

Turtles of Kankai (Mai) river and their ethno-medicinal uses

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Abstract

This paper deals with 67 specimens belonging to eight different species out of which 4 species were hard-shelled turtles such as *Indotestudo elongata*, *Melanochelys tricarinata*, *Melanochelys trijuga* and *Pangshura flaviventer*, while rest of 4 species were soft-shelled turtles such as *Lissemys punctata*, *Aspideretes hurum*, *Aspideretes gangeticus* and *Chitra indica*. Among all, *Lissemys punctata* was recorded as widely distributed and most abundant species. Ethno-medicinal uses of turtle by *Satar*, an indigenous ethnic community of southern Jhapa for human and domestic animals have been documented. Most of the diseases are treated by the use of turtle shell of *Lissemys punctata*.

Key words: Turtle, Kankai river, Jhapa, anthropogenic impacts, Chelonian

Introduction

Jhapa district [Lat. 26°20' to 26°50'N and the longitudes of 87°39' to 87°12'E; alt. 56 (Kechana Kalan) to 381 msl (Sunmai and Nindatar); area 1606 km²] is located in sub-tropical region of eastern Nepal with a monsoon climate (Rai, 2003). Kankai (Mai) is the largest and holiest river of the district, originated from the george of mountain, flows southward to lowland of eastern Terai, enters into the Bihar state of India and joins the Ganges river, covering drainage area of about 1,150 km² (Rai, 2004).

Records of Nepalese chelonian species date back to 150 years. Guenther described yellow elongated tortoise (*Indotestudo elongata*) for the first time from Nepal. An excellent summary of herpetological work done in Nepal up to 1960 is given by Swan and Leviton (1962). Shrestha (1997) made field work in different parts of eastern and western Nepal and gathered amphibians and reptiles from these areas. *Chitra indica* was reported from Kechana Jheel (Schleich, 2000) and Koshi Barrage (Schleich *et al.*, 2002). There are 14 species of turtles recorded in Nepal (Schleich *et al.*, 2002). Turtles and crocodiles need massy shallow wetlands habitats, many of which have been converted to agriculture land (Shrestha, 2002). *Indotestudo elongate* and *Melanochelys tricarinata* are rare in Nepal. Rai found *Cyclenys oldhami* at Tanting in the confinement of Dhobi Khola and Sakala Khola in the altitude of 280 m in August, 2001 (Schleich & Kaestle, 2002).

The situation for the turtle fauna of Nepal is extremely bad. The frequent killing and selling by the local people has added further depletion in the number of turtle fauna. All the turtles of Nepal are under tremendous pressure from professional fishing man, tribal people, children and censorial collectors collecting the snails and turtles (Schleich *et al.*, 2002). Rai (2006) reported *L. punctata*, *Pangshura* sp. and *Melanochelys* sp. from Chillagadh pond;

Cyclemys oldhamii, and *P. flaviventer* from the Kankai river; and *I. elongata* from Khumaltar (Bahundagi), Peltimari (Chulachuli) and Khudunabari (Biring flood plain). Similarly, *Melanochelys trijuga* was recorded from Kankai River (Schleich *et al.*, 2002; Rai, 2003). About 50% of total turtle species of Nepal (14 species) is recorded from Jhapa district but the habitat is vanishing drastically due to various anthropogenic impacts (Rai, 2006). Kankai (Mai) River was considered as the hot spot of turtle fauna after Kosi River but now it is not so (Rai, 2003). Shah (2004) reported that turtles are being overexploited as food and in the preparation of several traditional medicines as well as in making decorated artifact masks and curio items.

Atudy area

The study area covers the Kankai (Mai) River including its long and wide floodplains on either sides as well as forests, ponds, lakes and wetlands lying at its vicinities. The study area includes the survey route of about 30 km long starting from Domukha Dam at Maidhar (26°25'49.4"N to 87°40'31.0"E) to Bhakurmari (26°34'15.7"N to 87°50'27"E) Mahabhara VDC at south bordering Bihar state of India (Fig. 1).

