

### 3.1 Introduction

The Sundarbans delta spanning 355 km in width is the largest mangrove forest in the world at the mouth of the Ganges and is spread across areas of Bangladesh and West Bengal, India (see Figure 3.1). The Bangladesh and Indian portion of the forest are listed in the UNESCO world heritage list separately as the Sundarbans and Sundarbans National Park respectively, though they are simply parts of the same forest. The Sundarbans is intersected by a complex network of tidal waterways, mudflats and small islands of salt-tolerant mangrove forests, and presents an excellent example of ongoing ecological processes. The area is known for its wide range of fauna. The most famous among these are the Bengal Tigers, but numerous species of birds, spotted deer, crocodiles and snakes also inhabit the eco-region.

“The Sundarbans are a network of tidal channels, rivers, creeks and islands. Some of these islands are mere swampy morasses, covered with low forest and scrubwood jungle, but those to the north, which are embanked, grow rich crops of rice. As one approaches the coast, the land gradually declines to an elevation throughout many hundred square miles [that] is scarcely raised above high-water mark. This scaboard area is a typical specimen of new deltaic formation. It exhibits the process of land-making in an unfinished state, and presents the last stage in the life of a great river – the stage in which it emerges through a region of half land, half water, almost imperceptibly, into the sea” (O'Malley, 1914/98; p.2).

### 3.2 Sundarbans eco-region

The River Hugli marks the western border of the Sundarbans; the Sandwip Channel, which runs west along the Chittagong Hills, acts as the eastern border. On the Indian side, the Sundarbans is located within the 24-Parganas Districts of West Bengal<sup>1</sup>. In Bangladesh, the Sundarbans covers portions of the Bakarganj and Khulna Districts, its north-eastern corner reaching toward the city of Morrelganj. According to Chaudhuri and Choudhury (1994) the name Sundarbans has three possible derivations: (i) the forest of the sundari (*Heritiera fomes*), (ii) *sundar* (beautiful)

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<sup>1</sup>The 24-Parganas District was bifurcated in March 1986. Subsequently, of the 19 Development Blocks within the eco-region, 13 are under the jurisdiction of the South 24-Parganas District while six Development Blocks fall within the jurisdiction of the North 24-Parganas District.

forests, and (iii) forests of the ocean (*samundraban*)<sup>2</sup>. During the period 1829-1830, the region was surveyed and delineated as a Special Forest Cover by the Dampier-Hodges line<sup>3</sup> (see Figure 3.2).

The Sundarbans has the distinction of being the first mangrove forest in the world where scientific management of resources was practised; a Forest Management Division was established in 1869, and the first management plan was implemented in 1892. The forest was administered as a single management unit until 1947, when India was partitioned. The Sundarbans today comprise approximately 10,000 sq km of mangrove forest and intricate water channels fringing the river deltas at the head of the Bay of Bengal, remaining wetlands left untransformed are probably less than half of the area intact in the late eighteenth century (Sengupta, 1972 quoted in Richards and Flint, 1990; Townsend, 1987/91). The Sundarbans is one of the last tropical deltaic mangrove forests in Asia, the rest having succumbed initially to paddy fields, and later on to aquaculture.

### 3.3 Transformation of the eco-region

Historically, the Sundarbans has been a frontier, more in the American sense than in the European sense wherein the frontier is a border or border zone between two states or countries. According to the American definition, a frontier is described as the border between the settled and unsettled, the “civilized” (Turner, 1962/1996; p. 205) and the “wilderness” (Turner, 1962/1996; p. 4). The region presented the conditions which allowed a process of continuous advance, both in physical and socio-political terms and has been the arena for transformation of land, religion and values. The following three sub-sections are an attempt to capture these transformations.

#### 3.3.1 Forest to agriculture

Extension of the frontier into forested Sundarbans began before the Muslim Indo-Turkish Sultans ruled Bengal from 1204 until 1575 (Townsend, 1987/91). Eaton

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<sup>2</sup> “Because of the familiar problem of unstandardised transliterations (in this case from Bengali), the word is variously spelled. Questions about the etymology further complicate spelling. Yule and Burnell (1903:869) use *sunderbunds*, reflecting their belief that the origin is in *bund*, i.e. “mound” or “embankment” (created by tidal action and sedimentation) rather than “forest” (*ban/van*). Derivations of *sunder/sundar* are likewise disputed, ranging from *sundara* (“beautiful”) to *sundari* (the Bengali name of the mangrove, *Heritiera minor*; sometimes *H. fomes*) to *chandra* (“moon” reflecting against the tidal-island theory) to *chandradip ban* (from the name of a large *zamindari* estate) to *chanda-bhanda* (the name of an earlier tribe of salt-makers mentioned on a copper tablet dating from A.D. 1136). The “beautiful forest” notion is probably a retroformation, created by current valuations of forests under a pervasive ecological romanticism. Indigenous perceptions were closer to *jungal* than *ban*” (Herring, 1990; p.5). See Footnote 1, Chapter 1.

<sup>3</sup> In the early 19<sup>th</sup> century the colonial government wanted to augment its revenue by clearing mangrove forest and bringing land under paddy cultivation. The *zamindars* (landlords) to avoid paying enhanced revenue started large-scale encroachment of the forest adjacent to their estates. Threatened with possible loss of revenue, the government set out to demarcate the area as *khas mahal* (government’s own estate). A civilian by the name Dampier was appointed as the Commissioner of Sundarbans, and Lieutenant Hodges, an army surveyor was attached to him for the purpose. They drew a line from Kulpi on the river Hugli to Basirhat on the river Khamati that has since been known as the Dampier-Hodges line, south of which lies the Indian Sundarbans.

notes: "...between the thirteenth and eighteenth centuries Muslim pioneers locally remembered as holymen not only established the Islamic religion in much of south and eastern Bengal, but also played important roles in the intensification of wet rice agriculture, established new modes of property rights, and contributed to a fundamental altering of a natural, forested ecosystem" (Eaton, 1990; p.6). The popularity of Muslim pioneers such as Mubarra Ghazi is well documented. An important figure, Mubarra Ghazi was considered to be a *faqir* (holy man). He is reported to have converted the forested western (left) bank of the River Hugli into paddy land. James Wise recorded: "Mubarra Ghazi is said to have been a *faqir*, who reclaimed the jungle tracts along the left bank of the river Hugli, and each villager has an altar dedicated to him. No one will enter the forest, and no crew will sail through the district, without first of all making offerings to one of the shrines" (Wise, 1883; p.90).

The Muslim pioneers are believed to have either obtained land assignments from authorities in control of forest tracts or were incorporated within the state when the clearing had progressed to the extent where it was capable of generating revenue (Eaton, 1990).

The reverence of forest-clearers continued into the Mughal period as the locals continued converting the Sundarbans forest to wet rice fields and were heavily influenced by the Muslims around them. Even the Hindu Bengali castes living in the Sundarbans prior to the Muslims, the *Pods* in the west, and the *Chandals* in the east were strongly influenced in their livelihoods by such figures. Emergence of *Bon Bibi* as the presiding deity of the Sundarbans may be attributed to this influence. Even today nobody – Hindu and Muslim alike – ventures into the forest or sea without propitiating *Bon Bibi* (see Photograph 3.1). She is believed to have tamed *Dakshin Rai* (tiger-god). The *Pods* and *Chandals* were fisher folk by livelihood; however, the immigration of Hindu cultivators and the emphasis of the Muslim leaders upon cultivation resulted in converting these fishing castes to agricultural ones. In 1883, James Wise noted that the Muslims consider fishing to be a lowly occupation because of its historical association with non-Muslim and outcast tribes, who never became integrated into the Muslim society around them.

It was not only the Muslims that preferred the farmer to the fisher, Hindu sentiments toward fishing and agriculture paralleled those of their Muslim neighbours; farming was the chosen profession. The cultivator's product, grain, could easily be converted into cash, which the government could tax; being incapable of easy storage, the fisherman's product was not as easily taxed. Additionally, lagoons previously laden with fish eventually dried up, as the major rivers washed deposits of silt downstream. As a result, many of those who had previously depended upon fishing for their livelihoods increasingly turned toward cultivation<sup>4</sup>.

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<sup>4</sup> The Muslim and Hindu (non fishing castes) alike still displays the aversion towards fishing and only in dire straits do they take to fishing. However, with the increase in population and subsequent pressure on land as well as loss of land due to erosion, a counter-conversion of occupation can be witnessed. Cultivator families, irrespective of caste and religion are taking to fishing, especially collection of tiger shrimp seeds; caste and religious scruples no longer hold in case of occupation.

