



Conservation of Two Freshwater Turtle Species in the Guru Gorakhnath Community Reserve in Western Haryana, India

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Abstract.—The active involvement of local communities in conservation efforts is pivotal to ensuring the long-term protection and preservation of our natural environment. In the village of Kajalheri, Fatehabad District, Haryana, India, the environmentally conscious Bishnoi community has been engaged for nearly a century in the conservation of the Indian Softshelled Turtle (*Nilssonina gangetica*) population in the village pond. As a testament to their efforts, the pond was officially designated as a community reserve in 2019 to safeguard these turtles. The Indian Softshelled Turtle was the only species known to inhabit the small pond until we encountered a second species, the Brown Roofed Turtle (*Pangshura smithii*), during surveys from 2021 to 2023. No surveys have addressed freshwater turtle diversity specific to Haryana. Therefore, data on the diversity and distribution of freshwater turtles in the state are sparse. Observations herein provide valuable insights into effective habitat management strategies and instill hope that similar sites in the forest-deficient state of Haryana will be identified and protected.

In India, community reserves are protected areas established to conserve biodiversity and promote community participation in conservation efforts. These reserves are necessary for the conservation of local flora, fauna, and traditional knowledge systems. They serve as a bridge between local communities and conservation initiatives, fostering sustainable development and preserving ecological balance (Ministry of Law and Justice 2010). Villagers in the village of Kajalheri, Fatehabad District, Haryana, India, primarily of the environmentally conscious “Bishnoi” community, have been conserving the village pond for almost a century to safeguard the resident

turtles (Fig. 1) against threats emanating from illegal trade. Efforts were made to have the pond designated as a community reserve under Section 36-C of the Wildlife Protection Act, and in May 2019, an approximately 3.5-hectare area was officially designated the Guru Gorakhnath Community Reserve (Fig. 2). The reserve is home to at least 300 Ganges Softshelled Turtles, *Nilssonina gangetica* (Cuvier 1825) (Trionychidae).

Freshwater turtles play vital roles in aquatic ecosystems, not only representing a substantial portion of the biomass, but actively participating in the aquatic food web, support-



Figure 1. At least 300 Indian Softshelled Turtles (*Nilssonina gangetica*) are at home in the Guru Gorakhnath Community Reserve. These turtles are of significant cultural and religious importance, particularly in the context of Temple Pond culture, which considers them to be sacred animals. Photographs by Vinod Karwasra and Vikram Delu.

