

Distribution and Conservation Status of Assam Roofed turtle, *Pangshura sylhetensis* in Assam

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Introduction

The State of Assam is located between 24.3° N and 28° N and 89.5° E and 96.1°E and with an area of 78,438 km² representing 2.4 percent of the India's landmass. The turtle fauna of Assam is diverse comprising of *Pangshura sylhetensis* (Jerdon, 1870) commonly known as Assam roofed turtle. It is a small turtle differing from other species of *Pangshura* in having 13 pairs of marginal scutes, and attaining a carapace length of 200 mm and is endemic to northeastern region of India and Bangladesh. According to IUCN (2007), it is one of the Asia's Most Endangered Tortoises and Freshwater Turtles. The species was first reported from the Khasi hills. Study of population status, distribution pattern in an area can be used to formulate conservation strategies and taxonomic relationship among the species. This paper reports the present status and distribution of *P. sylhetensis* in Darrang, Sonitpur and Udalguri districts of Assam.

Analysis of zoogeography of *Pangshura* sp. provides information and ranges of their natural distribution and boundaries that helps to find out the endemic status of the species. Endemism constitutes an important feature while formulation of conservation strategies. Therefore distribution of the species and their habitat associations have been attempted in this study.

The study sites

The study was conducted in five sites viz. Kuruwa, Kulshi, of Darrang and Udalguri districts, Biswanath ghat, Gomirighat and Jia Bharali River in Sonitpur district of Assam, India (Table-1).

Jia Bharali river: This study sites under the river Jia Bharali and its tributaries are Diji, Dinai, Doigurung, Nameri, Dikori and Khari criss-cross of Nameri National Park (200 sq km).

Biswanath ghat: It is popularly known as "Gupta Kashi" located at the confluence of Bridhaganga (Burigonga) river with the Brahmaputra.

Gomirighat: It is on the north bank of the river Brahmaputra, adjacent to Ghanhigaon in Sonitpur District.

Kuruwa ghat: It falls under Kuruwa Reserve Forest (155 Ha) is located on the north bank of the river Brahmaputra.

Kulshi river: It is at the North border of Udalguri touching foothills of Bhutan falls Khalingduar Reserve Forest (7033 Ha).

Table-1: The Survey Areas

Survey area	Geographical location		Type of vegetation
	Longitude	Latitude	
Jia Bharali River	26°55'20.22"N	92°50'27.12"E	Semi evergreen forest
Biswanath Ghat	26°46'30.74"N	93°32'04.86"E	Evergreen and Semi evergreen forests
Gomirighat	26°44'47.93"N	93°38'45.45"E	Evergreen and Semi evergreen forests
Kuruwa Ghat	26°13'32.79"N	91°46'39.74"E	Semi evergreen forests
Kulshi River	26°45'30.74"N	92°02'51.38"E	Evergreen and Semi evergreen forests



Methods

The study was conducted in different representative ecozones of northern part of the River Brahmaputra valley of Assam during January 2004 - December 2007. Extensive surveys in 3 districts of Assam, India were made in different seasons. Surveys were also done in Buffer Zones of Protected areas considered important by earlier workers.

The survey for *Pangshura sylhetensis* habitat was done using quadrats; transects, museum records and interviews with local people using photo sheets and questionnaires.

The study area was censused one to three times per day between 7a.m. to 5 p.m. in winter, premonsoon and postmonsoon season. Searching for nests was carried out by walking an 1.5 Km transect in 2 hrs. Local fishermen gave information about nest and eggs of *P. sylhetensis*.

During survey period most turtles were marked with red paint on the plastron and released in the same area. For identification of the species Das (1995) was followed.

Live turtles were collected and without causing any injury, measured for curved carapace length (CCL), straight carapace length (SCC) curved carapace width (CCW) and shell height (SH). Scute and bone terminology used by Zangerl (1969) was followed.

Dead specimens collected from the study sites were preserved and measured for curved carapace length (CCL), straight carapace length (SCL), curved carapace width (CCW), shell height (SH) and body weight.

Results and discussion

A total of 136 representatives of *P. sylhetensis* belonging to the family Geoemydidae have been collected from study sites and released after investigation (Plate 4A and 4B). Eight dead specimens of *P. sylhetensis* were collected from Biswanath ghat and Gomirighat.

The present field survey has identified the following important habitats for *Pangshura sylhetensis* in Darrang, Udalguri and Sonitpur districts of Assam-

Darrang district: Poska phukhuri near Barampur, Dighirpar phukhuri near Arjuntal, Marasuti of Mangaldoi river near Karimchowka, Beel near Shiv temple of Kuruwa ghat, Beel near Ganesh Kuwari of Dumuni chowki, Khalihoi beel, Rowmari, Chereng and Mowamari beel, Dova near areng of Darrang district.

