

A large breeding colony of River Tern *Sterna aurantia* in Chilika Lake, Orissa (India)

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River Tern *Sterna aurantia* distribution is restricted to tropical Asia—from Iran east through Pakistan, India and Thailand. It inhabits inland river systems, lakes and rarely, estuaries (Ali & Ripley 1983; Harrison 1983). Information on the breeding biology of the species is limited.

During our waterbird population monitoring study at Chilika Lake (19°28'–19°54'N 85°05'–85°38'E), Orissa (India), between 2001 and 2005, a breeding colony of three tern species namely Gull-billed *Gelochelidon nilotica*, Little *Sterna albifrons* and River terns was recorded on Nalabana Island (19°42'36"N 85°28'48"E) located in Chilika Lake. We recorded nesting season, nest locations, nest materials, clutch size and threats to the breeding terns for three consecutive years (2002, 2003 & 2004). Nests were marked with 5 cm long, well-camouflaged sign strips, to avoid repeated counting and to confirm the clutch

size and incubation period. The sign strips were numbered to identify individual nests and nest locations were marked with a Global Positioning System (GPS). To minimize disturbance to the nesting / brooding birds, surveys were mostly done early morning and late evening. Care was taken to minimize the disturbance while moving into the colony site.

In Chilika especially at Nalabana Island, the River Tern population began to build up from February, as birds arrived to the Island for breeding, and peaked in April (Fig. 1). Though territory marking and mobbing behaviour occurred in late February in all the breeding seasons, nest construction and egg laying were recorded only in the last week of March. Our data of the River Tern's main nesting season (from the end of March to June), clutch size, and incubation period, corroborates that of Ali & Ripley (1983). From studies in Gujarat



River Tern *Sterna aurantia*

it appears that the breeding season is closely linked to the appearance of safe nesting substrate, mainly islands and in years when water levels are such that safe islands emerge in November, the breeding season can commence early and second clutches are also laid (Mundkur 1991).

In all the three breeding seasons, the shallow, unlined nests were observed on dry, open, sandy, and invariably, slightly elevated ground. The average size of newly constructed nests was 18.6cm (± 1.8 cm) in diameter and 7.3cm (± 0.9 cm) in depth (n=44). Dead gastropods, shells and tern feathers were used as nesting materials in some nests. Though clutch size varied between years, most of the nests were found with two to three

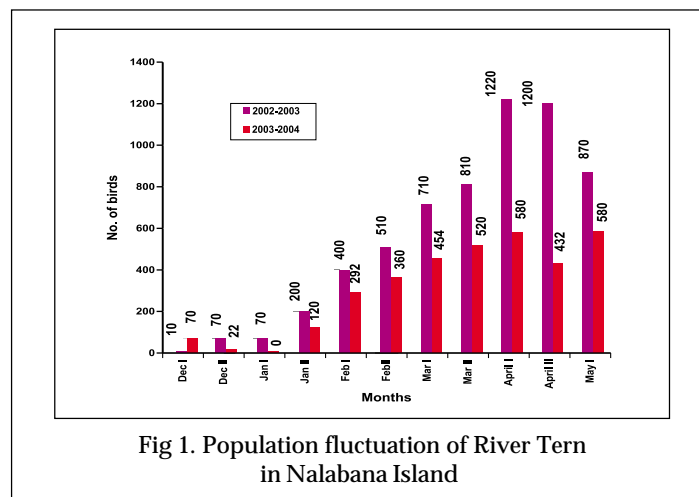


Fig 1. Population fluctuation of River Tern in Nalabana Island

eggs. One nest each with four and five eggs was seen in 2002 and 2003 respectively. Food in nests, either dropped by adults or regurgitated by hatchlings, was collected for identification—to ascertain the diet of breeding terns. Three genera / species of brackish water fishes namely, *Aterinomor* *duodecimalis*, *Nandus nandus* and *Mugil* sp., were fed to the chicks.

Though Neelakantan (1988) and Saxena (1992) state that the River Tern breeds sporadically throughout India, only a small number of nests have been recorded in each colony, colonies numbering many hundred nests were recorded by Baker (1929). Larger River Tern colonies have been recorded near Pune (Bharucha *et al.* 1988; E. Bharucha *verbally*) and in Pong Dam (D. S. Dhadwal *verbally*; S. Balachandran *field observation*). However, Mundkur (1991) estimated a total of 456 nests during an entire nesting season, including re-nesting pairs, in a freshwater riverbed near Rajkot city, Gujarat. The 540-nest colony of Nalabana Island, during 2002, is probably the largest known breeding colony for this species. Moreover, occurrence of such a large colony on an island in a brackish lake is noteworthy, especially since large colonies of this freshwater preferring tern were hitherto recorded either along the riverbeds or islands or on margins of freshwater dams. The terns are most probably constrained to use a saline environment due to the disturbance around freshwater habitats that prevents their nesting. It is worth mentioning here that this species rarely occurs in estuaries, contrary to Ali & Ripley (1983). Most of the colonies described from northern India were either on sand pits, sand banks or islets in perennial rivers (Baker 1935; Ali & Ripley 1983).

Table 1. Total nests of River Tern on Nalabana Island

Year	Number of nests
2002	540
2003	476
2004	304

Despite the availability of several riverbeds within a radius of 50 km of Nalabana, the preference for this island for nesting may be due to its being uninhabited and a sanctuary protected from human interference, although as explained further cattle grazing by villagers indicates a level of human disturbance. Though Hussain *et al.* (1984), Mohapatra (1998) and Acharya & Kar (2000) reported breeding colonies of Gull-billed *Gelochelidon nilotica* and Little *S. albifrons* Terns on Nalabana Island, breeding colonies of River Tern were not recorded earlier. However, during our study, River Tern was the predominant tern species in all the seasons. This suggests that the large River Tern colony on Nalabana has been established recently.

Floods are the single greatest threat to the colony at Nalabana. In all the three seasons, the hatching success here was above 70% but the fledging success was less than 5%. Nalabana begins to submerge in the rising waters of Chilika from the second week of May, and remains under water till early November. The flooding of the Island is caused by the incursion of seawater due to strong winds in summer, and subsequently by rainwater during monsoon. As this flooding coincides with the terns' peak breeding season, the un-hatched eggs and chicks are washed away.

Grazing domestic buffaloes from nearby villages caused additional damage to the breeding birds, as well as nests. They trampled altogether 59 nests during the three years. 44 nests being destroyed in 2003 alone. Egg predation by bandicoots *Bandicota* sp. was another threat to the breeding birds and a total of 99 eggs were found in their tunnels during 2002 and 2003, several of which were of the River Tern. Mundkur (1991) also reported predation by bandicoot in colonies around Rajkot.

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