

3. STUDY AREA

3.1 LOCATION

The study was carried out at Raiganj Wildlife Sanctuary and its adjacent areas (Fig.3.1). Actually breeding biology and a part of feeding ecology was done at the sanctuary but data on foraging was mainly collected at different feeding grounds within 10 km. radius of the sanctuary. The sanctuary is located in the district of Uttar Dinajpur, 2 km. northwest of district town Raiganj and is 174 km. (by road) south of North Bengal University, Siliguri, West Bengal, India. National Highway No. 34 runs by its southern border and connects Raiganj and Siliguri. The sanctuary lies on the co-ordinates of $25^{\circ} 37'$ north Latitude and $88^{\circ} 08'$ east longitude. Mean sea level (RL) is 32 meter. Location of Raiganj Wildlife Sanctuary in relation to West Bengal is shown in Fig 3.2, Fig 3.3.1. and Fig 3.3.2.

3.2 ESTABLISHMENT OF SANCTUARY

The sanctuary is under the Kulik Beat, Karandighi Forest Range, Raiganj Social Forestry Division. Though birds started to visit the sanctuary since 1962 it was only in the year 1971 when the first step was taken to protect the birds and record related information by the timely initiative of Mr. B.N.De, IFS, the then Conservator of Forests, Central Circle.

In order to consider the feasibility of creating a new bird sanctuary in and around Raiganj F.R.H. under Bhattadhighi and Soharoi Mouzas a resolution was taken by the Wildlife Board in its meeting on 23.08.1975 (agenda item no. 10 of the 6th meeting). The resolution was then forwarded to the DFO, Malda by the Chief Wildlife Warden (vide no. 3086/CWLW/21-125 dt. 28.10.75). subsequently, a detailed report with maps was also submitted to the DFO, Malda in reference to his query (no. 1874/28-42 dt. 08.11.75).

Eventually an amount of Rs. 75,000/- was allotted to carry out prelimi-

nary works towards the establishment of the proposed sanctuary during the financial year of 1976-77. In this process at last, in 1985 the area around the nesting zone was declared as “Raiganj Wildlife Sanctuary” vide notification no. 1901-Fer/11B-88 dt 11.04.1985). Raiganj Wildlife Sanctuary is popularly known as “Kulik Bird Sanctuary”.

3.3 AREA

The sanctuary covers an area of 321.23 acres. Actually this tiny reserved area was formed cumulating several vested and private land with the existing forest portion. Thus it developed from (i) Forest range (Soharoi 139.85 acres & Bhattadighi 171.41 acres) of 311.26 (ii) Vested land transformed on 27.01.1977 (Abdulghata 1.42 acres & Soharoni 0.24 acres) of 1.66 acres (iii) Private land by acquisition on 23.02.1977(Soharoi 6.13 acres, Bhattadighi 0.83 acres & Abdulghata 1.32 acres) of 8.28 acres, and (iv) Vested land transformed on 03.05.1977 (Abdulghata) of 0.03 acres. Out of this 321.23 acres the present nesting area spans over only about 36 acres comprising Plot nos.1077,1078,1079,1080,1158,1159,1202 & 1226 in Mouza Soharoni, J.L. No. 106.

It is also mentioned that proposal for acquisition of private land about 12.74 acre is sent to the Conservator of Forests, Social Forestry, North Circle, Siliguri (Memo No. 243/8-2 dt. 05.03.2004).

3.4 BOUNDARY DESCRIPTION

The river Kulik delimits its northern and eastern boundary. The NH-34 runs along its southern boundary and its western end is marked by the Eco-tourism Park and the farm of the State Sericulture Department.

3.5 METEOROLOGY

3.5.1 Seasons

The seasonal cycle of Raiganj is marked with three distinct seasons : the summer (March to May), prolonged monsoon (June to September) and the winter (Mid-November to February) ; punctuated with a short autumn (October to Mid-November) between monsoon and winter.

3.5.2 Rainfall

This area records a good amount of rainfall. Figure 3.4 presents the average monthly precipitation that were recorded at Model Seed Farm, Raiganj, 2 km. northeast of the sanctuary, during last 10 years (1997-2006). The average annual rainfall over this period was 2081.38 mm ; of which 78.83% precipitated during the monsoon. The pre-monsoon and post monsoon months i.e. May and October respectively also show a good amount of rainfall, 179.59 mm. and 141.59 mm. respectively.

