Conservation of the Indian Flying Fox at Murappanadu Sacred Grove in Tamil Nadu

The order Chiroptera comprises 25% of all mammal species (Mickleburgh et al. 2002) and the global number of taxa now exceeds 1,400 species. India is known to have more than 127 species of bats (Talmale & Saikia 2018), and in Tamil Nadu, there are 35 species of bats (Kamalakannan & Nameer 2019). Among them, the Indian Flying Fox *Pteropus medius* Temminck 1824 (formerly *Pteropus giganteus*) is the largest.

Flying Foxes aid in seed dispersal for nearly 300 plant species and play a vital role in forest regeneration (Shilton et al. 1999). Despite their ecological services, they are still threatened by hunting for meat and habitat destruction due to anthropogenic encroachments in several cases (Dey et al. 2013) leading to consistent decrease (Venkatesan 2007) and becoming locally threatened. Hence, it necessitates the need

A view of 'Inthu Marathu Sudalai' sacred grove at Murappanadu Village and a colony of Indian Flying Fox *Pteropus medius* roosting in the trees, *Terminalia arjuna* and *Ficus religiosa*. © M. Punitha Stephen & K. Kamaraj.

to recognize and study the roosting and foraging landscapes of *P. medius* in order to understand their habitat selection strategy which will enable us to provide information for the planning of forest management strategies for conserving *P. medius* (Mildenstein et al. 2005). Even in these situations, *P. medius* and its roosting areas are conserved thanks to sacred groves, they are forest fragments protected by local communities as being the sacred residence of local deities and sites for religious cultural rituals. There are numerous sacred groves in and around Tamil Nadu such as Agraharam and Palakode in Dharmapuri and Nattamangalam in Salem (Murugan 2019), Madhukaatu Kali sacred grove in Pudukottai, Tamil Nadu (Tangavelou et al. 2013). These places serve as valuable storehouses of biodiversity. Sacred groves are distributed over a wide ecosystem and help in the conservation of rare and endemic flora as well as fauna (Mohanta et al. 2012; Tangavelou et al. 2013). In this context, the roosting ecology of *P. medius* in a sacred grove of Thothookudi District was documented.

The distribution and survey of *P. medius* bats was studied in a sacred grove of Murappanadu village (8.7170^0 N; 77.8317^0 E), Karungulam block in Thothookudi District of Tamil Nadu during January 2017 through March 2021. This sacred grove locally called 'Inthu Marathu Sudalai' temple which covers an area of about 200 acres is located 150 m away from the running perennial Tamirabarani River. This is one kilometer away from Murappanadu village, the northern side of the Tirunelveli-Thoothukudi National Highway (NH 138). The ecologically unique features in the sacred landscape have facilitated bats to select the roosting place in the particular habitat.

In the study area, a bat colony of *P. medius* (ca. 250) was observed in undisturbed conditions in three trees. The height and girth at breast height (GBH) of *Ficus religiosa* (tree #1) is 28 m and 243 cm, *Terminalia arjuna* (tree #2) 24 m and 152 cm, and *Terminalia arjuna* (tree #3) 27 m and 182 cm, respectively.

In this sacred grove, the bats are considered as sacred animal and worshipped by the local people residing in and around the villages. They believe that the bats are serving as guards protecting the tree and the deity would punish if anybody hurt the bats. Thus, the bat colony is protected inside this scared grove for several decades.

Fruit bats in India cause considerable damage to the orchards and get themselves killed in the hands of cultivators (Srinivasulu & Srinivasulu 2002). In such a reality, it is surprising to hear that bats are still conserved by local communities. One such unique habitat is our study area (250 bats), where the bat abundance is lower than Madhukaatu Kali sacred grove (431 bats on *Acacia leucophloea* and *Pongamia pinnata*) (Tangavelou et al. 2013) while lower than Agraharam (500 bats on *T. indica*), Palakode (2,000 bats on *Ficus religiosa*) in Dharmapuri and Nattamangalam (1,000 bats on *T. indica*) in Salem (Murugan

2019). Extirpation of any species from the ecosystem will have hazardous impact on the ecosystem. When an animal like *P. medius*, a potential seed disperser is removed, the results will be disastrous. As its population is declining consistently, it is vital to conserve its roosting places in order to maintain their healthy population in this anthropogenically influenced ecosystem. In the future, environmental awareness program to these local peoples can be conducted to focus on the ecological importance of the flying foxes in sacred grove and its beneficial role as a pollinator and seed disperser and health hazards arise due to hunting and consumption of bats.

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