This preference for cultivation over fishing continued into the British rule of India. In 1764, the East India Company won over the Mughal powers that had dominated Bengal for nearly two centuries. With thoughts toward bringing land under increased cultivation, both the British government and the Bengalis worked to push the frontier farther south. By 1770, land tenures were given to the Bengalis who would reclaim 'waste land'<sup>5</sup>.

Although the clearing of land for cultivation began prior to Turkish rule, the British appear to have been responsible for much of the conversion to farmland, and changing the face of the Sundarbans. "During the time of Pratapaditya [pre-Portuguese and obviously pre-British], forests were cleared from land where the delta-building processes had reached some order of maturity. ... But, during the British rule, even these low-lying tracts were occupied ... and circuit embankments were constructed. ... This is the basic difference between the interventions made during these two regimes [periods]" (Chakraborty, 2005; p. 4). Besides demand for land revenue and other forest produce, the reason for large-scale transformation was the view that: "a land covered over with impenetrable forests, the hideous den of all descriptions of beasts and reptiles ... [can] only... be improved by deforestation" (Richards and Flint, 1990; p.17). This provides a better understanding of the desire to transform the forest into paddy land, which prompted one visitor to write: "It is pleasing to reflect that what was once only a den of wild beasts is now made to yield to not a few their 'daily bread'..." (Richards and Flint, 1990; p.19).

The deterioration of the forests took place over a long period; there was little understanding of the ramifications that would later develop as a result of such an active focus upon cultivation. Within the past three hundred years, the two-horned rhinoceros (last recorded in 1870), the Indian rhinoceros, the Indian cheetah, the golden eagle, and the pink-headed duck, wild buffalo (last shot in 1890), all species indigenous to the Sundarbans, have disappeared (Mukherjee and Tiwari, 1984).

### 3.3.2 Resource access regime

During the pre-British period, as the frontier was being extended into the Sundarbans, access to resources came to be controlled but this pertained only to the cleared tracts. The forest, watercourses and sea remained as open-access common-pool resource. Eaton notes: "Typically ... indigenous peoples, while working as ordinary cultivators on these newly claimed lands from the jungle, were permitted continued access to the *uncleared* portion of the Sundarbans adjacent to these plots" (Eaton, 1990; p.12). In 1798, Hamilton Buchanan traveled into the Chittagong Hills, an area analogous to the Sundarbans proper so far as the process of agricultural expansion is concerned, and wrote: "The woods, however, are not considered as property; for every *ryot* [settler-cultivator] may go into them and cut whatever timber he wants" (Buchanan, 1798; p.36).

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<sup>5</sup> It was a Victorian essay by W.W. Hunter, a senior civil servant, published in 1875 that was largely responsible for characterisation of the Sundarbans as wasteland. It must also be noted that by the third quarter of the nineteenth century, to scour off native claims to the vast forests of India, colonial policy-makers were readying the terminology of 'waste' in order to move toward their exploitation (Guha, 1990; p. 66).

It was not only the individual cultivator and fisherman who was appropriating from the commons but also the *zamindar* (landlord responsible for paying revenue). As the East India Company was pushing for extension of settlement farther into the 'no-man's land' of the forest by clearing it, disputes arose over ownership of lands and amount of revenue to be paid since the *zamindars* were clearing forest tracts in addition to what they had taken on lease. As a consequence, the 'Permanent Settlement' was established in 1793, in effect giving the *zamindars* complete ownership rights in exchange for paying yearly land taxes to the Company. If taxes were not paid, the state would sell the land to someone else. The state considered itself sole owner of the Sundarbans forests, the *zamindars'* lands extended only to the edge of the forests but boundaries remained uncertain until demarcated by the Dampier-Hodges line.

I have noted elsewhere that the right to fish in the watercourses of the Sundarbans then as now was in the realm of the common-pool, and no revenue for it was collected on behalf of the Government. In 1866 however, the Government put up to auction the rights of the fisheries in all the Sundarbans rivers for a term of five years. The Port Canning Company purchased the fishing rights, but they were withdrawn in October 1868 in consequence of the claims of the Company being disputed by fishermen and others who had prescriptive rights; it was then finally decided that the Government had not the right to farm out the fisheries in tidal waters to private persons (Danda, 2002).

*Bhawalis* (woodcutters) of the Sundarbans appear to have had all along a prescriptive right to fell forest timber, and no Government revenue was realised from the forests (Richards and Flint, 1990). Nevertheless, in 1866, the Port Canning Company leased un-appropriated forests in the Sundarbans along the sea face of the Bay of Bengal. The lease was cancelled in February 1869, and the forests reverted back to being common-pool resource. The then District Collector of the 24-Parganas District was of the opinion that making the forest open to public would largely increase revenue from forests. A Deputy Conservator of forests was specially sent to the Sundarbans in early 1873 to establish toll stations and issue licenses (Danda, 2003). The fact that forest resources were in the realm of the common-pool, and also that demand for wood, especially firewood was so great, offered ample inducement to cultivators and fishermen, even when comparatively well off. These people were the lower orders of Muslims and the following castes among the Hindus: *Pods*, *Bagdis*, *Kaoras*, *Tiors*, *Chandals*, *Kaibarttas*, and *Kapalis*.

The trend of constant assault on the forest continued well into the nineteenth century; it was not until 1878 that uncleared forest was declared "reserved" or "protected" vide Act VII because all did not share the enthusiasm for reclamation. With the establishment of the Indian Forest Service in 1865, a precedent toward Indian conservation had been established although establishment of the Service was meant to facilitate appropriation of forests by the state with an eye on revenue from forest resources. Though this new system helped to protect forests, those who had previously depended upon their resources were now legally restricted against the use of these resources. This created a competition over resource uses that had not previously existed. Creation of the Indian National Parks Act in 1934 saw the model of human use of the park repeated, game-hunters and park visitors were recognised

as having valid claims to the park; however, the local residents of now reserved areas were left out of the planning, almost as if they did not exist, and their resource needs not taken into account<sup>6</sup>. In Independent India, champions of the country's natural resources advocated increased protection at the cost of local inhabitants, so much so that in 1973 while launching Project Tiger, Indira Gandhi noted: "The tiger cannot be preserved in isolation. It is at the apex of a large and complex biotope. Its habitat, threatened by human intrusion, commercial forestry and cattle grazing, must first be made inviolate" (Tikader, 1983; p.259).

Thus, the eco-region that was once an open-access commons was initially subject to privatisation of property rights, and then, to central state intervention over resources. Increasingly, the Government found itself in a dilemma. The protection and preservation of the remaining Sundarbans forests became pitted against exploitation of forest resources. The Marichjhapi incident of 1978-79 characterises this conflict wherein refugee-settlers were forcibly evicted from the island on the ground that the island was part of the designated forest area<sup>7</sup>. Apparently ecological concerns prevailed over that of human requirement but as Mallick (1999) points out that the new Government feared setting a precedent in the face of the fact that it was practically impossible to rehabilitate the large number of refugees (1.1 million refugees had arrived by June 1948 and kept pouring in through the 1950s, 60s, and 70s) though while in opposition the Left Front had supported the cause of the refugees. It could also be the internal dynamics of coalition partners within the Left Front that prompted the Government to react so strongly since the largest partner, the Communist Party of India (Marxist) (CPI(M)) is not particularly strong in the eastern Sundarbans and the smaller parties (e.g. Revolutionary Socialist Party (RSP)) would have benefited politically had the refugees been allowed to settle. Also, this was the first Left Front government in the State since Independence (barring a three-year period in the late 1960s, the Congress Party had been in power) and it wanted to be seen capable of governing and taking tough decisions. At a different level, it could also be that caste politics came into play, while the refugees were low caste; the ruling elite are predominantly Hindu upper caste (Mallick, 1999; Jalais, 2005). Whatever be the motivation for the Government for prioritising conservation over human use of the eco-region, it was apparent that the Government needed to balance the needs of its people with the health of the forests' biodiversity. It was in the 1980s that the option of collective action came to be entertained in the management of the Sundarbans. But, again in 2004, fishermen were evicted from Jambudwip Island for degrading mangrove vegetation on the island, which is also designated as forest

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<sup>6</sup> Corbett National Park was the first one set up in 1935 in northern India; Sundarbans became a National Park almost half a century later but the character of the forest of being open-access common-pool resource had changed.