3.5.3 Temperature

The average daily maximum and minimum temperature, recorded during the study period, are presented in Fig. 3.5. Temperature attains the culmination point in May (average ; max 33.50^o C, min 22.87^o C) and the lowest in January (average max 23.75^o C, min 10.12^o C). During this period the highest and lowest recorded temperature were 39^o C (on 15th May,2004) and 4.7^o C (on 23rd January,2003).

3.5.4 Relative Humidity

Relative humidity in this area is very high. The mean maximum relative humidity during the study period remained almost stable at a higher value with a slight decrease during the summer months (Fig.3.6). Whereas, the mean minimum relative humidity fluctuated at a greater extent throughout

the year. Difference of maximum and minimum relative humidity attains the highest order in March(41.96%) which drops down to only 21.40% in September.

3.6 RIVER AND WATERBODIES

This sanctuary is placed in a curvature of the river Kulik(Kulik R.) which delimits the the northern and eastern boundary of the sanctuary. The Kulik R. also regulates the water condition of the sanctuary as it is connected directly or indirectly with canals and ditches which pass through the sanctuary (Fig. 3.1). During periods of heavy shower this river usually over flows and inundates a major portion of the sanctuary. Thus the sanctuary is on the flood plains of the Kulik R. During the study period flood struck the sanctuary on two occassions (1998,1999, 2002) with maximum manifestation during 1999 When even the highest land area of the sanctuary was under 0.3 m. in water and major parts were inundated by more than 1.0 meter deep water.

The main creek which is also the deepest runs through the heart of the sanctuary in a horse-shoe pattern. Except at its two tips the major portion of the creek is 2 m deep and water is retained throughout the year. This canal is indirectly connected with the Kulik R. through another perennial canal which runs through the northern part of the sanctuary in east-west direction. Apart from these two main canals and some other canals and ditches borders the southern extremity of the sanctuary (Fig 3.1). Though these canals and ditches become confluent with the Kulik R. during monsoon the northern and southern canals become connected by another canal which persist only upto November. Water-logging during monsoon is a common feature of the western part of the sanctuary as it is a low land with some waterholes. All these canals and ditches serve as a handy source of water and fish to the birds of the sanctuary throughout their breeding season.

3.7 GEOLOGY

This region is a part of the great alluvial plain of India which originally was a fore-deep between the peninsula (i.e. the Decan) and the Himalayas. This depression gradually converted into the plains by the process of alluviation. The deposition of this alluvium commenced after the final phase of Siwaliks and has continued all through the Pleistocene upto the present.

3.8 SOIL

The soil of Raiganj Wildlife Sanctuary is mostly loamy type with colour varying from yellowish-grey to grey. This small area is unique in its highly varied nature of soil which may be a function of differential deposition of faeces of birds. Soil is highly acidic in nature and in some cases acidity is of very much high degree. High concentration of phosphorus and low concentration of potassium are two other characteristic soil features of this area. The results analysis of soil samples taken from 5 spots of the sanctuary is presented in Table 3.1.

In general the gangetic riverine soil of the region outside the sanctuary is rich in calcium and bases and vary from sandy, loam or silty clay which is acidic in nature in most cases.

3.9 VEGETATION

The Vegetation in part is an outcome of the 1955 plantation programme. Thus instead of any particular forest type, here we find a mosaic of different types of vegetation. Some of the local tree species grow here in close association with many other species which are rather uncommon to this region. On the whole it forms a tropical semievergreen type of forest. The tree species which are common to this sanctuary are shown in Table 3.2. There are 30 major tree species of which three species viz. Jarul, Hijal and Arjun are predominant (36.7%, 17.2% & 11.8% respectively).

3.10 FAUNA

Due to its small size and because it is a plantation forest a large variety of wildlife is not expected to thrive here. A number of reptiles, birds and mammals, which are in general common in this region and found in the sanctuary. Most of these animals are visitors.

3.10.1 Terrestrial Animals

Reptiles : The Bengal monitor , *Varanus bengalensis* (Daudin), which is also a good swimmer, is the most common reptile of the sanctuary. Among snakes Indian rat snake, *Ptyas korras* (Schlegel) and Indian Cobra, *Naja naja* (Linn), snake, *Enhydris enhydris* are common.

Birds : Almost all the bird species which are common to this region were found to this sanctuary from time to time. However, the four other nesting bird species which breed almost at the same time with the Little Cormorant and Night Heron are Open-bill stork, *Anastomus oscitans* (Boddaert) ; Large egret, *Egretta alba* (Linnaeus), Median egret, *Egretta intermedia* (Linnaeus), Little egret, *Egretta garzetta* (Linnaeus). Recently a small population of Indian Pond Heron (*Ardeola grayii*) is also found to nest in the sanctuary.

