



Expanding Range, Ecological Impact, and Conservation Challenges of the Invasive Red-eared Slider (*Trachemys scripta elegans*) in West Bengal, India

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Abstract.—The Red-eared Slider (*Trachemys scripta elegans*), among the most frequently trafficked species in the international live-animal trade, is recognized as a globally significant invasive species. During a 2024 chelonian survey in the lower Gangetic Plain, an internationally recognized turtle priority area, we encountered numerous individuals of *T. s. elegans* in southern West Bengal. One individual was in the Kangsabati River, Paschim Medinipur District, and others were in the Parashnath Temple pond in Kolkata, in both instances coexisting with native turtles. The survey also documented the expanded range of *T. s. elegans* in West Bengal and provided the first photographic documentation of the Indian Tent Turtle (*Pangshura tentoria*) from temple pond in the state. The occurrence of this invasive species raises concerns about potential impacts on native turtle populations and freshwater aquatic ecosystems. We suggest the implementation of comprehensive surveys across West Bengal to identify the distribution of exotic turtle species in native habitats and apply appropriate management strategies.

Freshwater ecosystems are among the most threatened environments throughout the world, largely due to the introduction of exotic species (Peipoch et al. 2015). These invasive species have detrimental effects on natural ecosystems largely by competition with and predation of native species (Schoener and Spiller 1996). Predation by non-native species can have immediate adverse effects leading to the breakdown of entire food webs (Schoener and Spiller 1996; Rodda et al. 1997), whereas competition tends to result in delayed but equally detrimental consequences for native species (Petren and Case 1996).

The Red-eared Slider, *Trachemys scripta elegans* (Wied, 1838), a freshwater turtle native to the southern and southeastern United States of America and extreme northeastern Mexico, is recognized as one of the top 100 worst invasive species globally due to its fecundity and adaptability (Dupuis-Desormeaux et al. 2022). Growing concerns about the introductions of *T. s. elegans* outside its native range reflect its popularity as a pet in at least 75 countries, including India (Vyas 2019; Hmar et al. 2021). Once these turtles reach carapace lengths of ~30 cm, they become difficult to manage in captivity, leading to their release into natural ecosystems by owners unaware of the potential ecological consequences (Teillac-Deschamps et al. 2008).

The introduction of *T. s. elegans* poses numerous threats to native species, particularly native freshwater turtles (Vyas 2020). Because of their highly aggressive and competitive behavior (Polo-Cavia et al. 2011), Red-eared Sliders can dominate resources such as food (Jo et al. 2017), basking (Cadi and Joly 2003) and nesting sites (Ma and Shi 2017). Additionally, they can facilitate the spread of diseases and parasites (Demkowska-Kutrzepa et al. 2018), and contribute to “genetic pollution” in closely related lineages like *T. s. scripta* (Parham et al. 2020).

Since ancient times in India, ponds adjacent to temples become sacred through worship rituals (Singh et al. 2021). Particularly in Northeast India, a unique cultural practice involves donating turtles to temple ponds whenever a child is born into a family, believing that this act ensures the child’s longevity akin to that of the turtle (Purkayastha et al. 2013). These ponds provide refuges for several endangered species of turtles, protecting them from hunting and other anthropogenic disturbances and thus are essential for conserving local biodiversity. For instance, the Black Softshell Turtle, *Nilssonina nigricans* (Anderson, 1875), declared extinct from the wild on the 2002 International Union for Conservation of Nature (IUCN) Red List of Threatened Species (Asmat 2002), is thriving in temple ponds across West Bengal and the northeastern states of India (Das et al. 2020).

The lower Gangetic Plain of West Bengal, which has been identified as a hotspot for freshwater turtles (Buhlmann et al. 2009; Mittermeier et al. 2015), also is known as one of the most active and critical routes for the turtle trade in India and other Asian countries (Sengottuvel et al. 2024; Mandal et al. 2025). Consequently, the occurrence of *T. s. elegans*, reported for the first time in both temple ponds and riverine pockets in West Bengal, particularly in the Gangetic Ecoregion, is alarming albeit not surprising. In addition, we herein provide the first photographic evidence of the Indian Tent Turtle, *Pangshura tentoria* (Gray, 1834), from West Bengal. Interactions between invasive Red-eared Sliders and native turtle populations emphasize the urgent need for targeted conservation efforts.

Materials and Methods

We employed visual encounter surveys (Gray et al. 2013) supplemented by input from local fishermen and residents from January to December 2024 at multiple locations in southern West Bengal to gather baseline data on the distribution of chelonian species.