<sup>7</sup> In the aftermath of Bangladesh's war of independence and with the Left Front coming to power in 1977 in West Bengal, an attempt was made in 1978 in Jhila Block of the forest (Marichjhapi) by the refugees numbering about 16,000, originally from East Pakistan/Bangladesh. Within 18 months the refugee-settlers had built a thriving and viable community on the island on the basis of communal ownership and collective action. Force was used to dismantle the community, 36 lives were lost to police firing but the island was freed of encroachers (Mallick, 1999; Jalais, 2005). Though fictional, an account of the Marichjhapi incident has been very vividly brought to life by Amitav Ghosh in his novel, *The Hungry Tide* (2004).

area. Around the same time the Hukaharaniya incident shows the Government and the dominant ruling party being more concerned with human development than health of the ecosystem<sup>8</sup>

A National Action Plan for Wildlife Conservation was envisaged in 1983, which provided for management of Protected Areas (PAs) and habitat restoration aimed at increasing the quality of management, and consideration for the local people in and around the wildlife reserves; and wildlife protection in multiple-use areas to serve community needs (by raising productivity) while enhancing resource conservation (Sutton, 1990). Nevertheless, the management approach was isolationist, achieved through enforcement of legislation and policing to prevent activities deemed illegal. In 1988, the National Forest Policy (NFP) acknowledged that attempts to protect PAs from human intervention by coercion led to hostile attitudes of local people towards wildlife management and forestry staff. Therefore, the NFP declared that local communities were to be involved in natural resource conservation. Accordingly, since 1991, funds have been committed for eco-development, which envisages a site-specific package of measures for conserving biodiversity through local economic development<sup>9</sup>. Social welfare activities under eco-development include provision of freshwater and irrigation facilities, village roadwork, solar lights for lighting and scaring away tigers, health care camps, and employment generation for local communities through pisciculture (MoEF / Project Tiger Status Report, 2001).

### 3.3.3 Protection regime

For three quarters of the nineteenth century the Sundarbans witnessed a constant assault on the ecosystem. It took some time before the importance of the Sundarbans for purposes other than cultivation were realised. Men such as Brandis (first Inspector-General of Forests in 1865) and Schlich (the then Conservator of Forests in 1874) had long emphasised the importance of scientific forestry. There were varying ideas of the forests' importance and roles, but eventually it had become clear to some within the Government that protecting part of the forests would be advantageous. Schlich understood the importance in the Sundarbans' supply of timber, thatching grasses, and fuel wood. In places where the forests had been

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<sup>8</sup> Hukaharaniya is an east-west flowing tidal river in Kultali Development Block which the Kultali Panchayat Samiti (middle tier of local-self government, *institutionalised* collective action organisation) and the Sundarban Development Board, both controlled by CPI(M), the dominant political party in the State, have converted into a freshwater canal for raising agricultural productivity while Socialist Unity Centre of India (SUCI) (the only leftist opposition party in West Bengal) opposed it on the ground of interfering with natural systems. At the ground level though, CPI(M) workers allege that SUCI supporters use the watercourse to travel to and from the forest to plunder its resources while SUCI workers allege that by blocking the river, not only has a natural system been interfered with but also taken away livelihood options of its members. It may be noted that the Legislative Assembly constituency under which Kultali falls is a stronghold of the SUCI and the CPI(M) is desperate to make inroads. See [http://www.earthisland.org/map/ltfrn\\_178.htm](http://www.earthisland.org/map/ltfrn_178.htm).

<sup>9</sup> For example, budgetary allocation for eco-development in the South 24 Parganas Forest Division (excluding Sunderban Tiger Reserve) for the year 2005-06 amounted to Rs. 33,73,992/- (US\$ 75,000/-) to be shared by the forest protection committees (FPCs). In the Sundarbans, there are 14 EDCs (as of May 2004) and 44 FPCs (as of March 2006) in villages adjoining forests.

cleared extensively, Schlich and others were uncertain of the Sundarbans' chances of regeneration. Schlich wrote: "It is our duty to see that the supply is not exhausted. Moreover, the demand is certain to increase, and we must therefore make sure that the increase also is provided for. It has been said that the supply is inexhaustible, but such is not the case. It appears, on the contrary, that the western part of the Sundarbans, which is that nearest to Calcutta, is already exhausted to a large extent, and that fuel-cutters proceed more to the east year after year" (as cited by Tikader, 1983; p.43). He, then, suggested: "... if the Sundarbans remain open to all comers, and if certain restrictions are not introduced, it seems no doubt that the supply will fall short of the demand. This must be avoided, as no other sources are available, and therefore the Sundarbans should be taken under forest management without delay, instead of extending cultivation towards the south without considering to what extent the permanent yield of forest produce may be curtailed by it" (as cited by Tikader, 1983; p.43). Though the Bengal Government was determined to utilise all available resources and shifted its attention to the 24-Parganas Sundarbans, the countervailing force gained ground on receiving crucial support from the Lieutenant Governor Richard Temple in 1874, which helped avoid complete obliteration of the remaining forest. It was the existence of much-needed products such as wood, fish, and honey that increased the eco-region's chance for continued survival through changes in management policy that offered protection to this area and its living resources.

The Sundarbans came under forest management in 1875 when five forest divisions were created in Bengal. These actions anticipated the sweeping affirmation of forest protection enacted by the Government of India in the late 1870s. After an extended period of investigation and debate, Act VII of 1878 constituted "Reserved" and "Protected" forests for every province in British India. The newly forming Forest Service busied itself in surveying, mapping, and bounding government forest areas throughout the subcontinent. The Sundarbans came under this new regime. To the Reserved forests classification the Forest Department added the "Protected" category. These were lands that could only be opened for reclamation by consent of the Forest Department. By 1890, there were Protected Forests totalling 4,480 sq km in 24-Parganas. By designating the 24-Parganas tidal forests as Protected rather than Reserved, the Forest Department left itself an option. It could either lease these lands for clearing and conversion to rice, or it could transfer them to timber production and management as reserved forests. For the western Sundarbans in 24-Parganas District, the area designated as Protected Forest stayed relatively constant from 1890 through the 1930s at between 4,400 and 4,500 sq. km<sup>10</sup>. The state preserved these mangrove forests primarily as a means of ensuring a continuing supply of timber and other forest products. Designation as Reserved or Protected Forests was an intervention designed to protect the Sundarbans forests against the forces of the land market and reclamation pressures. The Sundarbans forests became and remained a production unit run as a state monopoly industry in lower Bengal. Throughout the period between 1890 through 1980 of Forest Department management, the state either produced directly or licensed to contractors the cutting

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<sup>10</sup> Until 1904, about 40 percent of the Sundarbans in the district had been reclaimed. Of the total 7,500 sq km, only 3,115 sq km were assigned in various forms of grants to individual proprietors (Ascoli, 1921).



and sale of large quantities of timber, bamboo, and other products from its reserved as well as its protected forests.

Large-scale land clearance occurred between 1940 and 1950; cropland expanded by 23 percent. This reflects a response to two large-scale traumatic events: the Bengal famine in 1943 and the massive dislocations of refugees in both directions across the then newly created India-Pakistan border following the 1947 Partition. During this period, approximately sixty percent of the Sundarbans area in the 24-Parganas District was administered by the Forest Department. This formed the basis for the West Bengal Sundarbans Forest Reserve after Partition (Richards and Flint, 1990).

Independent India witnessed shortage of timber as a consequence of the War. Increased population as a result of transmigration due to partition made expansion of agricultural land a necessity; conservation was not the government's priority. Despite these difficulties, champions of India's natural resources advocated increased protection leading to establishment of the Indian Board for Wild Life (IBWL) in 1952<sup>11</sup>. It was not until November 1969, however, that Indian conservation gained widespread international attention when the 10<sup>th</sup> General Assembly of the IUCN (The World Conservation Union) met in New Delhi to discuss issues of conservation. It was then that Indian conservationists had the opportunity to draw world attention to the fate of India's fast dwindling wildlife, including the tiger.

The 1970s were a decade of change in India's conservation movement. The IBWL established many protected areas throughout India, helped create the Indian Wildlife (Protection) Act in 1972, served as motivation for India's membership of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) in 1974, and initiated a National Forest Policy (made public in 1988) and a National Environmental Conservation Policy (brought out in 1992). During this period World Wildlife Fund (WWF) offered India financial aid for Project Tiger<sup>12</sup>, a program designed to save the Bengal Tiger through the preservation of its habitat. This protection of tigers and their habitats became a goal for Indian conservationists. The Sundarbans of West Bengal was one of the three areas – the Sunderban Tiger Reserve – in which the tigers as noted already were provided protection in 1973. Subsequently, the area comprising the present tiger reserve was constituted as a Reserve Forest in 1978<sup>13</sup>. The area of the Reserve is 2585 sq. km., covering land area of 1600 sq. km. and watercourses occupying over 985 sq. km. Within this area, 1330.12 sq. km. is designated as core area, which was subsequently declared as Sundarbans National Park in 1984. An area of 124.40 sq. km. within the core area is preserved as primitive zone to act as a gene pool. Considering the importance of the

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<sup>11</sup> IBWL was mandated to advise the federal and State governments in dealing with problems relating to wildlife conservation and set up national parks, wildlife sanctuaries, and zoological parks and gardens.

