



Cultural Use of Turtle Shells, an Underrated Threat in Turtle Conservation: A Case Study in Assam, India

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Sixty-one percent of the 356 extant species of turtles are threatened or extinct (Lovich et al. 2018). Asian turtles have the highest percentages of imperiled species (75.0% Critically Endangered [CR] + Endangered [EN], 83.0% Threatened) due to high levels of exploitation (Rhodin et al. 2018). India is home to 29 species of freshwater turtles and tortoises, of which 21 species have been recorded in northeastern India and 20 from Assam (Ahmed et al. 2009; Purkayastha 2013). Most of the ethnic groups in the region consume turtle meat and eggs. Furthermore, turtle shells and meat are used for various traditional, cultural, and religious practices (Das et al. 2012).

As part of a recent (February–July 2019) study in northeastern India, an intensive questionnaire was used to survey 200 households in five villages (Jia Bharali, 26.710563°N, 92.852261°E; Biswanath Ghat, 26.659634°N, 93.166677°E; Batiamari Centre, 26.783616°N, 93.415533°E; Gohpur, 26.8789602°N, 93.6057847°E; and Major Sapor (26.905351°N, 93.897993°E) near the Brahmaputra River in Assam (Fig. 1). The questionnaires addressed people's traditional knowledge of turtles. We conducted structured interviews, asking questions related to turtles while showing participating villagers printed placards with photographs of turtles known to occur in the region. We also made inquiries regarding turtle shells or live turtles kept in households as trophies or for other purposes. No previous surveys of this type had been conducted in the chosen villages. We identified all turtles and turtle shells using descriptions in Smith (1931) and Purkayastha (2013). We extracted the current conservation status for all species encountered from the IUCN Red List of Threatened Species (IUCN 2020) and the Indian Wildlife Protection Act (1972).

We encountered 27 turtle shells belonging to two families and five species (Table 1; Fig. 2): Indian Roofed Turtle, *Pangshura tecta* (Gray 1830); Indian Tent Turtle, *Pangshura*

tentoria (Gray 1834); Tricarinate Hill Turtle, *Melanochelys tricarinata* (Blyth 1856); Indian Peacock Soft-shelled Turtle, *Nilssonina hurum* (Gray 1830), and the Ganges Soft-shelled Turtle, *Nilssonina gangetica* (Cuvier 1825). We also recorded two live Ganges Soft-shelled Turtles and one Indian Peacock Soft-shelled Turtle from two houses. Most of the turtle shells were hanging in cowsheds, but some were kept inside houses. Many of the villagers believe that a turtle shell kept in a cowshed will protect cattle from disease and bring prosperity to the family of the shell keeper.

Many ethnic groups associate turtles with healing, wisdom, and spirituality (Hassan and Sadek 2015), and turtle shells and

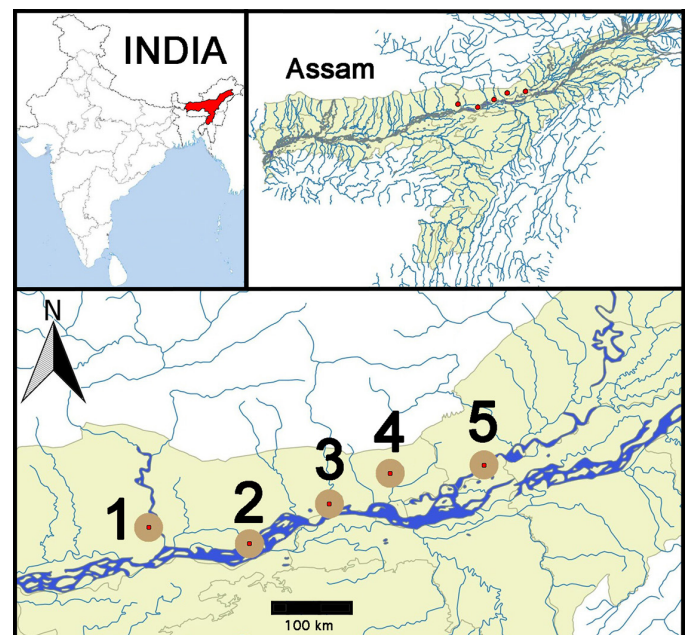


Fig. 1. Map showing locations of surveyed villages near the Brahmaputra River in Assam: (1) Jia Bharali, (2) Biswanath, (3) Batiamari Centre, (4) Gohpur, and (5) Major Chapori.

Table 1. Turtle shells found in various households in surveyed Assam villages. IUCN = International Union for Conservation of Nature, WPA = Indian Wildlife Protection Act (1972), LC = Least Concerned, VU = Vulnerable, Sc = Schedule.

Species (n)	IUCN Status	WPA Status
Geomydidae		
Indian Roofed Turtle (<i>Pangshura tecta</i>) (9)	LC	Sc I
Indian Tent Turtle (<i>Pangshura tentoria</i>) (12)	LC	Sc I
Tricarinate Hill Turtle (<i>Melanochelys tricarinata</i>) (2)	VU	Sc I
Trionychidae		
Indian Peacock Soft-shelled Turtle (<i>Nilssonina hurum</i>) (3)	VU	Sc I
Ganges Soft-shelled Turtle (<i>Nilssonina gangetica</i>) (1)	VU	Sc I

various body parts are used in zootherapy in many regions of the world (e.g., Costa-Neto 1999). Observations similar to ours were recorded by Khatun et al. (2013) in Bangladesh, where turtle shells are used to cure infections on cattle legs. Mahavar and Jaroli (2007) stated that the ash from burning turtles shells is used to cure skin burns and for the treatment of asthma and tuberculosis in Rajasthan, India. Although little information exists regarding the extent of using turtles or their parts for zootherapy in India, the practice of exploiting turtle shells and body parts for zootherapy could pose a considerable challenge for the conservation of Indian turtles. Increasing the awareness of nature, the importance of turtles to ecosystems, and the enactment and enforcement of legislation among relevant stakeholders, especially young people, is an urgent need if Indian turtles are to remain a part of India’s future.

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Fig. 2. Shells and a live turtle found in households in surveyed villages near the Brahmaputra River in Assam: (A) Shell of an Indian Tent Turtle (*Pangshura tentoria*); (B) shell of an Indian Peacock Soft-shelled Turtle (*Nilssonina hurum*); (C) a live Ganges Soft-shelled Turtle (*Nilssonina gangetica*). Photographs by the author.

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