

# Chapter 10

## Status, Distribution and Ecology of the Indian Flapshell Turtle, *Lissemys punctata*

S. Bhupathy  
Sálim Ali Centre for Ornithology and Natural History  
Anaikatti (PO), Coimbatore -641 108, India  
E-mail: bhupathy.s@gmail.com

### Introduction

The Indian subcontinent with 33 species has one of the most diverse chelonian fauna of the world; five marine, 24 freshwater and four land species. This includes eight species of softshell turtles; *Amyda cartilaginea*, *Nilssonina gangetica*, *N. hurum*, *N. leithii*, *N. nigricans*, *Pelochelys cantorii*, *Chitra indica* and *Lissemys punctata*. The flapshell or mud turtle of the genus *Lissemys* is currently known from two species, *Lissemys punctata* and *L. scutata*, and the later is distributed in Myanmar. Presence of three claws in each limb, femoral flaps, nasal septal ridges and moveable anterior plastral lobe are the key identification features of this species. Some information on taxonomy, distribution and ecology of the Indian turtle fauna is available in Smith (1931) and Das (1995). However, precise data on the biology of majority of the softshell turtles is scanty. In this paper updated information on the distribution and ecology of the Indian flapshell turtle, *Lissemys punctata* is presented.

### Status and Distribution

The Indian flapshell turtle is restricted to the Indian sub-region and two subspecies; *L. p. punctata* and *L. p. andersoni* are reported (Webb, 1982). The carapace and soft body parts of *L. p. punctata* are olive-green to brownish-green in young that may have black markings. The subspecies *L. p. andersoni* has an olive-green carapace and soft body parts, with yellow blotches (Webb, 1980). The subspecies *L. p. punctata* is distributed in Sri Lanka and peninsular India and *L. p. andersoni* in Pakistan, northern India, Nepal and Bangladesh and parts of north-western Myanmar. Barring a few northeast Indian states, the Indian flapshell turtle is distributed in all states in India. It is believed that this species was introduced into the Andaman Islands.

Countrywide and regional surveys showed that the Indian flapshell turtle is common and the most frequently observed of any turtle species in India (Moll, 1984; Das, 1986; Vyas and Patel, 1990; Bhupathy and Vijayan, 1991). Literature compiled on the species indicates that it is known from at least 153 localities within India, and is common at 88 of them (Bhupathy, unpublished data). This includes about one fourth of the locality records from the Protected Areas such as the Wildlife Sanctuaries and National Parks (Plate 10 A).

The Indian flapshell turtle and its eggs are heavily exploited for food. The quantum (number) of turtles reaching the Kolkata markets might have reduced in recent years; 50-70 thousand turtles/ year in early 1980s (Whitaker, 1997) and about 2000- 4000 during 1991- 1993 (Choudhury *et al.* 2000). Due to stringent action taken by the Forest Department of West Bengal, turtle trade has either been controlled or has gone underground. One kilogram of turtle meat in the Kolkata market was sold at ' 50 during 1991, and elsewhere in the country, this price might have varied from ' 15 to ' 150 for the same quantity.

### Habitat

The Indian flapshell turtle inhabits a variety of aquatic habitats, ranging from rivers and streams to reservoirs, marshes, ponds, lakes, and even salt marshes, rice fields, and gutters in metropolitan areas (Das, 1995). It is common in brackish water habitats in Sunderbans, West Bengal; Bhitarkanika, Orissa; and Coringa, Andhra Pradesh. It prefers relatively shallow waters, which may be devoid of aquatic vegetation, and they may spend long periods partially buried in the bottoms or along the edge of the wetlands. Of the 119 localities, where the species occurs in India, 37% harbours ponds and 3% had coastal wetlands (Plate 10 B).



### Food

The Indian flapshell turtle is an omnivore. Food items include adult frogs, tadpoles, fish, crustaceans, molluscs, earthworms, insects, carrion, and water plants (Das, 1995). Bhupathy and Vijayan (1993) quantified its diet from 71 faecal samples and reported both animal and plant items (Plate 10 C). It is suspected of being destructive to fish populations (Deraniyagala 1939). A study conducted in the Keoladeo National Park, Bharatpur showed that most fish consumed were either dead or dying (Bhupathy and Vijayan, 1993). Aquatic plants eaten include grass, water lilies and the bladderwort, and seeds and fruits of a few tree species (Bhupathy and Vijayan 1993).