<sup>12</sup> It was Prince Bernhard of the Netherlands, founding President of WWF who launched a nature trust in 1970 and raised US\$ 10 million, which convinced donors to make donations towards saving India's charismatic, but severely endangered tigers in 1973.

<sup>13</sup> The Sundarbans Tiger Reserve has not witnessed encroachment unlike some other Reserves on the mainland except the Marichjhapi incident.

bio-geographic region of Bengal River Forests and its unique biodiversity, the National Park area of the Reserve was included in the list of World Heritage Sites in 1989 and in the same year the entire Sundarbans area was declared as Biosphere Reserve. Ever since, Sundarbans' stature as a significant bio-geographic region has only increased. However, the watercourses outside the forest core area and also elsewhere in the eco-region remain open to fishing (regulated in case of forest buffer area) and are accessible as a commons where excluding potential beneficiaries from obtaining benefits is impossible. This has given rise to a situation where absolute degradation of the commons is a possibility in the near future about which marine biologists and conservationists are concerned (details given in Chapter 8, Section 3). Given the socio-economic state of the eco-region and lay of the land, riparian Sundarbans as of now does not lend itself to institutional arrangements that help resource users to allocate benefits equitably and sustainably over long periods of time.

### **3.4 Administering Sundarbans**

West Bengal is one of the constituent States of the Republic of India. The State is divided into 19 districts (*zillas*) each headed by a Collector/District Magistrate who is a civil servant and by an elected head of the Zilla Parishad (district-level local self-government). The Sundarbans is not a district by itself but parts of it fall under the jurisdiction of the North and South 24-Parganas districts. Independent India has persisted with the administrative structure that the colonial government had devised to administer Sundarbans. As per the British dispensation, the Collectors of the 24-Parganas, Jessore, and Bakarganj districts exercised concurrent jurisdiction with the local Commissioner in revenue matters in the Sundarbans. Practically, it was the Sundarbans Commissioner who performed the revenue work in parts of these districts with the exception that the revenue of all Sundarbans estates was paid into the abovementioned Collectorates. The office of Commissioner of the Sundarbans was established under Regulation IX of 1816 to ascertain the extent of encroachment by the neighbouring landholders beyond their permanently settled lands so as to bring the encroached land within the revenue-paying estates. Jurisdiction of the Sundarbans Commissioner was enhanced in 1819 to grant leases of forestlands on behalf of the government but land revenue, as before, continued to be paid into the treasuries of the respective districts to the north. The Office of the Sundarbans Commissioner was dissolved in 1905, by which time mapping and resource inventory was more or less complete.

Each of the districts in a State is divided into Sub-Divisions (five in case of South 24-Parganas District) headed by a civil servant (Sub-Divisional Officer/Magistrate). The Sub-Divisions are again divided into several Development Blocks (29 including 13 in the Sundarbans) headed by the Block Development Officer and an elected head of the Panchayat Samiti (block-level local self-government). The Block Development Office is the last administrative wing of the State Government. The last level of the elected local self-government is the Gram Panchayat (312 in the South 24-Parganas District including 89 in the Sundarbans) headed by an elected Pradhan (chief). The South 24-Parganas Zilla Parishad is empowered to initiate and implement development activities within the District through the Panchayat Samitis and in turn the Gram Panchayats which are composed of four to five *mouzas* (revenue villages) with a total population of about 25,000. This structure pertains to

settled areas; forests come under the jurisdiction of the Directorate of Forest (Forest Department) of the State Government. In addition to the above, backward areas like the Sundarbans also have specialised organisations like Sundarban Development Board (SDB) for bringing about socio-economic development of the area. However, the new specialised organisation has remained ineffective for a number of reasons such as relatively junior or weaker government minister in charge of the new organisation, the new organisation has to compete for resources and space with larger and older line departments, as well as the eco-region being of little consequence in electoral terms though representation in national and State legislatures is representative. For example, out of 546 Members of the National Parliament (Lower House) just three members are from the Sundarbans, and in West Bengal Legislative Assembly, 13 out of 295 of the members represent different parts of Sundarbans.

As a consequence of the process of decentralisation ushered in by the 73<sup>rd</sup> amendment of the Indian Constitution<sup>14</sup>, administration is now carried out along two parallel channels throwing up new challenges that need to be resolved to attain the objectives of decentralisation. The local self-government institutions have become responsible for provisioning of public goods and services for which as of now they are not equipped due to a mismatch of responsibilities and personnel, and misalignment of organisations. For example, it is now the responsibility of the Panchayat Samiti (middle-tier of local self-government) to repair embankments but the personnel continue to be with the Irrigation Department of the State Government (see Chapter 4). For a place like the Sundarbans and its people, this is a major handicap because the public good in question is life sustaining.

During the late 1960s and early 1970s, State governments had thought it prudent to create specialised agencies catering to socio-economically backward areas like the Sundarbans, but with democratic decentralisation their roles have become ambiguous and multiplicity of organisations/agencies leads to duplication and turf wars, not helping the cause of the region and its people. An illustrative example will help understand the situation better.

The Sundarban Development Board (SDB) with assistance to the tune of \$ 450,000/- from Asian Development Bank (ADB) in 2001 got down to preparing a comprehensive Integrated Conservation and Development Plan (ICDP) to secure biodiversity conservation in the Indian Sundarbans, and improve the livelihoods of local communities. While work on the ICDP was in progress, the Ministry of Environment and Forests (MoEF), Government of India, with an aid of \$ 0.5 million from UNDP launched a three-year project “Strengthening Sustainable Livelihoods for Biodiversity Conservation in Sundarbans” in 2003. The Forest Department (FD), Government of West Bengal, is the nodal agency for the latter project. Towards the end of 2006, it was expected to come up with a Master Plan but until March 2007 it

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<sup>14</sup> See Annexure I for a note on the 73<sup>rd</sup> constitutional amendment regarding local self-government.

has not been published. The aims of the two projects are to essentially come up with plans that improve the livelihoods of the people of the Sundarbans while at the same time conserve the ecosystem for its biodiversity. Despite the two projects being similar and the existence of a formal linkage between SDB and FD through deputation of personnel from FD to SDB<sup>15</sup>, there is no linkage and synergy between the two projects. Instead of formal consultations between the two groups there is rivalry and duplication evident from the fact that the Minister-in-Charge of SDB publicly complains at not being consulted and invited by the MoEF-UNDP project (*The Times of India*, Kolkata; June 30, 2004), and Dr. A.K. Ghosh (eminent biologist and environmentalist) who attends meetings of both the groups finds that the two groups are doing almost the same set of things but without consulting each other (*pers. comm* Nov. 2004). It is also my personal experience that NGOs that work in close association with SDB are not welcome in FD and vice versa, even when it comes to sharing information that should be in public domain in any case, this reflects the antagonistic attitude of the two organisations of the Government of West Bengal. Public spats between two departments or agencies of Government of West Bengal are not unusual (an example can be found in Footnote 1, Chapter 8).

### 3.5 Sundarbans as home

The Indian Sundarbans between 21° 32'-22° 40' north and between 88° 85'-89° 00' east is home to 4.5 million people. The majority of these people trace their origins either to East Midnapore District across River Hugli or across what is now the international border into parts of Bangladesh depending on their location in the Sundarbans<sup>16</sup>; many still have live contacts with their places of origin. The population of Hindus and Muslims is almost equal in the Sundarbans though there are islands and villages where one religious group overwhelmingly outnumbers the other but hamlets are almost always composed of single or similar religious and ethnic identities. Caste and religious scruples in the Sundarbans villages do not apply as strongly as they do in mainland villages, especially, in terms of occupation, though marriages are along religious and ethnic lines. Use of violence is not uncommon in Sundarbans villages, but seldom has it been used along religious lines. Only one of my elderly respondents mentions of religious violence some time in his youth. Often incidents of violence go unreported unless it results in death due to the fact that each of the Development Blocks usually has only one Police Station. Reporting petty crime and incidents of abrupt violence at the Police Station is impractical due to the distance and time taken to reach there, as well as the fact that enforcement is weak. For a resident of the Sundarbans islands, enforcement is not something associated with the state but with the dominant political party, more so, if that party is one among the nine in the Left Front. The state for a typical Sundarbans resident is not something that they have to deal with on a regular basis or even once

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<sup>15</sup> The SDB has a Forestry Division, which is manned by personnel of the Forest Department on deputation, but the arrangement is not smooth. While senior officials of the SDB feel that the deputees are not motivated because they have no stake and are there only to spend a part of their working lives before returning to their parent organisation, the deputees themselves regard the deputation as a kind of punishment posting caused mostly due to not-so-good relation with their superior.