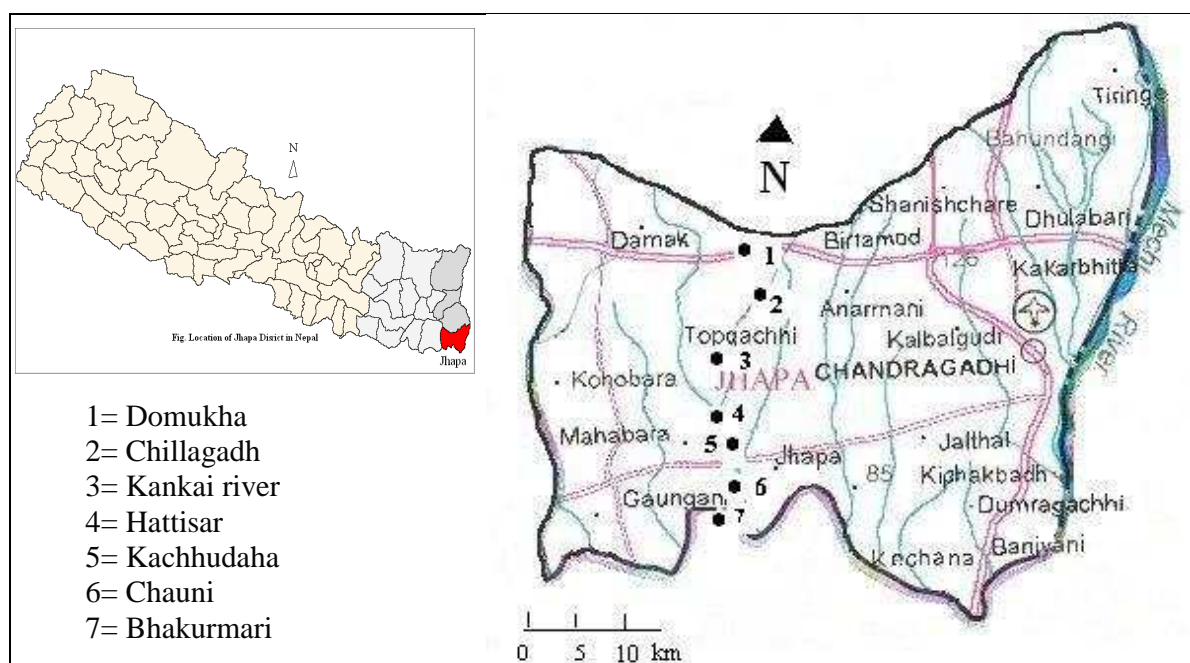


Figure 1. Survey route map of Jhapa showing different sampling stations.

Materials and Methods

Data collection

Information were collected through questionnaire and. Information were grouped and sub grouped and classified as necessary to meet the objectives of the study. Local people, officer, fisherman etc in addition to secondary data were collected from Gaide Meterological Center, DDC office, IUCN information, books, Journals and other reports. The study was based on general survey, carried out in the *Satar* communities settled in the vicinities of Kankai (Mai) River and its wide floodplains on either sides. Qualitative and quantitative data were obtained by employing questionnaire survey and structured interview technique.

Households of *Satar* community in the study area were selected by random sample technique. Ethno-zoological information and details covering methods of preparation of traditional medicines from different parts or products of turtle and method of application of medicines were recorded from people of different ages (16-80 years).

Sample collection technique

In each visit, maximum effort was made to collect live specimens; but if not available, dead specimens were collected. They were collected with the help of nets, hooks and other measures like hand catching in the evening when the specimens come out from the aquatic habitat for food and retreat. Each time, attention was taken to collect eggs, juveniles, bones and shell elements. The captured living ones were collected in wet cloth bags and carried to the ARCO-TCC lab at Bhadrapur, Jhapa for the identification. The living specimens were released into the natural pond at the TCC-laboratory. The dead were preserved in 10% formalin with labeling and kept in the museum at TCC-Bhadrapur, Jhapa.