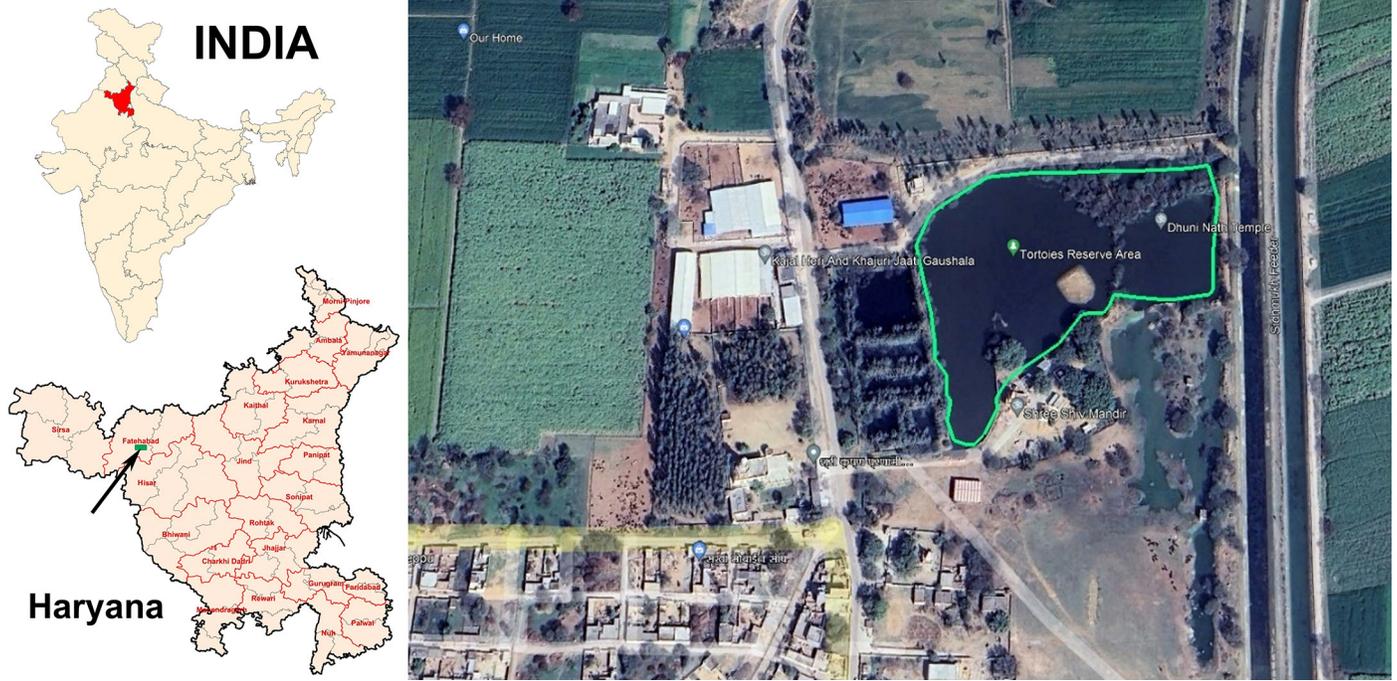


Figure 2. Maps showing the location of the Guru Gorakhnath Community Reserve in the Fatehabad District, Haryana, India, and the the specific location of the pond (green outline) that is home to populations of the Indian Softshelled Turtle (*Nilssonian gangetica*) and the Brown Roofed Turtle (*Pangshura smithii*).

ing co-dependent species, and facilitating the energetic operation of the ecosystem (Iverson 1982; Congdon and Gibbons 1989; Ernst et al. 1994; Moll and Moll 2004). The Ganges Softshelled Turtle is a large species (carapace lengths to 70–90 cm) with extensive webbing on both fore- and hindlimbs that facilitates aquatic locomotion (Fig. 3) (Das 1995). Distributed in northern India and adjacent Bangladesh and southern Nepal, these omnivorous turtles occur primarily in rivers and streams, with substantial populations in major Indian river systems, such as the Indus, Ganga, Brahmaputra, Mahanadi, and Kosi, that span upper peninsular India. Although usually associated with rivers and streams, occasional reports document the presence of the species in stagnant lakes and ponds

near bodies of flowing water; these could represent isolated populations or merely individuals dispersed from adjacent rivers (Das 1995). The species is listed as endangered (EN) on the IUCN Red List (Ahmed et al. 2021a) and in Schedule I of the Wild Life (Protection) Act, 1972 (Ministry of Law and Justice 2023).

The Ganges Softshelled Turtle is of substantial cultural and religious importance, particularly in the context of Temple Pond culture, which considers it a sacred animal, believed to be the holy incarnation of the Hindu God Vishnu, known as “kurma” (Das 1995). This further highlights the cultural value of the species and the need to conserve it. Herein we document a case of community-based



Figure 3. Congregations of Indian Softshelled Turtles (*Nilssonian gangetica*) at the Guru Gorakhnath Community Reserve: Multiple turtles on the banks of the pond with a monkey in the background; monkeys are potential predators of turtle nests (top); edge of the pond edge with turtles struggling to find suitable basking sites; shore improvements are necessary to increase the extent of quality basking habitat (center); and turtles in the eutrophic pond; water-quality assessments are needed to ensure that this habitat remains viable for aquatic species (bottom). Photographs by Vinod Karwasra and Vikram Delu.

conservation in a region with strong beliefs and a commitment to conservation.