<sup>16</sup> According to the Census of India 2001, about 7 percent of the people of Sundarbans are of tribal origin hailing from parts of Orissa, Jharkhand, Chhattisgarh and West Bengal States.

in their lifetime for some. I have observed that the residents of the Sundarbans do not perceive the Gram Panchayat as an extension of the state although state agencies and planners deem it as such. In villages adjoining forests, readily identified state representatives are the Forest Department personnel, in border villages it is Border Security Force (BSF) personnel. Local government employees, school teachers and health workers are not regarded as being representatives of the state since these individuals are from within the community or become embedded in the community, but educated city-dwelling outsiders are often perceived as agents of the state and their presence on the islands is taken to be a sign of change, mostly related to provisioning of a public-good but at times also as something being wrong.

Despite the frontier characteristics<sup>17</sup> (in a Turnerian sense), the Sundarbans villagers do need to negotiate political delineations since political affiliations can make it relatively harder or easier to access services such as tube-wells for potable water. Political polarisation is intense in the Sundarbans and the uninterrupted communist rule in West Bengal since 1977 is not a single party rule but that of a coalition of leftist parties. The parties at the sub-State level fiercely protect their turfs, even with the use of violence. Political polarisation has intensified after the introduction of statutory Gram Panchayats (local self-government institutions); traditional Panchayats are caste based, controlled by the predominant caste and not the highest caste in social hierarchy. Earlier, traditional Panchayats (a form of *spontaneous* collective action) would mediate conflicts and oversee adherence to norms but in almost all villages, Gram Panchayats (a form of *institutionalised* collective action) have supplanted the traditional Panchayats. In the Sundarbans as elsewhere in West Bengal, almost every *para* (locality) has a 'club' with some kind of political affiliation. These clubs have varied activities ranging from sports, cultural programmes, social service, religious festivals, and political groundwork. In exceptional cases such clubs are apolitical. Often these clubs serve as the extension of the dominant political party and the Panchayat, mediating and enforcing decisions even in domestic matters of households. A situation where people come together to supply themselves with goods and services (social and or public-good) that they all need but could not provide for themselves individually is termed "collective action" or "self-organised action" (Wade, 1988; p. 14). In this thesis collective action is termed as *spontaneous* when it is organised by the community as a response to a felt need for goods and services. When collective action is organised by the state backed by statutory provisions, it is termed as *institutionalised*.

Agriculture (mostly rain fed) is the mainstay of the economy of the Sundarbans villages though about 56 percent of the population is landless despite land reforms. From the Club of Rome to the World Bank, the communist regime has received much acclaim for its success in land reforms but instead of redistributing land to tenants, it has mainly regulated tenancy through 'Operation *Barga*' (sharecropper) wherein sharecroppers have security to till the land and take the greater share of the

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<sup>17</sup> The identifying characteristics that have resulted from the influence of frontier experience are: individualism; mobility, both physical and social; innovativeness; self-reliance; suspicion/distrust of authority; trust in quick-working relationships; sense of effectiveness; and localisation and portability of civic and governmental institutions (Elazar, 1996). See further, Footnote 2, Chapter 2.

harvest but not ownership of the land. Landless families are dependent on agriculture through labour or lease of land. Members of landless families also depend on fishing including crab hunting and collection of tiger shrimp seeds from the wild. Collection of forest resources has become increasingly difficult though not totally discontinued due to tightening of conservation laws and their implementation, but during this same period commercial aquaculture has created a market for wild tiger shrimp seeds (Chapter 8 deals with aquaculture). Temporary migration is common in the Sundarbans villages; almost all the Bengali-speaking housemaids I have come across or heard of in Delhi are from the Sundarbans (possibly not all of them are from Indian Sundarbans), as are the Bengali-speaking labourers as far as Gujarat, Andaman Islands and even Sri Lanka. Human trafficking in women and children is also common in the Sundarbans villages though exact figures are hard to come by (ADB, 2003a).

Being at the mouth of the Bay of Bengal, the Sundarbans villages have to cope with violent climatic conditions leading to saline water incursion and coastal erosion. Serious concerns are also being expressed regarding the impacts of global climate change, particularly relative sea level rise. According to one estimate, half a million people living in the Sundarbans may be rendered homeless by 2020 on account of relative sea level rise (Hazra et al, 2002; Mitra, 2007). All of the 54 inhabited islands are not equally vulnerable to coastal erosion though; of the 14 most vulnerable nine<sup>18</sup> are uninhabited. Moreover, infrastructure in the Sundarbans is poorly developed and maintained, a brief description of some basic infrastructure follows.

The earthen embankments without which human existence on the deltaic islands would not be possible are often breached for a number of reasons (see Chapter 4) but are almost always repaired on an emergency basis, a reactive response rather than proactive. Though agriculture is the mainstay of the local economy, irrigation canals are few and far between resulting in a single crop over most of the eco-region. The Sundarban Development Board had undertaken canal excavation as one of its first interventions during the period 1980-1989 with International Fund for Agricultural Development (IFAD) assistance many of which have become derelict in the absence of maintenance by the state or the community.

Even where the embankments and irrigation canals are in relatively better shape, farmers find it difficult to reap the benefits in monetary terms due to poor transportation (details given in Chapter 5). Major movement of goods is by boat since all-weather roads are almost nonexistent and there are no bridges connecting the islands except for a few, resulting in multiple handling increasing cost, damage and time consumption. Thus price realisation for the farmers is poor due to poor road and rail connectivity despite geographical proximity to Kolkata markets (see Chapter 7 for details).

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<sup>18</sup> Most vulnerable inhabited islands are Dakshin Surendraganj, Sagar, Namkhana, Moushuni, and Ghoramara. The other islands on the list of most vulnerable are Lothian, Dulibhasani, Dhanchi, Dalhousie, Bulchery, Ajmalmari West, Ajmalmari East, Bhanganaduni, and Jambudwip (Hazra et al., 2002; Mitra, 2007).

The healthcare delivery system in West Bengal is organised in a way that every district has a District Hospital (located at the District Headquarter) and smaller hospitals (Block Primary Health Centre (BPHC)/Rural Hospital) in each of the Development Blocks followed by a Primary Health Centre (PHC) for a population of about 25,000, which usually coincides with a Gram Panchayat area. In some of the Development Blocks the hospitals are larger than the average BPHC/Rural Hospital because in these places the Development Block Headquarter and the District Sub-Division coexist and the Sub-Divisional Hospital provides services. The system works on a referral basis, that is, a patient depending on nature of illness, gets referred to the next higher level hospital for treatment by a specialist. Additionally, a health worker caters to a population for roughly 3000. The health workers primarily administer the 'mother and child programme' of the Government of India. There are also disease-specific programmes with dedicated personnel at the grassroots. The healthcare delivery mechanism appears impressive, as does the physical infrastructure for it, but for the Sundarbans it is far from satisfactory or adequate. The South 24-Parganas District Hospital is located in Kolkata putting it beyond reach of most of the people in the Sundarbans. Since all district offices and district courts of South 24-Parganas are located in Kolkata, a decision has been made by the Government of West Bengal to shift the District Headquarters further south of Kolkata to Baruipur but there has been no movement yet. Moreover, the Sundarbans Development Blocks are unlike the ones on the mainland due to lay of the land and geographic spread, making it difficult for people to access services since the various government offices (e.g., irrigation, education, and health) are located at the Block Headquarters. Also, for the same reason, PHCs on remote islands remain unmanned by trained personnel rendering investment on physical infrastructure to waste. In certain places, NGOs have stepped in to provide healthcare, the two most notable being SHIS (Southern Health Improvement Society, funded by Dominique Lapierre of *Is Paris Burning?* and *City of Joy* fame) and TSRD (Tagore Society for Rural Development).

