

Challenges of managing water bodies as bird sanctuaries in Tamil Nadu

Avantika Bhaskar and Jayshree Vencatesan

The state of Tamil Nadu in South India has had a long history of creating and managing water bodies, especially in the plains. (The general term ‘water body’ has been used in this note to avoid confusion resulting from the use of terms like ‘tanks’, ‘ponds’, ‘wetlands’, ‘lakes’, etc. in administrative parlance.) This is attributed largely to the spatial and temporal variance of rainfall distribution in the state, which is concentrated over the months of October to December during the northeast monsoon, and June to September during the southwest monsoon¹. Estimates suggest that there are about 39,200 irrigation water bodies in the state which serve various purposes such as irrigation, domestic and livestock use, fishing, groundwater recharge and flood control²⁻⁴. Started in the 1960s, foreshore planting by the Tamil Nadu Forest Department on some of the water bodies was crucial in the creation of a number of heronries in the state⁵. A ‘heronry’ is a general term that refers to nesting colonies of waterbirds like storks, egrets, herons, cormorants, etc.⁶. Consequently, some of the heronries were declared as bird (wildlife) sanctuaries, with a working arrangement between the Tamil Nadu Forest Department and Public Works Department or Rural Development and Panchayat Raj Department on aspects of ownership, management and protection. This eliminated traditional practices like desilting of the tank, fishing, firewood collection, grazing by the locals, etc. which were earlier regulated by a combination of self-regulation and prudence as well as customary rules. Interestingly, all the 14 bird sanctuaries of the state are water bodies, and with the exception of one bird sanctuary in the western district of Erode, the others are located on or

near the east coast and are a part of a system of interconnected water bodies.

One of the most well-known bird sanctuaries of the state is the Vedanthangal–Karikili (thangal = shallow wetland), which is situated at a distance of approximately 85 km south of Chennai. The water body is part of the Lower Palar Anaicut system and is a nesting ground for nearly 17 species of waterbirds⁵. Vedanthangal is often cited as an example of community-led conservation, as is the Koonthankulam–Kadankulam (kulam = tank) bird sanctuary in Tirunelveli district^{5,7}. The bird droppings that enrich the waters of Vedanthangal–Karikili and Koonthankulam–Kadankulam are stated to have served as organic enrichment for the intensive paddy–horticulture cultivation in the landscape (Table 1). Systems to manage the inflow and outflow of water were evolved by the local zamindar (landlord) in consultation with the community, and the marginalized sections within the community were vested with the responsibility of maintaining the water body. The zamindar spearheaded the protection of birds by punishing hunters and poachers and incentivizing the households which protected them. Likewise, a landlord in Koonthankulam played the role of a custodian of birds, by incentivizing protection efforts. Over time, this evolved into a local tradition with the people desisting from engaging in activities detrimental to birds. In both cases, the villages came to be defined by the birds. Farmers and local communities around many of the sanctuaries used the arrival of birds as one of the key indicators to monitor local climate, and this in many instances assumed the character of ‘divinity’. The association between local communities, water bodies and birds was

symbiotic with the use of agricultural fields for foraging by birds and the use of guano-rich silt from the water body as fertilizer.

Interactions with the farmers of the state’s delta region, however, suggest that there is a need to re-examine the notion of this symbiotic association. For instance, farmers reported that the presence of birds during the initial phases of paddy cultivation, especially before the crop is transplanted, leads to crop damage. They address this issue by creating noise using ingenious solutions such as the use of cassette tapes. In various parts of the world migrant waterfowl, including ducks, geese, coots and cranes have been reported to damage crops like rice, corn, wheat and soybean by feeding, trampling and grazing^{8,9}. While Gole¹⁰ reports crop damage by Bar-headed goose to the winter crops in India, managing rice cultivation by flooding rice fields after harvesting and use of efficient agronomic practices and equipment can benefit the birds and at the same time prevent crop losses¹¹. On the flip side, the presence of birds in the agricultural areas attracts poachers and hunters, which results in conflicts with the Forest Department.