Udalguri district: Dhansirighat, Mara-dhansirighat, Pond of Rawta charali, Kachubeel, beel near Orang National Park, Namkhala bazaar area of Udalguri district.

Sonitpur district: Nameri National Park, beel near Beseria village, near Gabharu river, Gahigaon wetland, Gohpur wetland of Sonitpur district of Assam.

These observations resulted from the catch of 136 turtles during the study period (male 81 and female 55) (Table-2). Further, 50 juvenile male's and 20 juvenile females were observed during this study. This confirms the suitability of this habitat as having a breeding populations. Habitat destruction and over exploitation have threatened the survival of this species. Indian population of *P. sylhetensis* suffered a 90% decrease in the last decade and IUCN justifiably declared this species as endangered (IUCN, 2007). But present investigation documents a healthy population of *P. sylhetensis* in Nameri National Park, Biswanath ghat, Gomirighat and Kuruwa ghat areas, probably due to the level of protection and awareness among locals.

Nests of *P. sylhetensis* were observed only in March/ April at Biswanath ghat and Kuruwa ghat with 6-8 eggs per nest. During this study period, three new habitats were located and their physiochemical parameters were recorded.

Table-2: The abundance of *P. sylhetensis* in the study sites.

Year	JB	GG	BG	KG	KR
2004	8	6	6	4	-
2005	10	6	6	6	Shell
2006	14	8	10	6	Shell
2007	18	8	12	8	Shell
Total	50	28	34	24	-

JB: Jia Bharali River (total 50 specimens: 30 M and 20 F)
 GG: Gomirighat (total 28 specimens: 17 M and 11 F)
 BG: Biswanath Ghat (total 34 specimens: 20 M and 14 F)
 KG: Kuruwa Ghat (total 24 specimens: 14 M and 10 F)

Our survey shows that every year during the period from the first week of October to first week of February, a huge numbers of eggs of *P. sylhetensis* are collected by the inhabitants (particularly by children) and sold in the local market. Other reasons for the decline of the species are illegal slaughtering for meat, egg perdition, water pollution and human disturbances (Rao, 1985 and Gupta, 2000). The killing of adult female freshwater turtles and incidental catch of breeding adults has probably increased over the past few years. The nest poachers can easily identify the nests and dig out the eggs and sell these in the local markets.

Earlier, *P. sylhetensis* was recorded from Kukurmara and Chandubi beels of Kamrup district; Kalathua village of Sibsagar district; Rupali Bhumuk of Manas National park; Barpeta district, Kundil river of Sodia; Banko beel of Dibru-Saikhowa Wild Life Sanctuary; Lohit river near Saikhowaghat, Tinsukia district; Ghilamara of Lakhimpur district and Nameri National Park, Sonitpur district of Assam. Cachar district of Assam, Garo, Khasi and Naga hills.

Moll (1986) had reported *P. sylhetensis* from Cherrapunji (Khasi hills) and Garo hills of Meghalaya, Cachar dist. of Assam. Coudhury (1995) reported the new locality of *P. sylhetensis* in Sadiya, subdivision of Tinsukia district, Kolathua village of Sibsagar district, Assam. Choudhury *et al.* (1997) described the distribution and diet of *P. sylhetensis* in Assam. They conducted a survey between March 1995 to August 1996 in Kamrup district, Assam, north eastern India to ascertain the distribution of the species. They collected *P. sylhetensis* from Kukurmara river and Chandubi beel located in the south western part of Kamrup district. Praschag and Fachbach (2001) reported *P. sylhetensis* from Nameri National Park of Assam, India. This species has been reported from various locations from the Northeastern region in the past (Tikadar and Sharma 1985, Choudhury 1995, Choudhury *et al.* 1997).

Conclusion

The survey shows that vast areas of their original habitats have been lost. Amongst all the study sites surveyed, Jia Bharali seems to be an ideal home for *P. sylhetensis*. Other reasons for the decline of the species are illegal slaughtering for meat, poaching of egg, water pollution and by-catch. Killing of adult freshwater turtles and incidental catch of breeding adults has intensified over the past few years. Hence, there is an urgent need to sensitize and educate the people about the significance of chelonians and their conservation.