### Predators

Apart from human exploitation for food, mortality is caused by a variety of predators. They include for adult: mahseer, mugger crocodile, large softshell turtle, white scavenger vulture; and eggs: otters, mongooses, jackals, rhesus macaques and monitor lizards (Deraniyagala, 1939; Bhupathy and Vijayan, 1994; Das, 1995).

### Adaptations

Ability to completely close the shell concealing soft body parts, and secretion from two pairs of Rathke's glands could protect this species from predators to some extent. Aestivation and hibernation during harsh climatic conditions might be responsible for wide distribution and healthy populations in many parts of its distribution. When shallow ponds and lakes dry up in the summer months; this species may undergo aestivation up to 160 days (Bhupathy and Vijayan, 1994). During aestivation, in Keoladeo National Park, Bharatpur, the turtles bury to a depth of about 50 mm (n=304). Annandale (1912) reported hibernation of this species during winter months in the northern part of its range.

### Breeding

Climatic factors such as rain appear to influence breeding in this species, but sporadic nesting is reported round the year as well. Clutch size varies from 2 to 15 eggs and multiple clutches are laid in a single breeding season. The eggs are white, spherical and brittle-shelled. This species has a prolonged incubation period ranging from 240 to 412 days; eggs laid during the monsoon of the previous year hatch during the onset of monsoon of the subsequent year. Vijaya (1982) reported breeding of this species in captivity.

### Conservation

The Indian flapshell turtle is protected under Schedule I of the Indian Wildlife (Protection) Act 1972. Moll (1984) and Choudhury and Bhupathy (1993) have recommended down listing this species to Schedule IV considering its common and wide spread distribution. However, abiding by the precautionary principle, the Government of India continues to keep it under Schedule I. This species is listed in Appendix II of the CITES and as Lower Risk in the IUCN 2007 Red List. In spite of the species being so common, ecology of the species is poorly known and studies on this species in larger geographical scale would provide more insights on its adaptability and biology.

### Acknowledgements

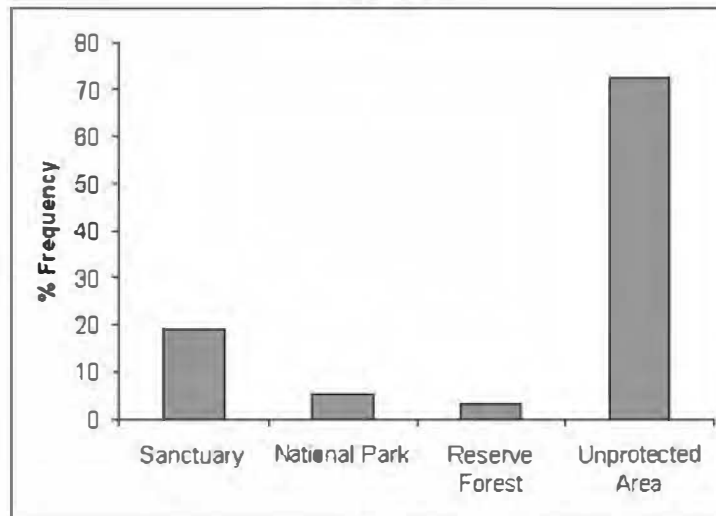
I am grateful to the Bombay Natural History Society, Mumbai (J. C. Daniel), Wildlife Institute of India, Dehra Dun (B.C. Choudhury), U.S. Fish and Wildlife Service, USA (David Ferguson) and Sálim Ali Centre for Ornithology and Natural History, Coimbatore (V. S. Vijayan) for supporting research on Indian turtles.