While the agrarian tradition of Koonthankulam has remained more or less the same over the last many years, in Vedanthangal–Karikili there has been a marked change in land use in recent years. Due to its proximity to the city of Chennai and speculative land transactions, agriculture has ceased to be of significance around the water body. Large tracts of temporary and permanent fallow lands typify the landscape, and the resident communities wish to capitalize upon the presence of the birds to create ‘green

Table 1. Details regarding two important bird sanctuaries in Tamil Nadu

Bird sanctuary (BS)	Location (district)	Area ¹⁶ (sq. km)	No. of nesting waterbird species ⁵	Major crops cultivated around the BS ^{17,18}
Vedanthangal	Kancheepuram	0.30	17	Paddy, gingelly, groundnut, finger millet, vegetables
Koonthankulam–Kadankulam	Tirunelveli	1.29	15	Paddy, groundnut, cotton, banana, vegetables

townships⁷. As the irrigation service of the water body becomes redundant, the guano-enriched water is perceived to be a problem.

Water bodies that continue to be of significance to agriculture with large ayacuts (area under agriculture) such as Vaduvor and Karaivetti, are under regular maintenance by the Public Works Department, while in contrast, water bodies with lower service to farmers such as Udayamarthandapuram or Vettangudi are accorded low priority. Consequently, they are characterized by silting of feeder tanks and embankments, derelict sluices and seepage. Agarwal and Narain¹² contend that the deterioration of tanks began soon after independence as they were brought under the Public Works Department that was unaware of existing indigenous systems of managing them, besides inadequate funding for maintenance. Discussions with farmer groups and the Panchayats, especially in Kanchipuram and Ramana-thapuram districts indicate that this was one of the many corollaries of the social reform movement in Tamil Nadu. Water bodies are valued and protected by local communities for their ecosystem services, especially irrigation, and when the management is local or perceived to be inclusive in its approach¹³. A change in the management, especially to a system that is seen to exclude local communities and their interests may undermine the intangible ecosystem services provided by the water body.

With specific reference to bird sanctuaries, contamination of water with large quantities of bird excreta, sediments and agricultural chemicals run-off results in high biochemical oxygen demand, thereby degrading water quality and reducing aquatic diversity, including native fish species¹⁴. The bird sanctuaries were observed to be infested with invasive fish species such as Tilapia (*Oreochromis mossambicus*) and Giant African Catfish (*Clarias gariepinus*), which are capable of surviving in unfavourable environmental conditions¹⁵. The Giant African Catfish not only decimates other aquatic

fauna, it is also not the food for any of the birds due to its large size (R. J. R. Daniels, pers. commun.). Tilapia, which was introduced in Tamil Nadu to ensure the availability of low-cost animal protein, was found to be widely represented in nearly all the bird sanctuaries. The cessation of fishing leases and permissions granted by the state departments has further intensified this problem. In bird sanctuaries that are part of the Lower Cauvery basin such as Karaivetti and Udayamarthandapuram, the major problem is the loss of area of the water body due to the extensive growth of weeds like *Eichhornia crassipes* and *Ipomoea carnea*. In Ramanathapuram district, water bodies such as Kanjirankulam and Chitirangudi are overrun by *Prosopis juliflora* and the planted *Acacia nilotica*, aggravating the existing water stress.

Evidently, the issue of managing the bird sanctuaries is rather complex not only due to changing scenarios within the landscape, but also because of the involvement of multiple line departments in protecting and managing the water bodies. Also, the much celebrated symbiotic relationship between local communities and birds in Tamil Nadu needs to be revaluated and contextualized for the current time-period. Based on the validation, management systems and processes need to be evolved as the state embarks on a mission of ensuring the wise use of wetlands, which is the key tenet of the Ramsar Convention on Wetlands, 1971.

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Avantika Bhaskar and Jayshree Vencatesan are in Care Earth Trust, #5, Shri Nivas, 21st Street, Thillaiganga Nagar, Chennai 600 061, India.*

**e-mail: jvencatesan@gmail.com*