Results and Discussion

A total 67 specimens of turtles belonging to eight different species were recorded including their information and body elements like carapace, plastron, egg etc. Among these, 23 were recorded from Kankai River (at Domukha), 8 from Chillagadh pond, 6 from Hattisar floodplain area, 17 from Kachhudaha pond, 9 from Chauni wetland and 4 from TCC pond, Bhadrapur (Tab. 1, Fig. 2). Among them, four species were hard-shelled turtles such as *Indotestudo elongata* (5), *Melanochyles tricarinata* (3), *Melanochyles trijuga* (2) and *Pangshura flaviventer* (4), while rest of the four species were soft-shelled turtles such as *Lissemys punctata* (39), *Aspideretes hurum* (9), *Aspideretes gangeticus* (2) and *Chitra indica* (3) (Tab. 2).

Table 1. Number of turtles recorded in each sampling stations (Species wise).

Species	Domukha	Chillagadh	Hattisar	Kachhudaha	Chauni	TCC
<i>I. elongata</i>	1 ^(inf)	1 ^(c)	-	-	-	3 ^(o)
<i>M. tricarinata</i>	-	-	1 ^(inf)	2 ^(inf)	-	-
<i>M. trijuga</i>	-	-	-	-	2 (1 ^{inf} +1 ^c)	-
<i>P. flaviventer</i>	1 ^(inf)	-	1 ^(o)	1 ^(inf)	-	1 ^(c)
<i>L. punctata</i>	16 (3 ^l +7 ^c +6 ^{inf})	6 (3 ^{inf} +2 ^c +1 ^o)	3 (2 ^l +1 ^c)	9 (4 ^l +1 ^e +2 ^{inf} +2 ^o)	4 (2 ^{inf} +2 ^c)	-
<i>A. hurum</i>	3 (2 ^{inf} +1 ^c)	1 ^(inf)	1 ^(c)	2 ^(o)	2 (1 ^{inf} +1 ^c)	-
<i>A. gangeticus</i>	1 ^(inf)	-	-	1 ^(inf)	1 ^(inf)	-
<i>C. indica</i>	1 ^(inf)	-	-	2 ^(inf)	-	-
Total	23	8	6	17	9	4

l= live, o= observed, d= dead, c= carapace, Inf= information, - = absent

According to Rai (2003), in Jhapa district both soft-shelled and hard-shelled turtles were found. In soft-shelled turtles of family Trionychidae, three genera viz. *Lissemys punctata*, *Aspideretes sps*, and *Chitra indica* were recorded whereas in hard-shelled turtles two families viz. Testudinidae and Bataguridae were recorded. Of which single genus *Indotestudo elongata* of Testudinidae family and *Cyclemys oldhamii* and *Pangshura flaviventer* of Bataguridae family were recorded. Locality records of some turtle species mentioned in previous research is found different in the present survey. *Cyclemys oldhamii*,

Melanochelys tricraniata and *Panshura flaviventer* were collected from Kankai river but during present survey no such species were recorded. Schleich (2000) reported *Chitra indica* from Kechana Jheel and *Melanochelys trijuga* from Kankai river but these species could not be recorded from that area. Rai (2003) recorded altogether 37 number of turtles belonging to five species from Jhapa, out of which 18 turtles were *Lissemys punctata* and only two turtles were *Melanochelys tricraniata*.

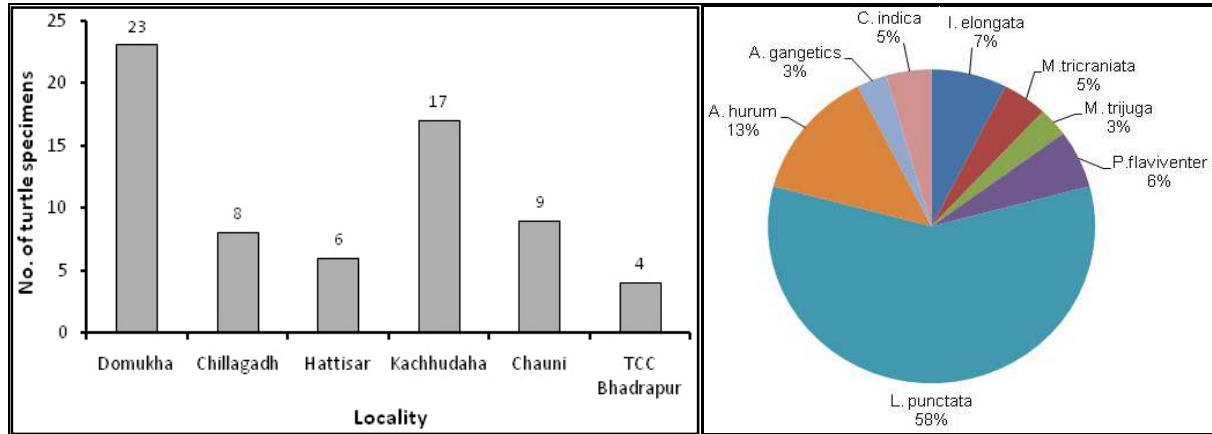


Figure 2. Number of sample specimens recorded.