After independence, education became the responsibility of the States. The Union Government's responsibility was to coordinate technical and higher education and specify standards. In 1976, through a constitutional amendment, education was made a joint responsibility of the States and the Union. A common structure of education was established through out the country and since then students are required to study for 10+2+3 years to earn a bachelor degree. Subsequently, in 2000, education has been made free and compulsory up to 14 years of age. The ten-year programme launched in 2000 (*Sarva Siksha Abhiyan* (Education for all)) envisages universalisation of education. Under this programme, facilities are being established/augmented for primary (first five years) and upper primary (next three years) education. Education in government schools is free. The government also heavily subsidises education at secondary and higher levels. Education can also be availed at private schools and colleges, especially in urban areas. Private education is not free nor is it subsidised. Schools and colleges have to be compulsorily affiliated to a School Board and colleges/institutes require affiliation from a university or the All India Council for Technical Education. Vocational training, depending on the stream, can be had after a minimum of 8 or 10 years of schooling. Despite great strides in quality and spread of education (vocational training included), rural areas remain disadvantaged as compared to urban areas, especially

regions like the Sundarbans. For example, higher secondary schools and colleges in the eco-region do not offer science subjects due to unavailability of laboratory facilities and trained personnel, putting students from such places at a distinct disadvantage as compared to students from semi-urban or urban areas.

Almost the whole of Sundarbans is without electricity except for the islands where West Bengal Renewable Energy Development Agency (WBREDA) has set up off-grid power stations. There are 15 such power stations but the largest island accounts for nine of them making the electrification process highly uneven (see Chapter 6 for details). On the whole, it is a grim situation for the people of the Sundarbans. According to the respondents of this study, the first five issues that they would like the state to address in order of priority are roads, healthcare, higher price realisation for agricultural produce, better schools, and better access to potable water. Surprisingly, the priority list does not include protection against saline water incursion or embankments, possibly because breach in embankments and saline water incursion are a given (see Chapter 4, Section 4).

### 3.6 Field research sites

The Sundarbans eco-region can be categorised into three distinct divisions – the beach/sea face, the swamp forests and the mature delta – based on the biogeophysical attributes. As already mentioned in Chapter 1, Section 5, I have left out the mature delta part for this study. For the purpose of this study Sundarbans *de jure* consists of 13 Development Blocks in South 24-Pargans District, south of the Dampier-Hodges line (see Figure 3.2) whereas Sundarbans *de facto* consists of eight Development Blocks<sup>19</sup> (see Figure 3.3). In this thesis, henceforward, reference to Sundarbans implies Sundarbans *de facto* unless referred to from a historical perspective in which case it would mean 24-Parganas Sundarbans. Sundarbans *de facto* has a population of 1.76 million, about 40 percent of Sundarbans *de jure*. The two islands, Mollakhali and Mousuni, selected for field research are representative of swamp forests and the beach/sea face categories respectively (see Figure 3.3). The other difference between the two islands is that Mollakhali is administratively fragmented; it has one Gram Panchayat and part of another Gram Panchayat, which is on another island, while Mousuni is one Gram Panchayat. However, the Mousuni Gram Panchayat and the Chotomollakhali Gram Panchayat on the two islands are similar in terms of geographical area (about 24 km<sup>2</sup> and 23 km<sup>2</sup> respectively), population size, occupation, and caste/religion composition of the population. A major difference between the two islands is in terms of accessibility; with two river crossings it is possible to avail bus/train services and it takes about two hours to get to this point from Mousuni while from Mollakhali bus/train services are at least four hours away. The threat to embankments is also different on the two islands, while breach in embankment in Mollakhali is due to gradual erosion, at Mousuni (on the western side) it is due to waves coming from the sea but the protective measure is the same on both the islands, thus the extent of damage at Mousuni is greater. Since 1969, Mousuni Island has lost about 15 percent of total area whereas over almost the same period the population has risen by about 265 percent. Moreover, threat due to

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<sup>19</sup> For a list of Blocks in the Sundarbans see Table 1, Annexure II.



global climate change and relative rise in sea level to Mousuni is far greater than Mollakhali; by 2020, 15 percent of current land area of Mousuni is likely to be submerged, according to estimates of the School of Oceanographic Studies, Jadavpur University (SOS, JU). Within the time horizon I am looking at, a significant proportion of the population of Mousuni will be left with no choice but to move to other islands as environmental refugees. It may be noted that Sen (2000) very strongly argues for freedom to make choices as a basic tenet of sustainable development. Therefore, one of the distinguishing characteristics between the two islands is the availability of freedom to make choices for one group, and lack of the same for the other group. The term environmental refugee is being increasingly used by the SOS, JU in the context of the threatened population of the Sundarbans (Mitra, 2007). However, Mollakhali has to cope with a threat that is absent in Mousuni, that of uncontrolled immigration from across the border due to its proximity and live contacts. The following paragraphs describe the two islands in some detail.

### ***Mollakhali Island***

Mollakhali Island is composed of five *mouzas*, viz. Chotomollakhali, Kalidaspur, Hentalbari, Taranagar, and Boromollakhali (see Figure 3.4)<sup>20</sup>. The first three constitute the Chotomollakhali Gram Panchayat (GP), one of 89 in the Sundarbans. The other two *mouzas* are part of Radhanagar-Taranagar GP, located on another island northwest of Mollakhali<sup>21</sup>. Thus, the people of Taranagar and Boromollakhali are administratively in a neither-here-nor-there situation; for the Chotomollakhali GP, residents of these two villages are of no concern while the Radhanagar-Taranagar GP does not treat their problems and concerns with immediacy. Both the GPs are part of Gosaba Development Block, which has 14 GPs in all. The island has a population of 27,983 with a density of 769 persons/km<sup>2</sup>, of which Chotomollakhali GP accounts for 18,430 persons, about 66 percent. Population density on the island is higher than the average figure for Sundarbans (671 persons/km<sup>2</sup>) as well as that of Gosaba Development Block (751 persons/km<sup>2</sup>); about 12 percent of the population is of tribal origin. The island has a major market, a hospital (upgraded Primary Health Centre), two higher secondary schools (one of over 50 years old), two secondary schools, a gasifier power station, bank, post office, Agricultural Growth Centre of the SDB, and an office of the Sub-Assistant Engineer of the Irrigation Department, Government of West Bengal. Usually, for line departments and administrative offices of the State Government, the Development Block Headquarters are the last level; Mollakhali seems to be an exception. Recently (2004), the island has again received telephone connections for public use after an earlier fiasco in the 1990s<sup>22</sup>. The island cannot be reached by road or rail; nearest road-heads are at Chunakhali (three hours by boat) and Dhamakhali (two hours away by boat/road), and railhead at Canning (see Figure 3.3). As elsewhere in the Sundarbans, people of Mollakhali mainly depend on agriculture for their livelihood. Fishing and tiger shrimp seed collection (TSSC) are other important occupations.

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<sup>20</sup> For demographic details see Table 2, and Figures 1 and 2, Annexure II.

<sup>21</sup> Reference to Mollakhali implies Mollakhali Island in its entirety.

<sup>22</sup> An earlier installation never served any purpose, details of which are described in Chapter 5, Section 2.2.

Proximity to swamp forests also provides opportunities for augmenting income through honey collection, small timber and fuel wood collection, and crab hunting; legally and also otherwise.

### ***Mousuni Island***

Mousuni Island is located in the south-western part of the eco-region, close to the sea, away from forest (see Figure 3.1). The island is composed of four *mouzas*, viz. Mousuni, Bagdanga, Kusumtala, and Baliara (see figure 3.5)<sup>23</sup>. The four *mouzas* together constitute the Mousuni Gram Panchayat, one of seven in Namkhana Development Block. The GP has a population of 20,013 with a density of 830 persons/km<sup>2</sup>, which is almost twice as much of the Namkhana Development Block figure (433 persons/km<sup>2</sup>). Namkhana has the lowest population density among the Sundarbans Development Blocks because two of the islands within the Block are presently uninhabited<sup>24</sup> since they are part of reserve forest. These forested islands are away from Mousuni<sup>25</sup>. Mousuni Island has one higher secondary school and a secondary school, two solar power stations, an upgraded Primary Health Centre (hospital), and post office. Official telephone connections for public use are recent additions (2004) but telecommunication was already possible in September 2002 when I arrived here for the first time. The island cannot be reached by road or rail but is better connected than Mollakhali Island; nearest rail and road-heads being Kakdwip (two hours away) and Narayanpur (one and a half hour away) respectively<sup>26</sup>. Agriculture is the main economic activity on the island. Proximity to the sea provides the islanders with the opportunity of being employed on fishing boats, locally known as trawlers. For the economically weak, tiger shrimp seed collection is an important means of livelihood.