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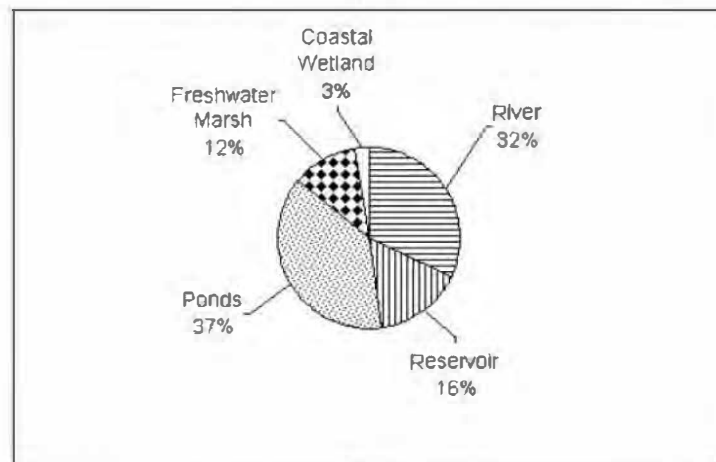
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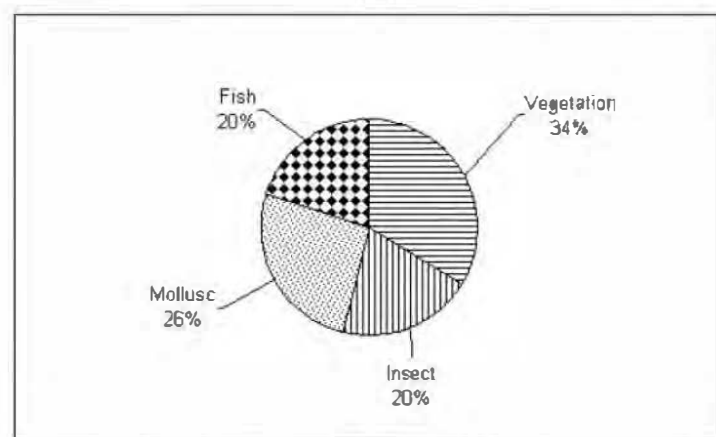
## Plate 10



(A)



(B)



(C)

(A): Distribution of the Indian flapshell turtle in various categories of forests in India; No. of locations included = 153; (B): Distribution of the Indian flapshell turtle in various habitats; No. of records analysed = 119 and (C): Food of the Indian flapshell turtle; No. of samples analysed = 71; Bhupathy and Vijayan (1993).

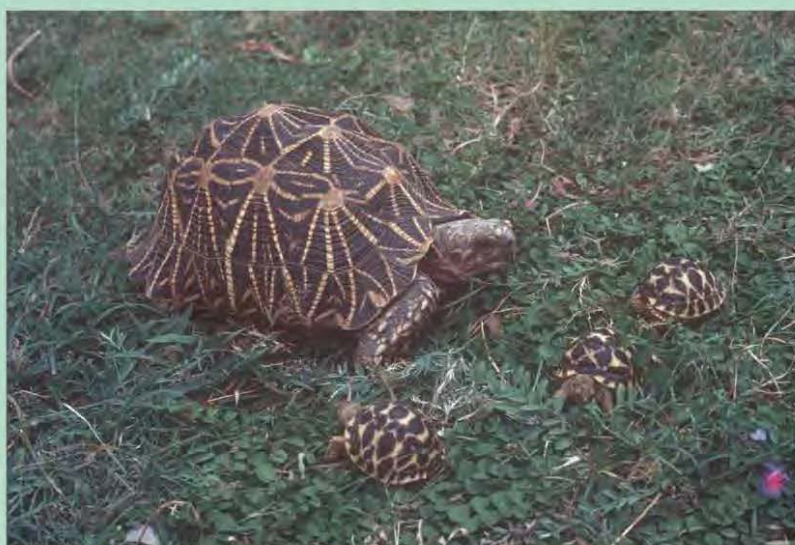
### The Indian Star Tortoise (*Geochelone Elegans*)

**Raju Vyas**  
505, Krishnadeep Apartments  
Mission Road, Fatehgunj, Vadodara, Gujarat, India.  
E-mail: [razoovyas@hotmail.com](mailto:razoovyas@hotmail.com)

The Indian Star Tortoise (*Geochelone elegans*) is a small tortoise with colourful markings. The habitats of the species are being lost very rapidly from its entire distributional geographical range. The species is widely distributed and found in dry and arid regions of Pakistan, India and Sri Lanka.

The geographical distributional pattern of species clearly illustrates that the species is discretely distributed in three sub-populations, i.e., two distinct populations on the main land and the third on the island of Sri Lanka. There is very little information on the ecology, biology, genetic variation and conservation value of the species.

Population	Geographical Area Occupancy (Approx) km <sup>2</sup>	% geographical area occurred by each sub-population	Country (Region)
North-western	384656	50	Pakistan (Sindh), India (Gujarat, Rajasthan, Madhya Pradesh)
South-eastern	334959	44	India (Kerala, Karnataka, Andhra Pradesh, Orissa, Tamil Nadu)
Sri Lanka	45927	6	Sri Lanka



**A female of Star Tortoise and hatchlings from North-Western Population**