Figure 3. Species-wise coverage % of turtles.

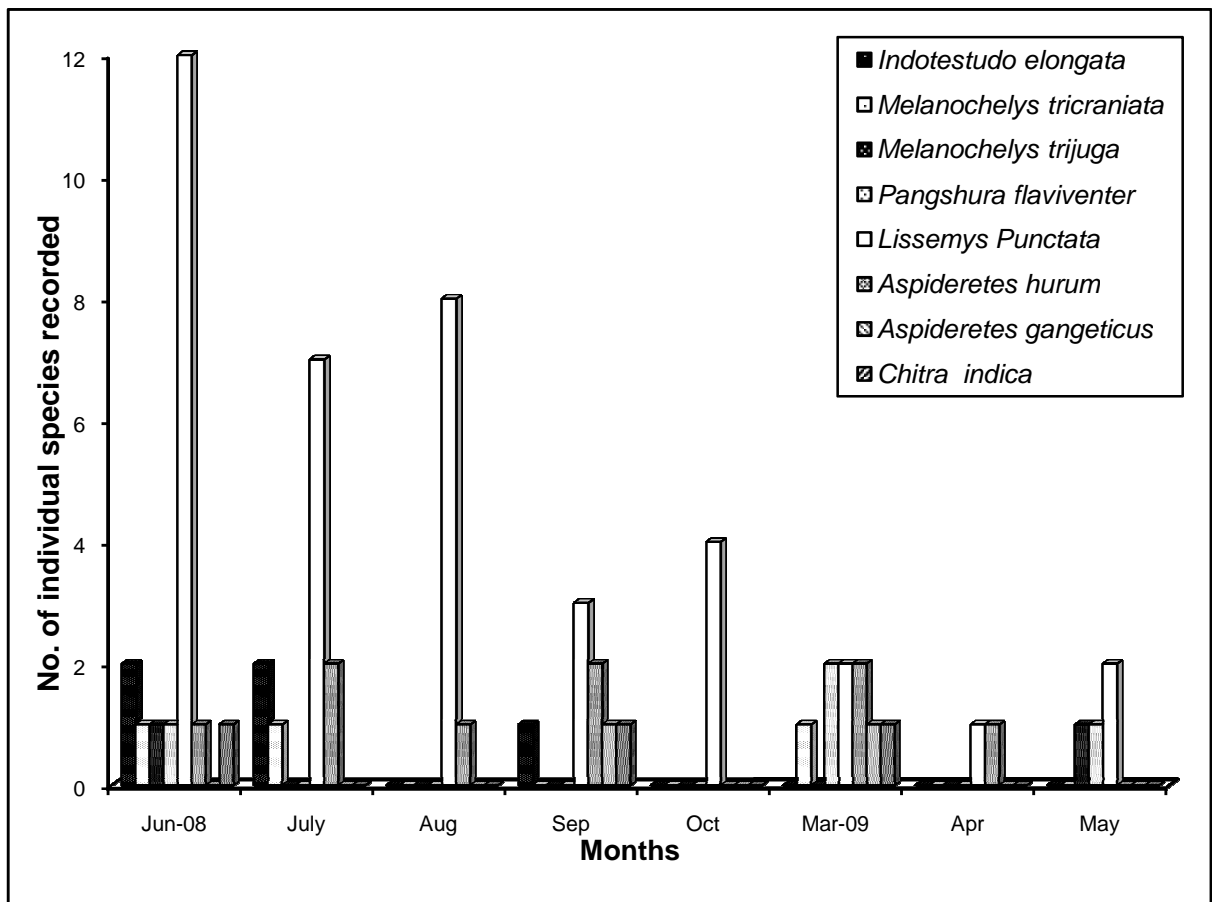


Figure 4. Monthly record of sample specimens

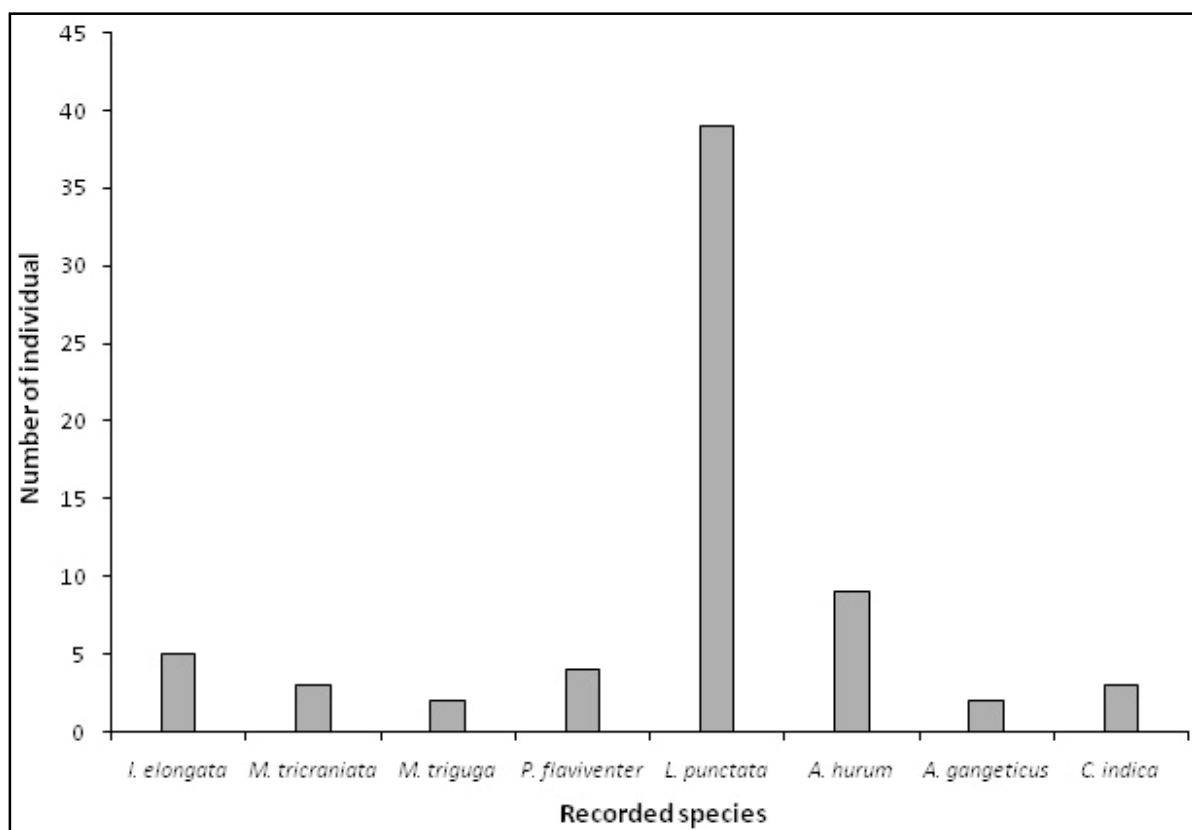


Figure 5. Species-wise number of turtle recorded.

Table 2. Distribution patterns of turtles at each sampling stations.

Turtle specie	Sampling stations					
	D	C	H	K	Ch	TCC
Hard shelled:						
<i>Indotestudo elongata</i>	+	+	-	-	-	+
<i>Melanochelys tricraniata</i>	-	-	+	+	-	-
<i>M. triguga</i>	-	-	-	-	+	-
<i>Pangshurea flaviventer</i>	+	-	+	-	-	+
Soft-shelled:						
<i>Lissemys punctata</i>	+	+	+	+	+	-
<i>Aspideretes hurum</i>	+	+	+	+	+	-
<i>A. gangeticus</i>	+	-	-	+	+	-
<i>Chitra indica</i>	+	-	-	+	-	-

D= Domukha, C= Chillagadh, H= Hattisar, K= Kachhudaha, Ch= Chauni, TCC= Turtle Conservation Centre, + = present, - = absent

Detailed survey and interviews were conducted to gather the information about details of the medicine preparation and uses to cure human and livestock diseases (Tab. 3).