Mammals : Only three non-domestic mammals i.e. Indian Gray Mongoose, (*Herpestes edwardsi* Geoffroy), the Bengal Fox (*Vulpes bengalensis*) and Jungle Cat (*Felis chaus*) are found here but their number is limited.

3.10.2 Aquatic Animals

Though the canals and ditches are small and shallow at most parts they support a good number of molluscs and fishes which are as follows:

Molluscs : *Bellamyia bengalensis*, *B. dissimilis* and *Dymnea luteola*

Fishes : *Channa punctatus*, *C. gachua*, *Ophicephalus punctatus*, *Labeo rohita*, *L. bata*, *Catla catla*, *Cirrhinus mrigala*, *Puntius ticto*, *Belone cancila*, *Rhynchobdella aculeata*, *Mastocembelus armatus*, *Heteropneustes fossilis*, *Anabas testudineus* , *Clarias batrachus*, *Colisa lalius*, *Mystus vittatus*, *Paleomon sp.*, and *Wallago attu*.

Table 3.1 : Soil characteristics of different regions of Raiganj Wildlife Sanctuary

Sl. No.	Sample Collection Spot	Month of Year	Parameters			
			Org. Carbon %	p ^H	Ec.mmho / cm ²	Ave. P ₂ O ₅ Kg/ha
1.	Low area of island under nesting tree. No herbs or any other plants present.	April	0.97 (H)	5.0 (SA)	0.74 (N)	665 (VH)
		December	0.85 (H)	4.4 (A)	0.68 (V)	388 (H)
2.	High area of island nesting tree. No herbs or any other plants present.	April	0.60 (M)	5.3 (SA)	0.56 (N)	609 (VH)
		December	0.59 (M)	4.7 (A)	0.80 (V)	280 (H)
3.	Low area of Island under nesting tree. Few herbs are present.	April	1.05 (VH)	5.4 (SA)	0.60 (N)	171 (VH)
		December	0.85 (H)	4.5 (A)	0.62 (V)	440 (H)
4.	Middle area between two nesting trees where some herbs are present.	April	1.35 (VH)	6.7 (N)	0.46 (N)	>1000 (VH)
		December	0.65 (M)	4.7 (A)	0.28 (V)	350 (H)
5.	Near Rest House outside island where plants are present.	April	0.60 (M)	6.3 (SA)	0.04 (N)	119 (VH)
		December	0.42 (L)	7.0 (N)	0.13 (V)	122 (H)

H = High, VH = Very High, N = Normal, SA = Slightly Acidic, M = Medium, L = Low

Table 3.2 : Tree species of the sanctuary

SI No.	Common name of the trees	Scientific Name
1	Jarul	<i>Lagerstroemia flosregnae</i>
2	Hijal	<i>Barringtonia acutangula</i>
3	Arjun	<i>Terminalia arjuna</i>
4	Chitim	<i>Alstonia scholaris</i>
5	Sisso	<i>Dalbergia sissoo</i>
6	Kadam	<i>Anthocephalus cadamba</i>
7	Pithali	<i>Treulia nudiflora</i>
8	Eucalyptus	<i>Eucalyptus globulus</i>
9	Tunt	<i>Morus alba</i>
10	Gokul	<i>Ailanthus grandis</i>
11	Dumur	<i>Ficus cunia</i>
12	Sirish	<i>Albizzia lebbek</i>
13	Simul	<i>Bombax malabaricum</i>
14	Sal	<i>Sorea robusta</i>
15	Aswatha	<i>Ficus reliqiosa</i>
16	Jackfruit	<i>Artocarpus intergrifolia</i>
17	Nim	<i>Azadirachta Indica</i>
18	Coconut	<i>Cocos nucifera</i>
19	Mehogany	<i>Swietenia mehogoni</i>
20	Banian	<i>Ficus bengalensis</i>
21	Bamboo	<i>Bamboosa sp.</i>
22	Sheora	<i>Streblus asper</i>
23	Jigni	<i>Lannea caromandelica</i>
24	Akashmoni	<i>Acacia moriliformis</i>
25	Subabul	<i>Leucina leucocephala</i>
26	Lichu	<i>Litchi chinensis</i>
27	Bakul	<i>Mimosops elengi</i>
28	Karanj	<i>Pongamia pinnata</i>
29	Guava	<i>Pisidium guajava</i>
30	Amlaki	<i>Emblica officinalis</i>