One major difference between the two islands, though historical, emerges distinctly through examination of figures 3.4 and 3.5. Notice that the inland features of Mousuni Island are straight lines, be it road or *mouza* boundary. The Bengal Government in 1904 changed the policy of leasing out land exclusively to *zamindars*. Individual *ryots* (settler-cultivators) were encouraged to take up small parcels of land on lease directly under the Government. Thus, forest clearing and settlement progressed along a set pattern in straight lines. Clearing of forest in Mousuni began after 1904, and the first settlement was established in 1909. Each of the *ryots* was given 1.3 ha or about 3.3 acres<sup>27</sup> of land; only the official hunter and estate manager were given 65 ha or 165 acres of land. Office of the estate manager

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<sup>23</sup> For demographic details see Table 2, and Figures 1 and 2, Annexure II.

<sup>24</sup> Lothian Island has traces of human habitation in the past. Artefacts such as pottery and brick pieces from firing mounds on the island suggest that human population flourished about 800-1100 years ago. Jambudwip Island had fishing and fish trading communities until 2004 when a fracas between the Forest Department and Fisheries Department of Government of West Bengal resulted in the island being cleared of human settlement. In an ethnographic account (Raychaudhuri, 1980) of the fishing community of Jambudwip from the late 1960s, it is clear that there were no permanent settlements on the island during the study period, only transient fishing camps. See Annexure IV.

<sup>25</sup> Reference to Mousuni implies Mousuni Island in its entirety.

<sup>26</sup> The railway is being extended up to Narayanpur.

<sup>27</sup> Ordinarily, *ryots* were given ten *bighas* each. One *bigha* is about 1338 m<sup>2</sup>.

now functions as the local land revenue office of the Government of West Bengal. Usually such offices are situated at Development Block Headquarters, Bagdanga being an exception. Settlement in Mollakhali was established by a *zamindar* in the late 1880s. For the *zamindars*, it was a business proposition<sup>28</sup> whereas for the *ryots*, it was an opportunity for better life as compared to their places of origin. As a consequence, the worldview and attitude of the people on the two islands are significantly different, evident from the difference in literacy. People of Mollakhali are generally a resigned lot whereas those of Mousuni are quite enterprising. This attitudinal distinctiveness will be apparent in the case study chapters that follow.

Photo 3.1: Beards of male deities denote Islamic influence



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<sup>28</sup> Daniel Hamilton who had leased Gosaba in 1903 was a notable exception. See Annexure III for an impression of Hamilton's estate.

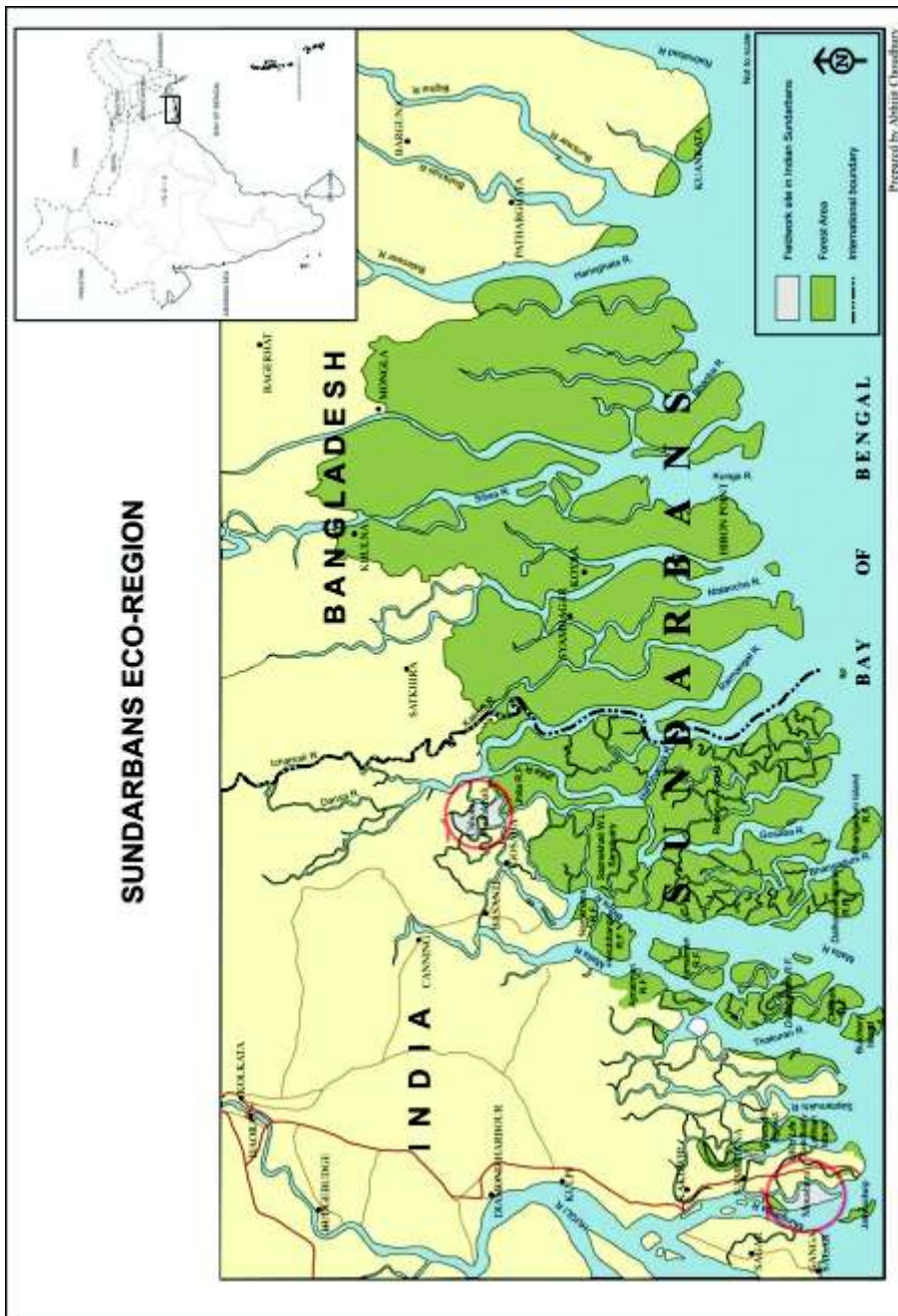


Figure 3.1: Sundarbans eco-region with field study sites marked by circles

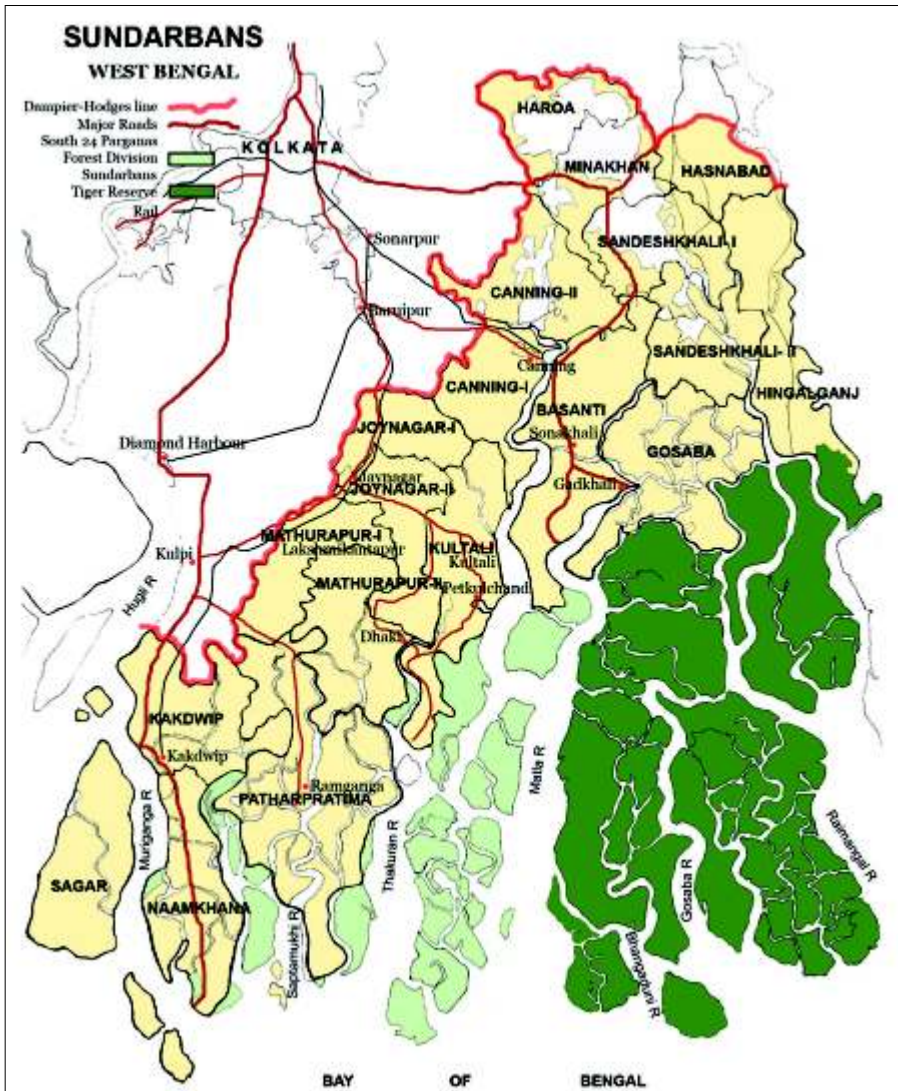


Figure 3.2: The Dampier-Hodges line now demarcates the boundary of Sundarbans eco-region



