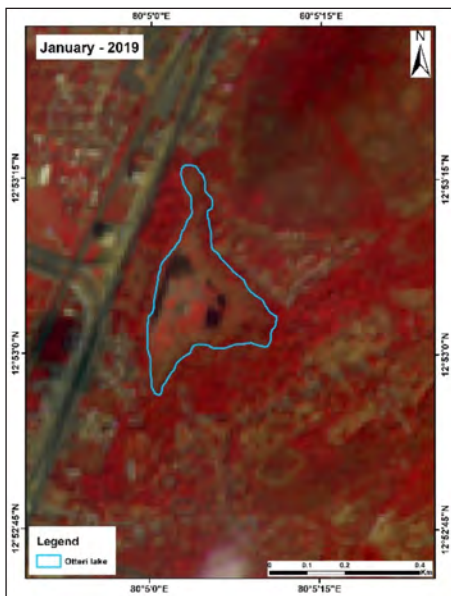
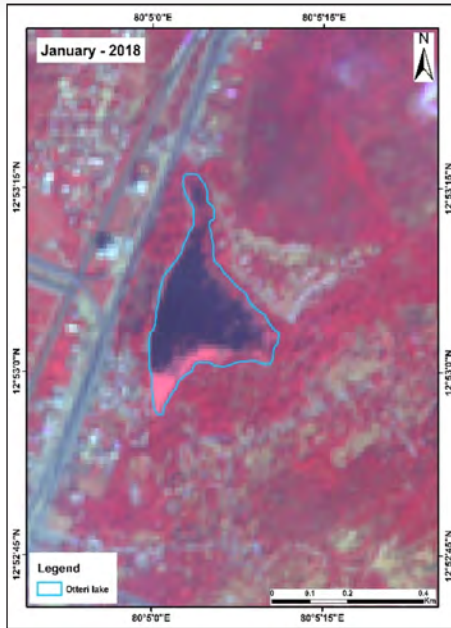
Waterbird species	IUCN status	Breeding / foraging in the lake	No. of active nests counted during 2017–18	No. of active nests counted during 2018–19	Number of individuals counted during 2017–18	Number of individuals counted during 2018–19
Eurasian Spoonbill <i>Platalea leucorodia</i>	LC	Breeding	23	0	47	0
Little Cormorant <i>Microcarbo niger</i>	LC	Breeding	528	0	2842	24
Indian Cormorant <i>Phalacrocorax fuscicollis</i>	LC	Breeding	121	0	465	0
Little Egret <i>Egretta garzetta</i>	LC	Breeding	45	0	194	0
Intermediate Egret <i>Ardea intermedia</i>	LC	Breeding	19	0	73	0
Cattle Egret <i>Bubulcus ibis</i>	LC	Breeding	35	0	146	67
Black-crowned Night-Heron <i>Nycticorax nycticorax</i>	LC	Breeding	68	0	224	0
Indian Pond-Heron <i>Ardeola grayii</i>	LC	Breeding	21	0	60	0
Grey Heron <i>Ardea cinerea</i>	LC	Breeding	42	0	83	9
Painted Stork <i>Mycteria leucocephala</i>	NT	Breeding	2	0	15	21
Oriental White Ibis / Black-headed Ibis <i>Threskiornis melanocephalus</i>	NT	Breeding	53	0	239	0
Oriental Darter <i>Anhinga melanogaster</i>	NT	Breeding	49	0	124	12
Spot-billed Pelican <i>Pelecanus philippensis</i>	NT	Foraging	0	0	8	6
Asian Openbill-Stork <i>Anastomus oscitans</i>	LC	Roosting	0	0	176	0

LC—Least Concern | NT—Near Threatened

and acts as the most important nesting tree species for waterbirds.

The actual rainfall received during NE monsoon in 2017 (Oct–Dec) in Chennai was 937.8mm compared with normal rainfall 789.9mm (Balachandran et al. 2017) whereas

during NE monsoon in 2018 the actual rainfall received was 352.9mm (Report on North East Monsoon 2018). Due to meagre amount of rainfall during NE monsoon in 2018 and some of the cyclones missing the state during this period has resulted in deficit rainfall. As a result, Otteri Lake failed to attract the



Sentinel-2 satellite data showing the presence and absence of water in the tank during January 2018 and January 2019.

waterbird species. A few water bird species like Little Cormorant, Cattle Egret, Grey Heron, Painted Stork, Oriental Darter, and Spot-billed Pelican visited the tank but none of them stayed back due to the dry condition. Here, rainfall acts as one of the important factors in determining the nesting

behaviour of waterbirds in a heronry. From conservation perspective, Zoo authorities are taking necessary steps to increase the water holding capacity of the lake by diverting the water from other areas to maintain the water level especially during the breeding season.

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