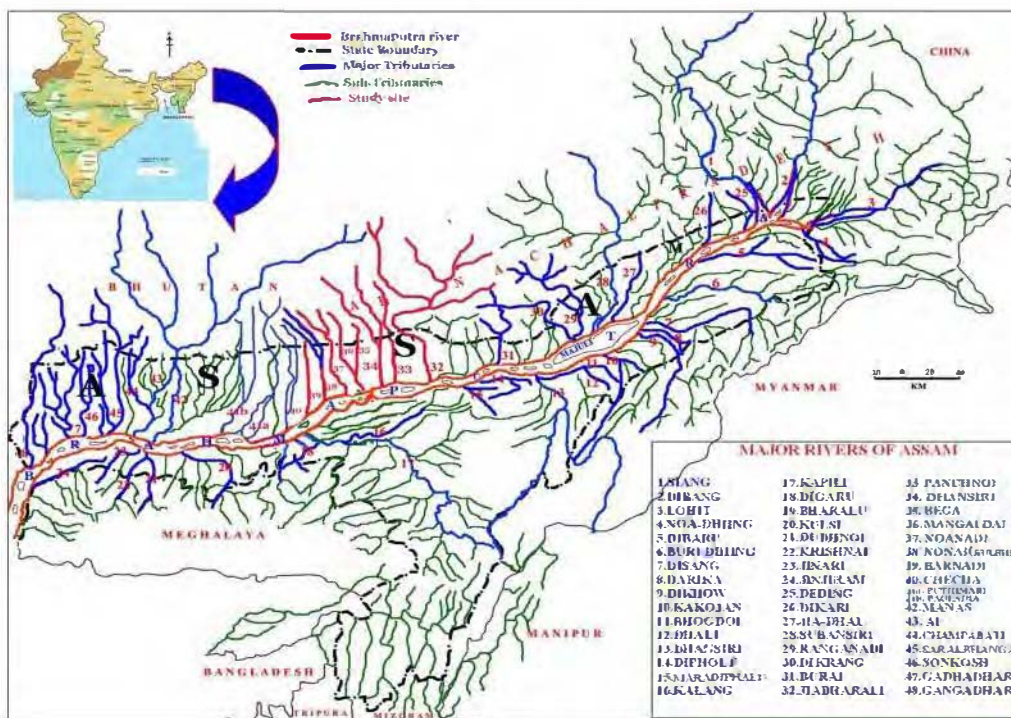
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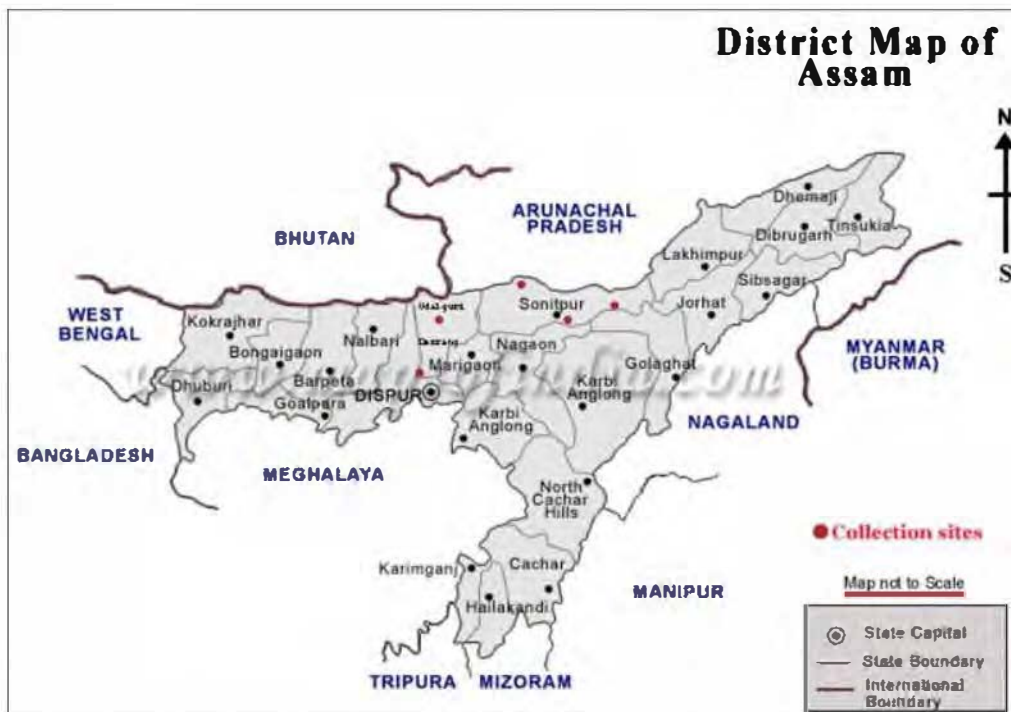
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Plate 4



(A)



(B)

(A): Major rivers of Assam along with the study sites (red colored) and (B): Map of Assam along with collection sites (red colored)