Table 3. Ethnomedical uses of turtle in southern Jhapa.

Body parts	Utilities for	Methods of preparation	Methods of application
Turtle shell	Skin disease	Burnt on the fire, then crushed to fine powder and mixed with coconut oil	The preparation is applied on the affected regions
	Tonsillitis & Measles	A paste is made by rubbing the shell on a stone with water	Given orally to suffered children
	Pneumonia	Smoke produced by burning turtle's shell	Patient's naked body exposed to the smoke
	Labor pain	A paste is made by rubbing the shell on the stone with water	Given orally to minimize labor pain
	Burns	Ash produced by burning turtle's shell	Applied to the affected area
	Prosperity	Dried turtle's shell	Kept in house and is believed to bring prosperity
	Milk production	Talisman made from the turtle shell	Tied around the neck of the milk producing cattle
	Eye irritation	A thick dark black paste made by burning	Put on the eyelids to treat eye irritation
	Lucky charm	Talisman made from the turtle shell	Put below the pillow in house
	Hydrocele	A paste is made by rubbing the shell on the stone with water	Applied to the affected region
Turtle bone	Evil spirit	Talisman made from turtle's bone	Tied around their neck to get rid of evil spirit
	Dysentery	Talisman made from turtle's bone	Put under the pillow of the patient
Turtle meat	Asthma	Cooked flesh after boiling with ash-water.	Eaten to avoid asthma
Turtle urine	Kidney disease	Collected in an earthen pot	Given orally to the patient to cure disease
Turtle egg	Stomach cramps	Paste made up of dried out eggs of turtles	Either eaten or applied on the stomach
Turtle heart	Witchcraft	Dried turtle heart	To perform witchcraft
Turtle bile	Tuberculosis	Collected bile	Given orally to the patient for 10-15 days to treat newly developed tuberculosis
Turtle blood	Blood production	Fresh blood	Drink with alcohol to enhance blood production in the body
Gall bladder	Migraine pain	Gall Bladder of <i>Indotestudo elongata</i>	Given orally to reduce migraine pain
Turtle penis	Hysteria	Turtle's penis rubbed on the stone with water	Given orally to treat hysteria
Turtle fat	Weak bone	Oil extracted by heating turtle fat	Massaged on the limbs of a baby who is unable to walk properly

There is no scientific reason to use turtle shells for medical or pharmaceutical treatments. The use of turtle bone is nothing more than a useless case of superstition (Schleich, 2000). The major factors responsible for the utilization of turtle in the preparation of traditional

medicines seem to be due to non-availability of modern medicines for the traditional substitute, superstitions and perhaps low cost treatment (Shah, 2004). These preparations never have been scientifically tested for their efficacy in Nepal. Some of the traditional medicines prepared from the turtle's body parts, eggs may have some healing properties, and partly effective against diseases, however, others seem working only on faith. These remedies are also useful to relieve fear and shock in the patient. Thus, overexploitation of turtles and their eggs for local consumption for food and in the preparation of traditional medicines definitely threat the survival of turtle species from the wetlands of south-east Nepal. Thus immediate steps are necessary to control their exploitation.



Plate 1. *Indotestudo elongata* under ex-situ conservation



Plate 2. Eggs of *Indotestudo elongata* at ARCO-TCC



Plate 3. *Lissemys punctata* (Dorsal view)



Plate 4. *Lissemys punctata* (Ventral view)

Plates 1-4. Some collected specimens of Turtle.

The conclusion of the present work is that the distribution pattern of turtles in Kankai (Mai) river and its vicinities is not regular. Compared to previous record, out of seven recorded species, this time live specimens belonged to only three species. Rest of the species might have disappeared due to human impacts, especially due to encroachment of wetlands and other potential habitats. However, frequencies of *Lissemys punctata* were recorded maximum during specimen collection.

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