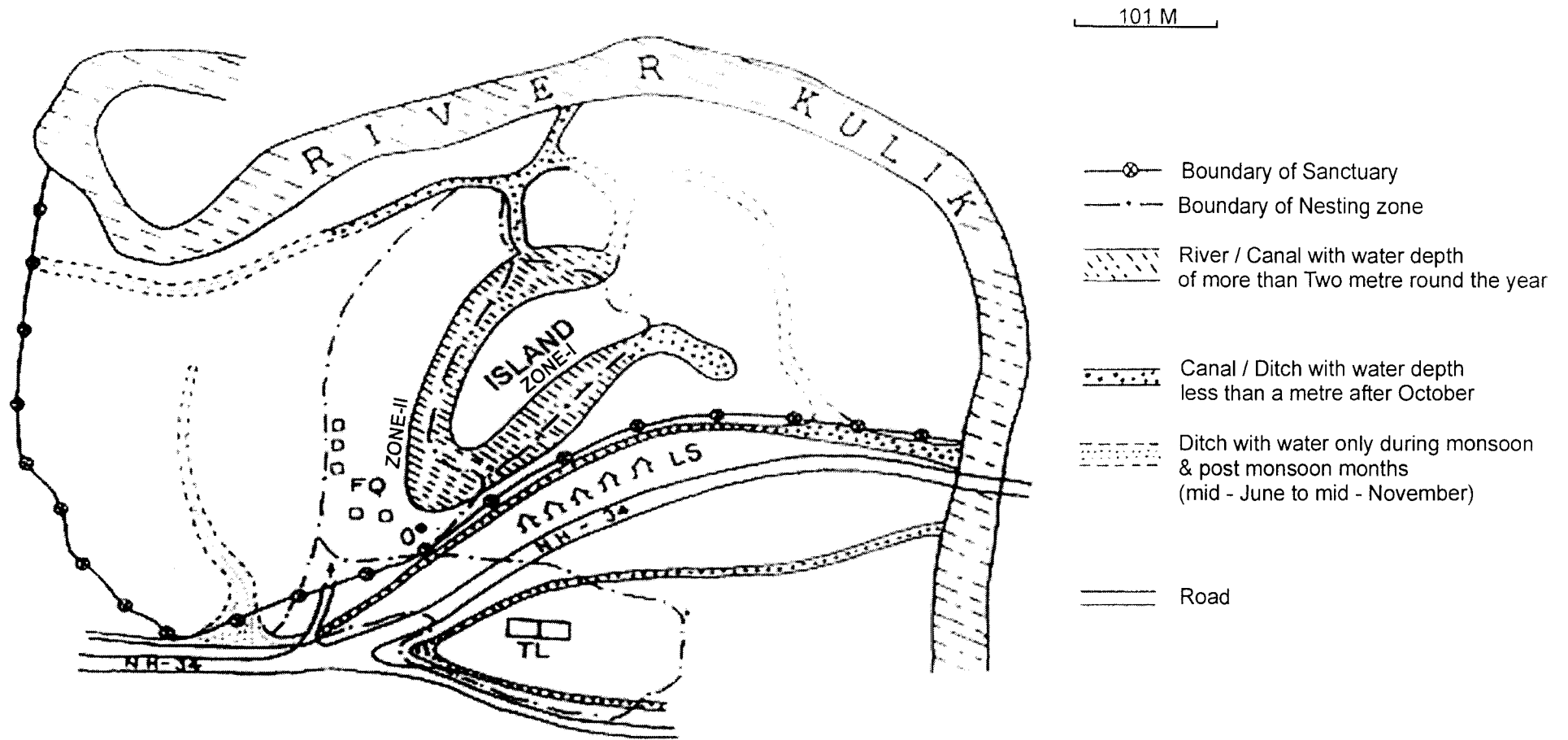


Fig. 3.1 : Map showing boundary and waterbodies of Raiganj Wildlife Sanctuary