We presented color photographs to local residents and fishermen to aid in identification, made observations only

during the day, identified turtles using literature (i.e., Burger 2009) and photographic references (Singh et al. 2023), recorded locations using a GPS device (Garmin eTrex-30), and photographed turtles with a Nikon B700 camera to document basking and feeding behaviors.

Results and Discussion

Based on preliminary data, we identified two sites where invasive Red-eared Sliders were present, one individual was recorded as bycatch in the Kangsabati River, Paschim Medinipur District (22.4096, 87.2779) (Fig. 1) and 16 were observed basking in the Parashnath Temple pond (22.5915, 88.3781) in Kolkata (Fig. 2). The temple pond, which is enclosed by concrete, covers a total area of 507 m² and has an average depth of ~4.5 m. Although discussions with temple authorities included an estimate of about 50 turtles residing in the pond, sightings are infrequent, primarily due to the absence of adequate basking sites. Turtles in the pond were actively fed by devotees with biscuits, puffed rice, and roti, which also disrupts basking behavior.

We recorded the first photographic evidence of *P. tentoria* in West Bengal, identifying four individuals in the Parashnath Temple pond (Fig. 3). A photographic voucher has been

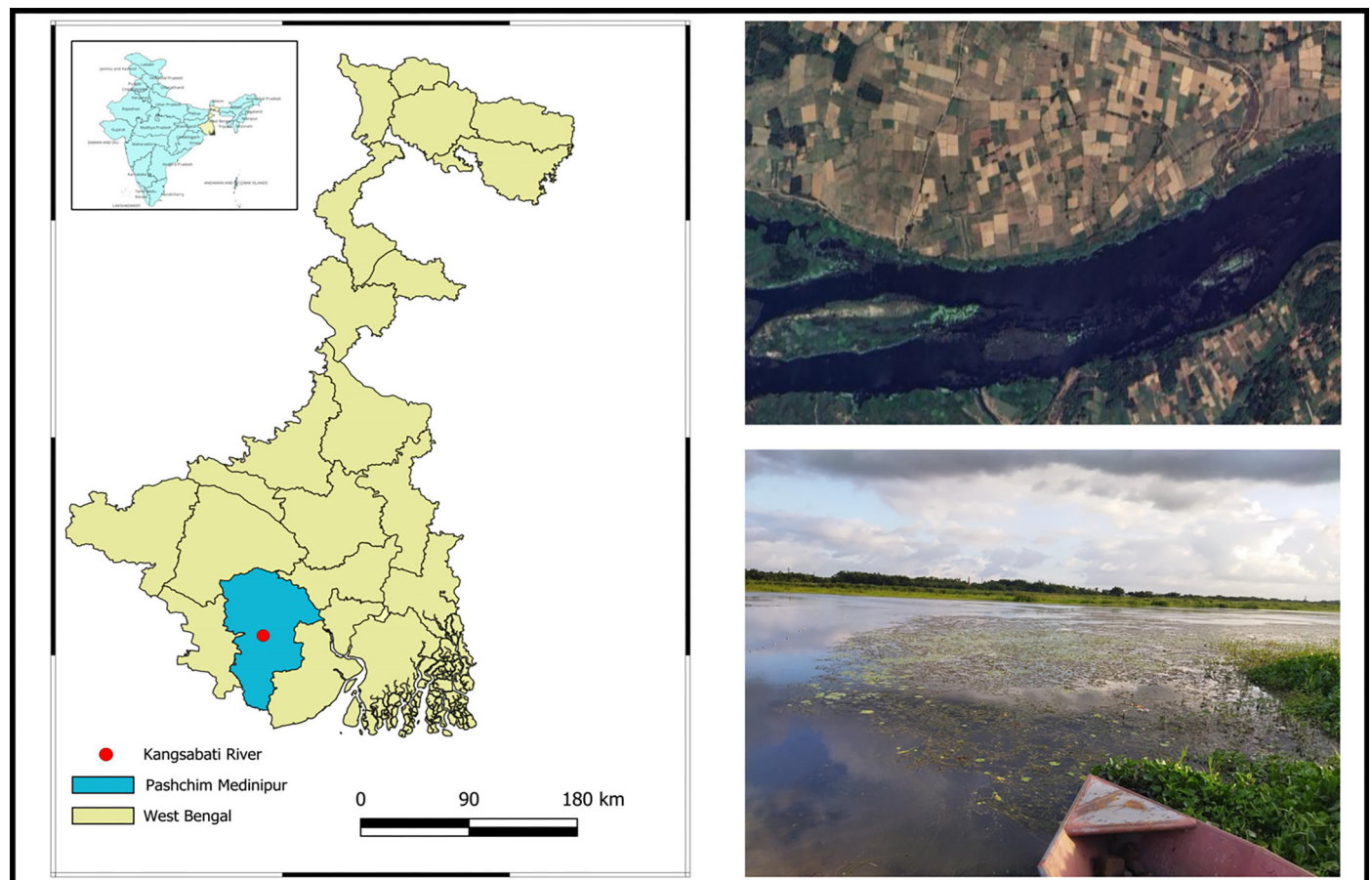


Figure 1. The location in the Kangsabati River, Medinipur Region, West Bengal, India, where a Red-eared Slider (*Trachemys scripta elegans*) was captured by fishermen. Photographs by Prasun Mandal.

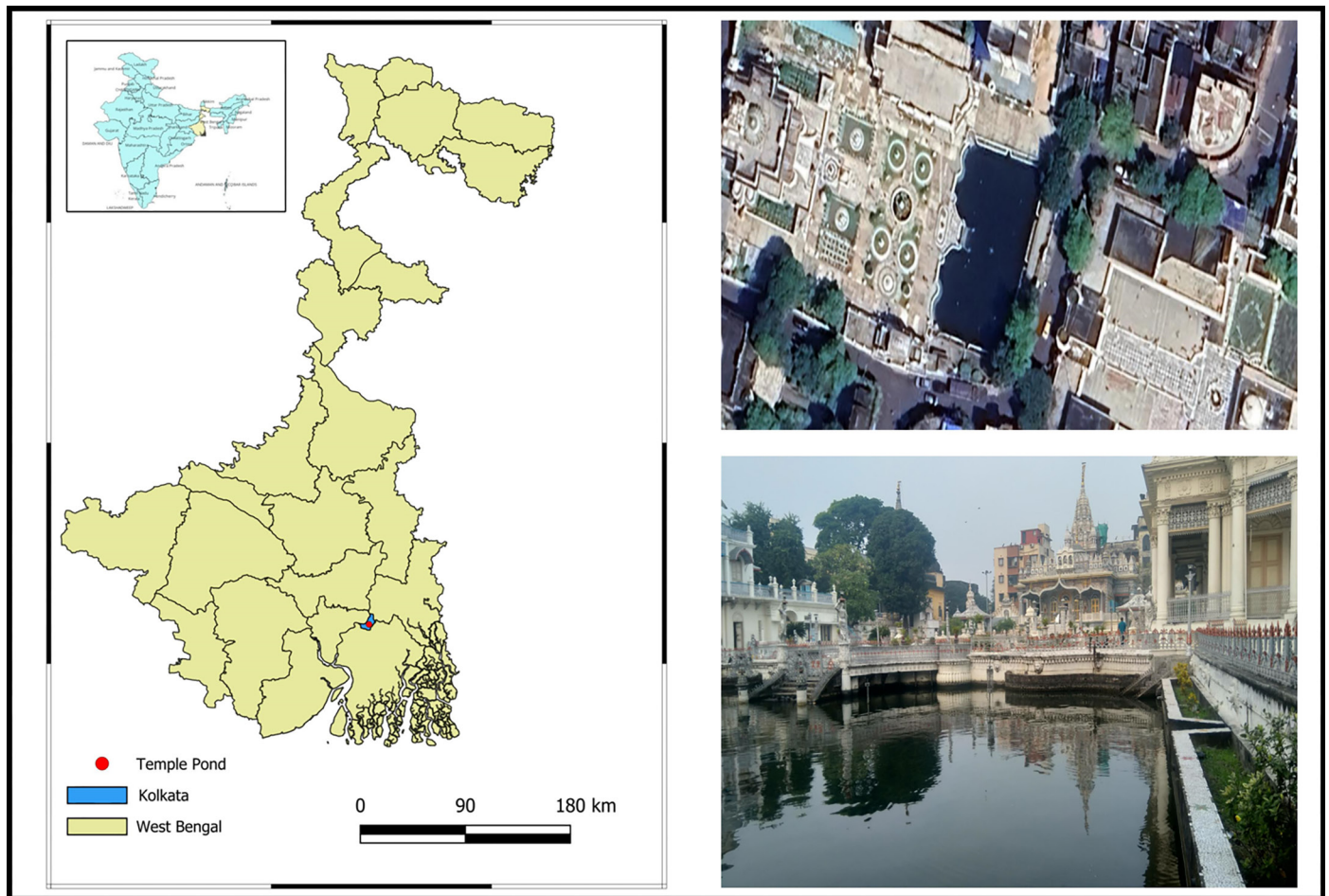


Figure 2. The location of the sacred Parashnath Temple pond in Kolkata, West Bengal, India, where 16 Red-eared Sliders (*Trachemys scripta elegans*) were observed basking. Photographs by Prasun Mandal.