We have been opportunistically monitoring the village pond in Kajalheri (29.4366 N, 75.6026 E) for turtles since 2021, photographing them when possible. During the initial survey in January 2021, we recorded approximately 300 turtles identified as *Nilssonia gangetica*. However, during subsequent visits in 2023, we encountered eight Brown Roofed Turtles, *Pangshura smithii* (Gray 1863) (Geomydidae) (Fig. 4). Found in northern India, adjacent Pakistan, and rarely in the Ganges River system in Bangladesh, this species is listed as Near Threatened (NT) on the IUCN Red List (Ahmed et al. 2021b) and in Schedule II of the Wild Life (Protection) Act, 1972 (Ministry of Law and Justice 2023).

Turtle sightings are relatively rare due to a lack of suitable basking areas, poor water quality, and hibernation during winters. Interaction with the local community provided valuable insights, including an estimate of about 500 turtles in the ponds and observations of dense aggregations in the few available basking sites (Fig. 3), such as that on a small island near the edge of the pond. The villagers endeavor to maintain the cleanliness of the pond but are not currently monitoring or protecting turtle nests from potential predators, such as monkeys (Fig. 3). Hatchlings encountered by local villagers are released back into the pond.

Factors that can affect turtle populations in isolated habitats include habitat size, resource limitations, water quality and maintenance, social dynamics, and conservation relevance. Natural behaviors of freshwater turtles require ample space (Das et al. 2014), and restricted movement in a small pond can lead to stress, compromised health, reduced overall fitness, and even cases of cannibalism (Rao 1986; Ahmad and Das

2010). In addition to space, limited resources such as food could lead to increased competition and potentially to malnutrition, stunted growth, or increased mortality (Gibbons et al. 2000). Insufficient access to basking areas, refugia, and nesting sites also can impact the reproductive success of individuals (Edgar et al. 2010). For example, monkeys are known to excavate nests and feed on the eggs. Any conservation management plans should prioritize biotic and abiotic factors when identifying and conserving suitable habitats. Water quality and maintenance is more challenging in a small pond due to a higher concentration of waste products (Dorcas et al. 2012). Filtration systems and regular water changes would be beneficial but are difficult to implement effectively in a pond.

The social dynamics of the relevant turtle species are an important consideration but little is currently known about communal behaviors of the two species in the Guru Gorakhnath Community Reserve — and this should be a focal point for future research. Some species are naturally solitary and their proximity to other turtles can cause stress and increase aggression (Rao 1986; Ahmad and Das 2010). Conversely, social species might benefit from companionship, although small pond size could still pose challenges in terms of limited space and other resources (Edgar et al. 2010). Further, from a conservation perspective, keeping turtles in a small pond that does not replicate their natural habitat does not significantly contribute to the conservation of the species (Rostal et al., 2014). Conservation strategies should focus on preserving quality natural habitat, supporting breeding programs, and addressing anthropogenic threats such as habitat loss, pollution, and illegal trade.

In conclusion, we suggest that authorities and local stakeholders acquire or create additional habitat to reduce compe-



Figure 4. Adult Brown Roofed Turtles (*Pangshura smithii*) at the Guru Gorakhnath Community Reserve. Note the diagnostic blue eye color and the characteristic median dorsal ridge on the carapace. Photographs by Vinod Karwasra and Vikram Delu.

tition within and between species. We also suggest long-term monitoring and development of a management plan for this small community reserve. Embracing ecotourism, this picturesque pond that harbors turtles has become a success story for conservation in the region. As awareness grows, similar areas in the state could be identified and developed, offering additional opportunities for community participation in conservation at a grassroots level and encouraging ecotourists to better appreciate the delicate balance of ecosystems, support local communities, and play a vital role in nurturing a sustainable future in Haryana and beyond.

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