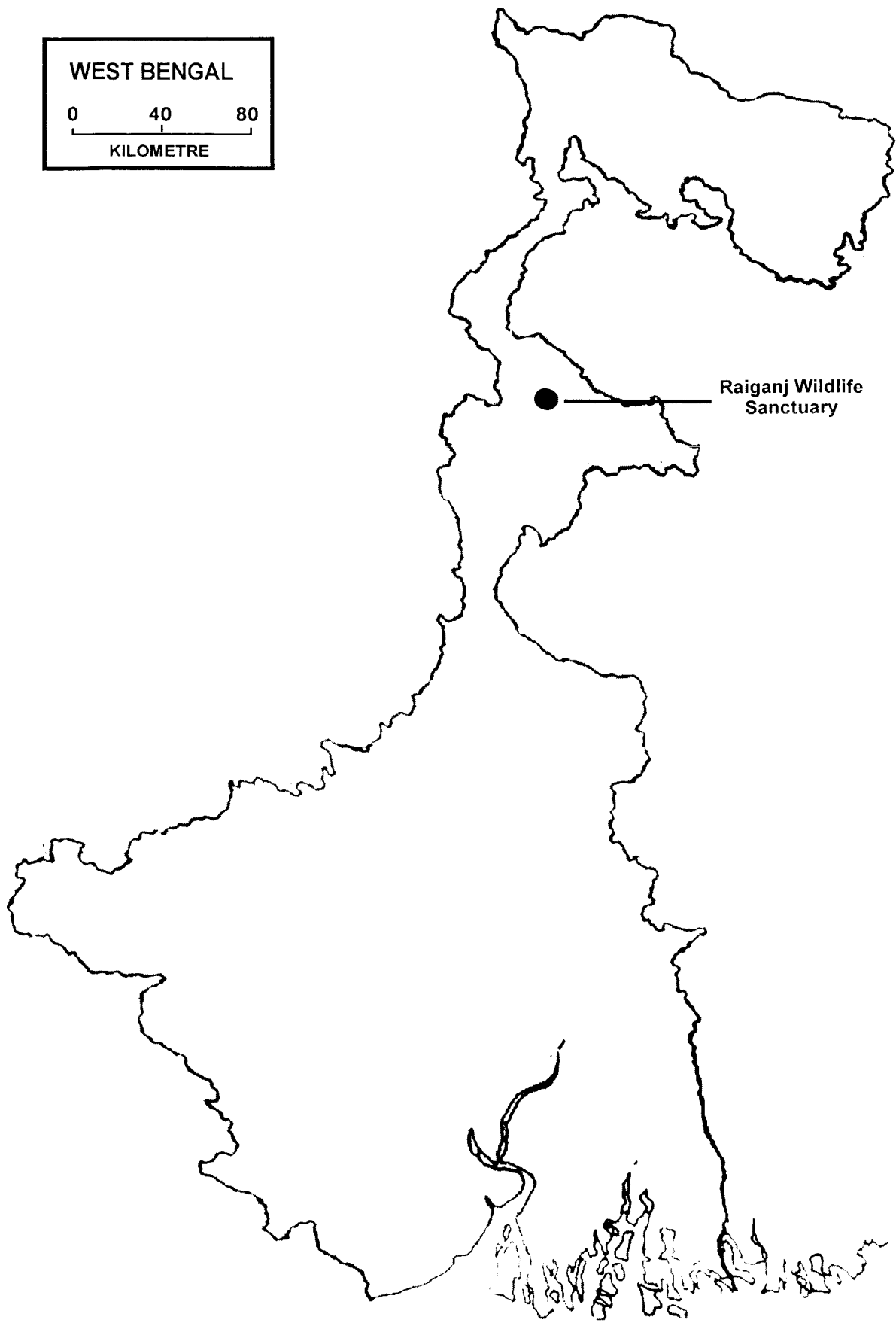


Fig. 3.2 : Location of Raiganj Wildlife Sanctuary in relation to West Bengal

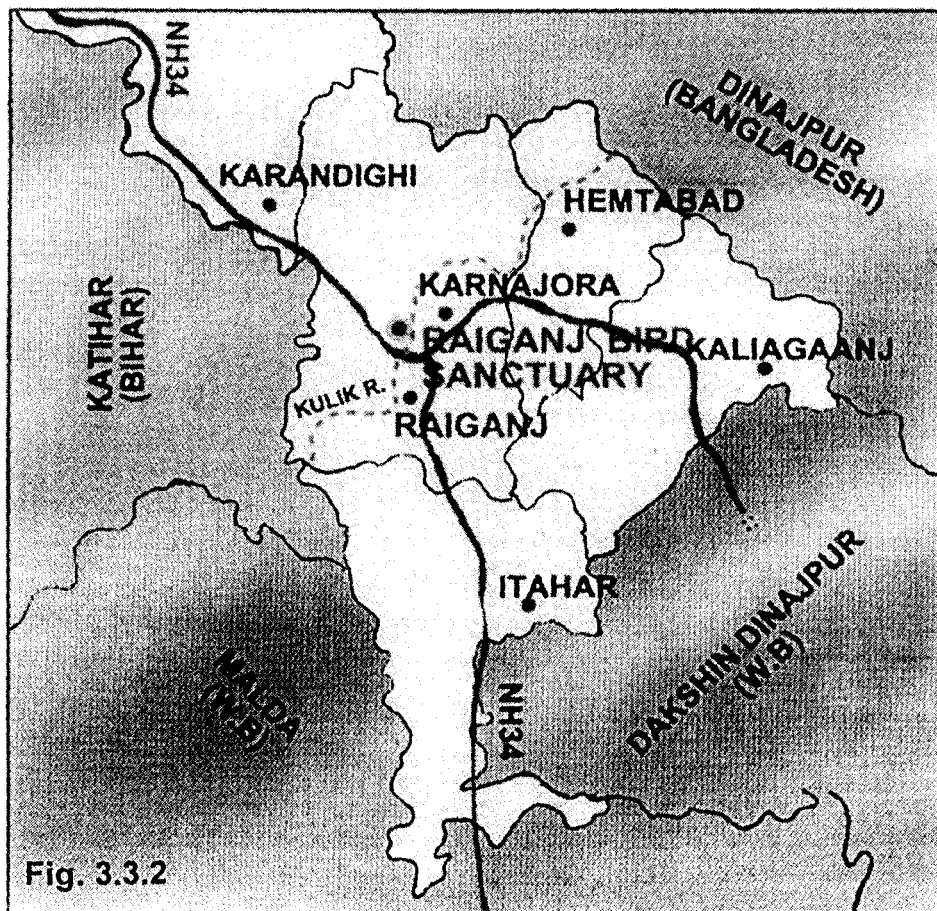