Figure 3. Biscuits, roti, and puffed rice thrown by devotees into the sacred Parashnath Temple pond in Kolkata, West Bengal, India, to feed the turtles (left) and an Indian Tent Turtle (*Pangshura tentoria*) being approached by a Red-eared Slider (*Trachemys scripta elegans*) (right). Photographs by Prasun Mandal.

deposited in Lee Kong Chian Natural History Museum (ZRC(IMG) 2.713) and the identity of the species was confirmed by Dr. Niladri Bhusan Kar. On several occasions, we observed *T. s. elegans* approaching this native species, displacing individuals from basking sites or interfering with feeding. Indian Tent Turtles occur in India and Bangladesh (Kundu et al. 2019), are classified as being of Least Concern on the IUCN Red List (Choudhury et al. 2021), and are included with other species of *Pangshura* (except *P. tecta*, which is in Appendix I) in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Appendix II (CITES 2025). However, due to anthropogenic threats, populations of *P. tentoria* have declined dramatically in Northeastern India and other regions, leading to recommendations for its inclusion in Schedule I of the Indian Wildlife (Protection) Act, 1972 (van Dijk et al. 2000; Yadav et al. 2021).

Temple authorities also indicated that several species of native turtles were present in this pond but due to the aggressive behavior exhibited by some turtles, a few individuals were captured and released into the river. In addition to competition for spatial and trophic resources, predation by Red-eared Sliders on native Indian turtles was reported initially by Chetan (2013) and a captive study of interactions between *T. s. elegans* and native Indian turtles demonstrated that the former actively chased and consumed hatchling Indian Roofed Turtles (*Pangshura tecta*) (Vyas 2020).

The introduction of *T. s. elegans* into natural Indian river systems has been documented by Jadhav et al. (2018) in Goa and Vyas (2019) in Gujarat. However, reports by Giri et al. (2022) of Red-eared Sliders in temple ponds of Odisha and Chaudhuri et al. (2018) in a wetland near Kolkata suggest that introductions of this invasive species likely are much more common than those that have been documented, emphasizing a need for comprehensive studies to understand the ecological implications of what appears to be a rapidly expanding range.

The popularity of *T. s. elegans* as a pet has fueled its widespread introduction in India (Vyas 2019). In 2013, approximately 10,000 hatchling Red-eared Sliders were seized at Kolkata International Airport, West Bengal (Chaudhuri et al. 2018). More recently, Pragatheesh et al. (2021) noted that large numbers of *T. s. elegans* are regularly and often covertly traded throughout India, facilitated by low prices, abundant availability, high survival rates, and small size, making them easy to transport covertly. This scale of illegal trafficking in Red-eared Sliders clearly is affecting freshwater habitats in India that sustain an enormous amount of biodiversity, about 9.7% of the country's entire fauna (Chandra et al. 2017), including the highest proportion of native freshwater fish species (27.8%) among Asian nations (Lakra et al. 2010). However, that faunal diversity is declining at an alarming rate.

In West Bengal, Kar et al. (2017) recorded 45 fish species within the stretch of the Kangsabati River in Paschim Medinipur District, and Das and Maity (2019) documented a diverse community of aquatic insects in a nearby 3-km stretch in the city of Midnapore. Our confirmation of the occurrence of *T. s. elegans* in this stretch of river highlights the potential overlap with local biodiversity, likely threatening populations of native species.

India is home to 31 species of freshwater turtles and tortoises (Mital et al. 2019; Hmar et al. 2020; Farkas and Praschag 2025), 78% of which are listed in a threatened category on the IUCN Red List (Mendiratta et al. 2017). West Bengal hosts 17 of these species (Rao 2016), making the state a critical area for turtle conservation. The invasion of *T. s. elegans*, with its ability to outcompete native turtles, poses a significant threat to this biodiversity. Temple ponds in West Bengal play an essential role in the conservation of threatened native turtle species (Das et al. 2020; Mandal and Mallick 2025); however, the introduction of exotic turtle species into these temple ponds is emerging as a new threat to those populations.

To address this growing issue, we suggest the implementation of comprehensive surveys across West Bengal to identify the distribution of exotic turtle species in native habitats and apply appropriate management strategies. In a megadiverse nation like India, stringent regulations addressing invasive species are urgently required to safeguard the conservation of native species. We also recommend that temple authorities establish additional habitats to minimize competition among these species.

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