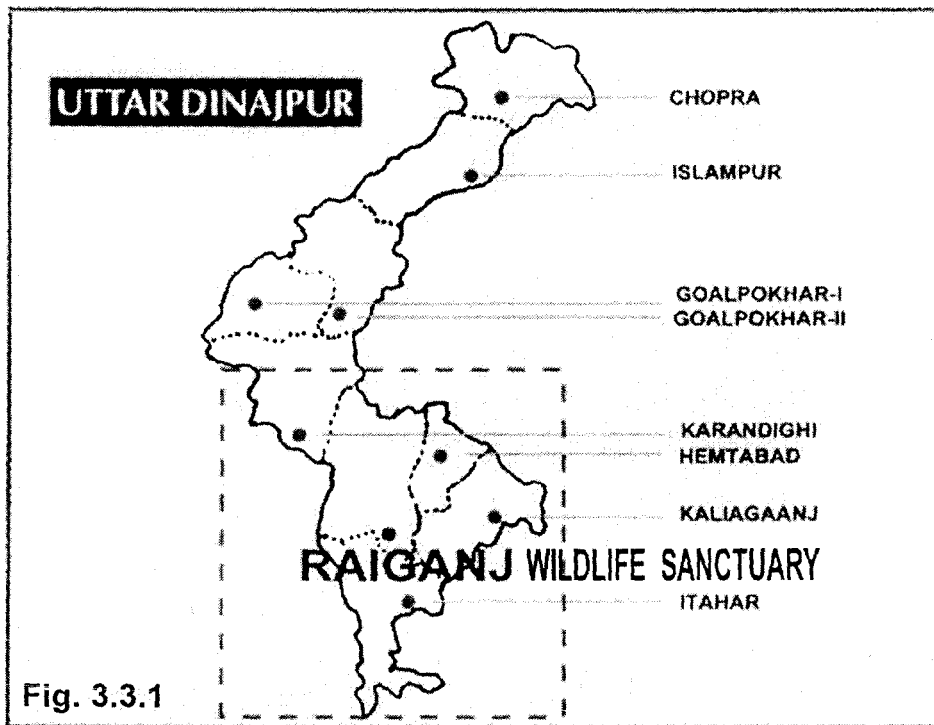


Fig. 3.3.1 and Fig. 3.3.2 : Map showing Raiganj Wildlife Sanctuary in Uttar Dinajpur

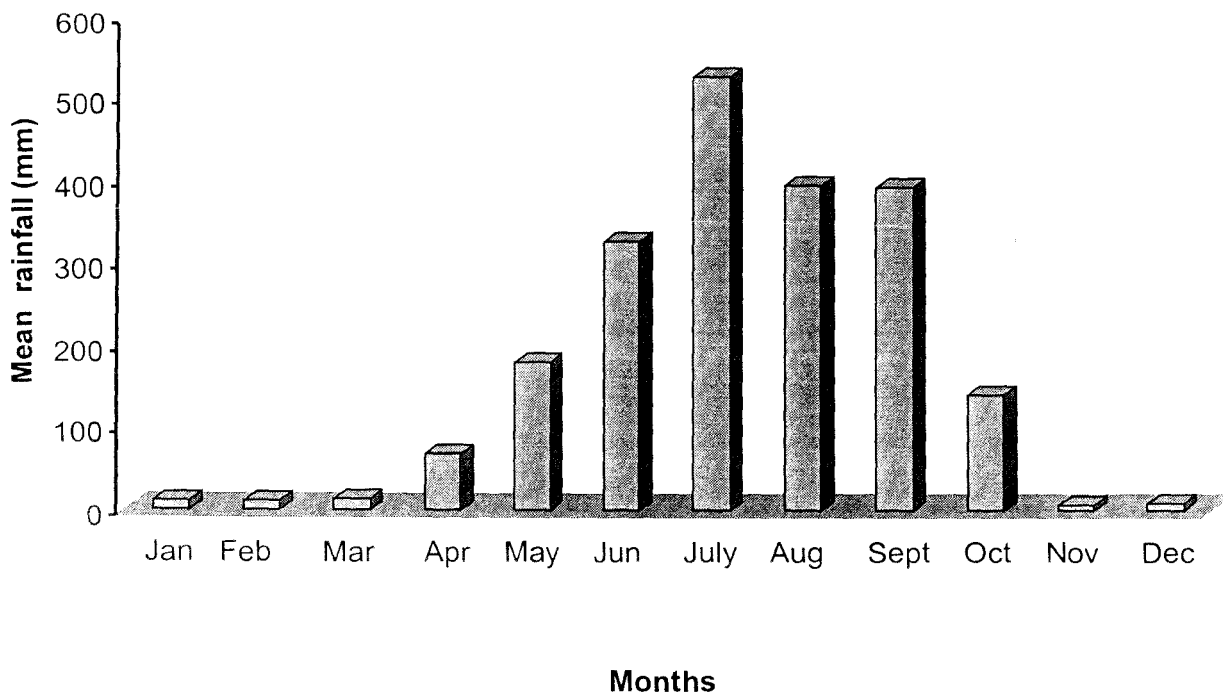


Fig. 3.4 Mean monthly rainfall.

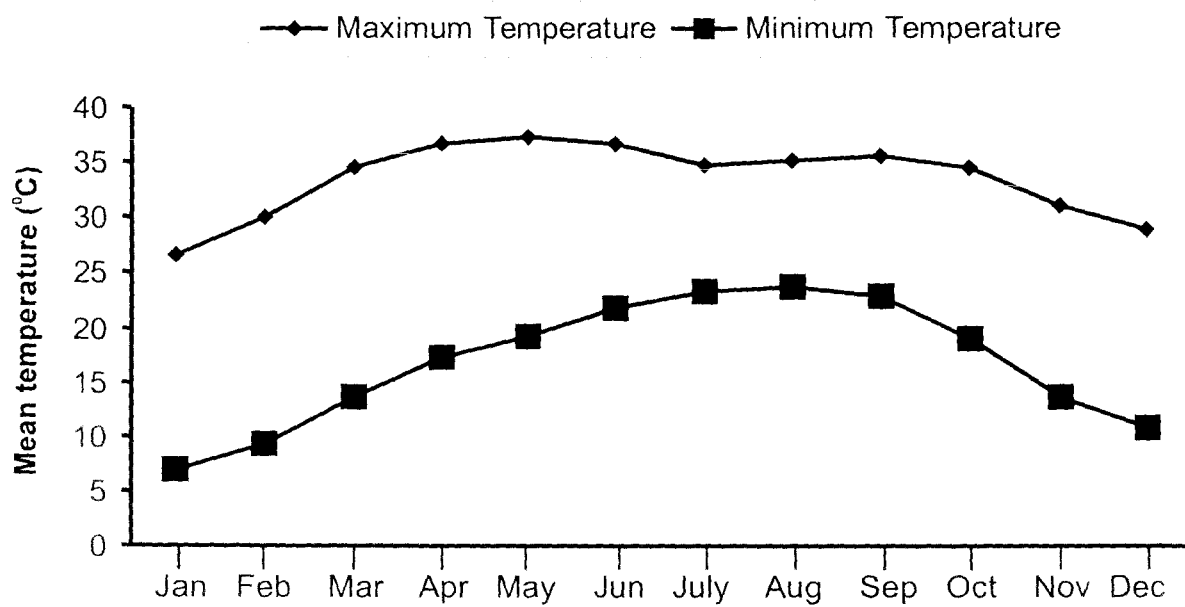


Fig. 3.5 Mean monthly minimum and maximum temperature

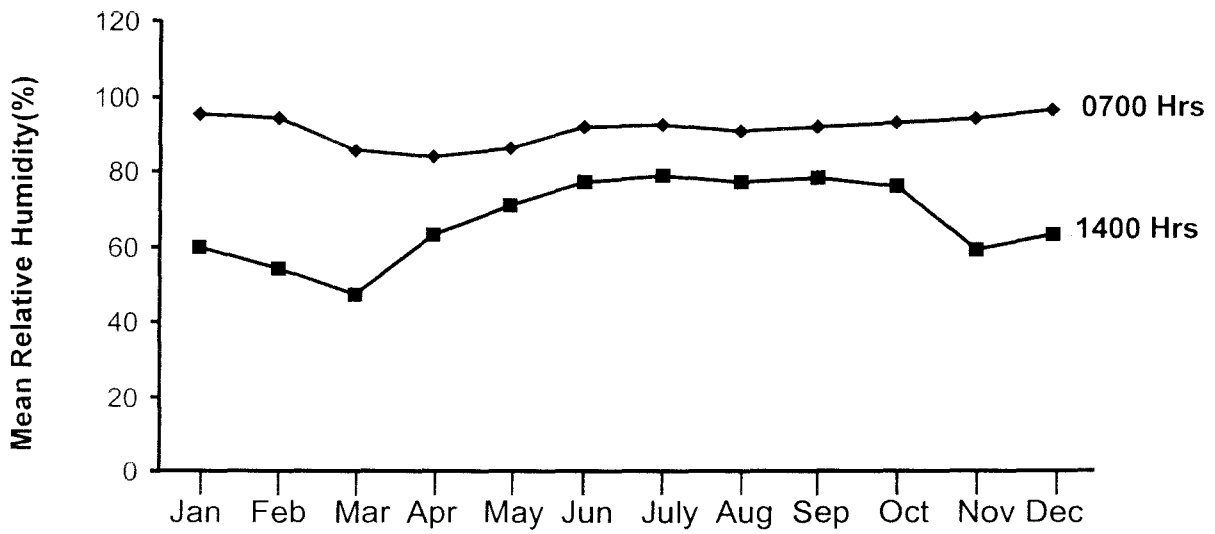


Fig. 3.6 Mean monthly relative humidity at 0700 hr and 1400 hr.



Plate 3.1

Tongue- shaped island, Zone-1 of the nesting area surrounded by canals in the sanctuary.



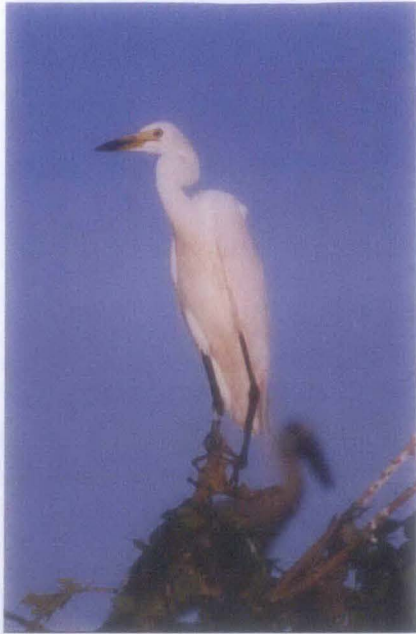
Plate 3.2

A Bengal Monitor resting in the sanctuary



Plate 3.3

Open-bill Storks the most dominant species in the sanctuary both in size and number.



(A)
Large Egret perched on the top
canopy of a Jarul tree.



(B)
Medium Egret displaying
its beautiful
white ornamental feathers.



(C)
Little Egret attending
its nestling comfortably
resting in the nest.

Plate 3.4 (A,B,C) White Egrets in the sanctuary



Plate : 3.5 **Birds in the island (Zone 1) of the sanctuary**



Plate : 3.6 **Bare soil (without any plant) under a nesting tree because of its highly acidic nature caused by the liquid defecates containing nitrogenous wastes excreted by the adult and nestlings.**