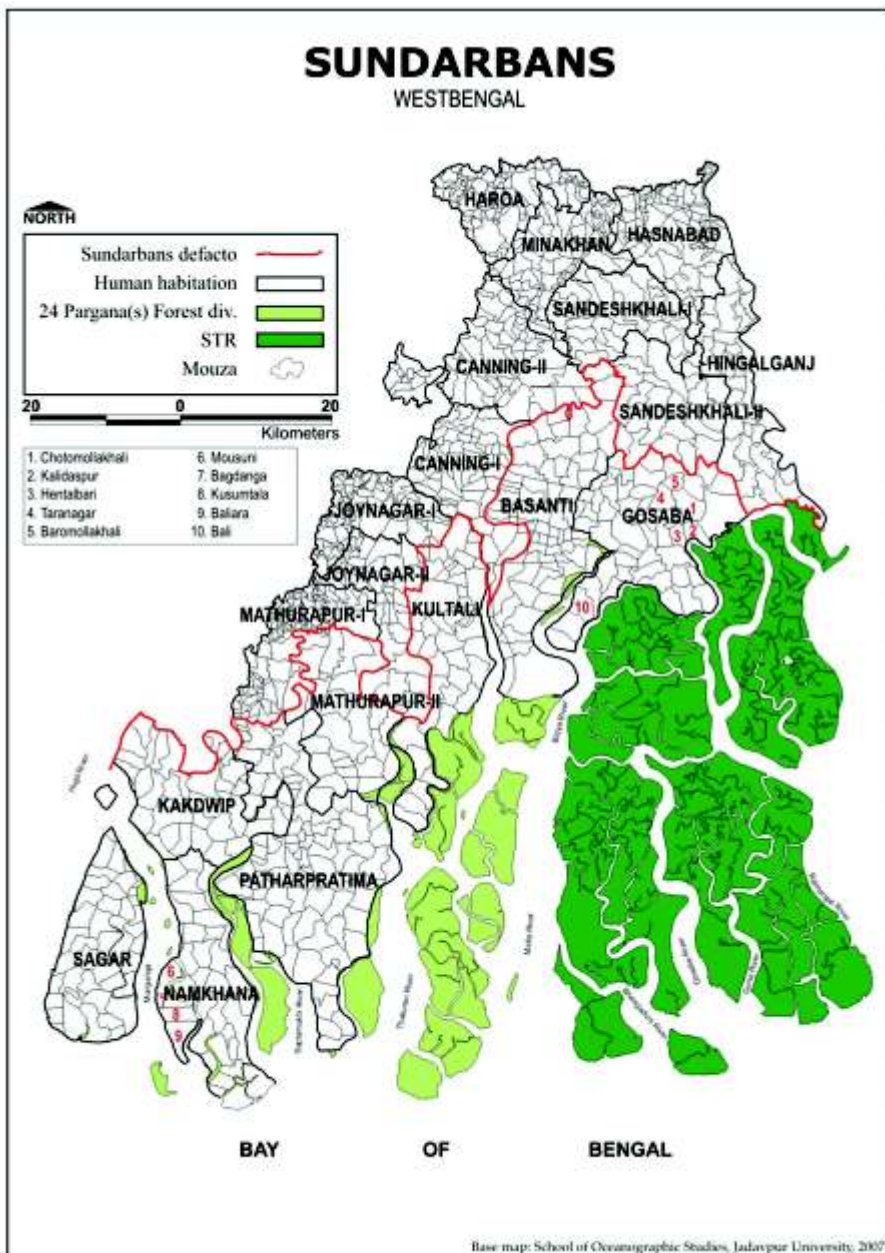


Figure 3.3: Sundarbans *de facto* and other reference points

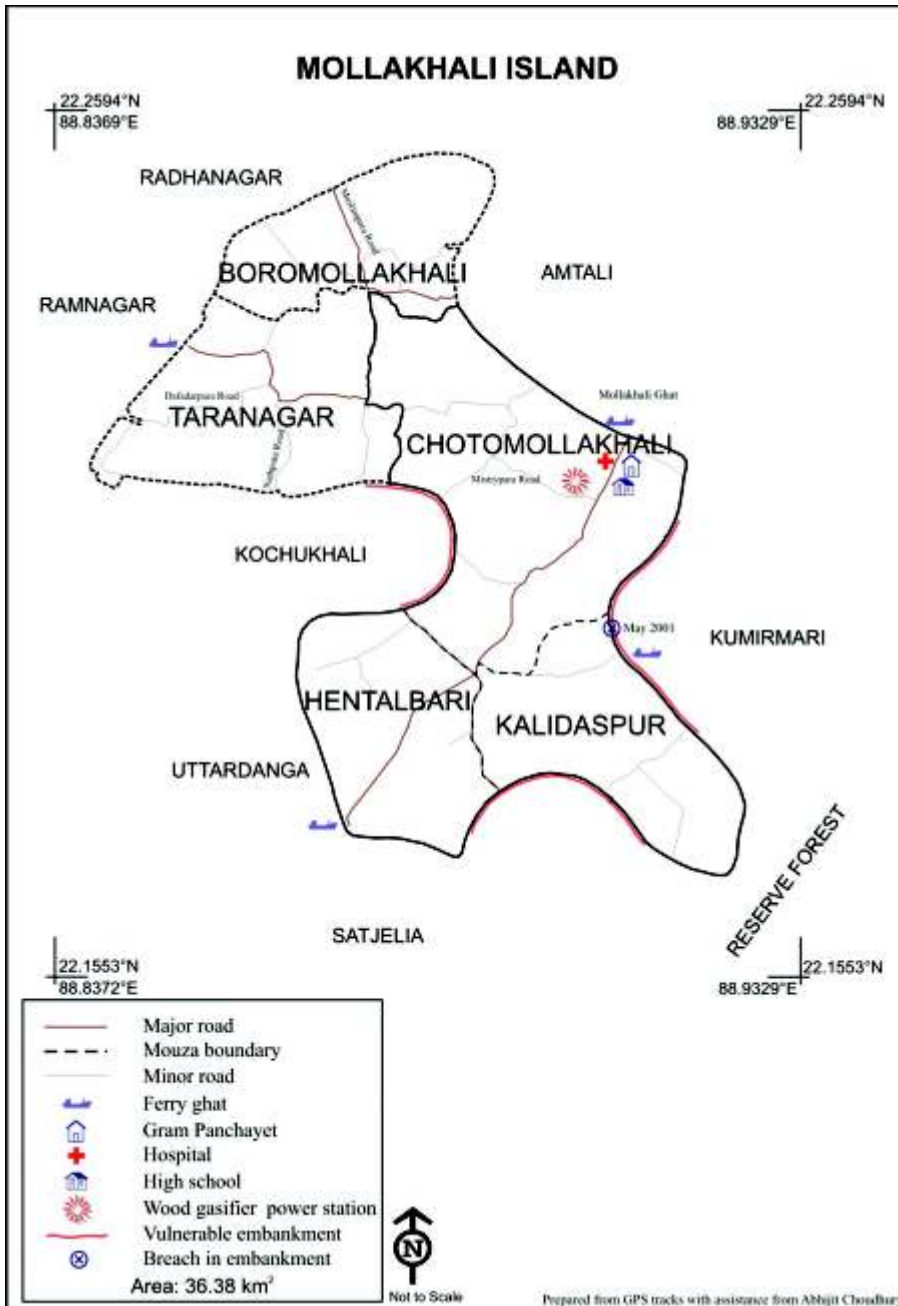


Figure 3.4: Mollakhali Island

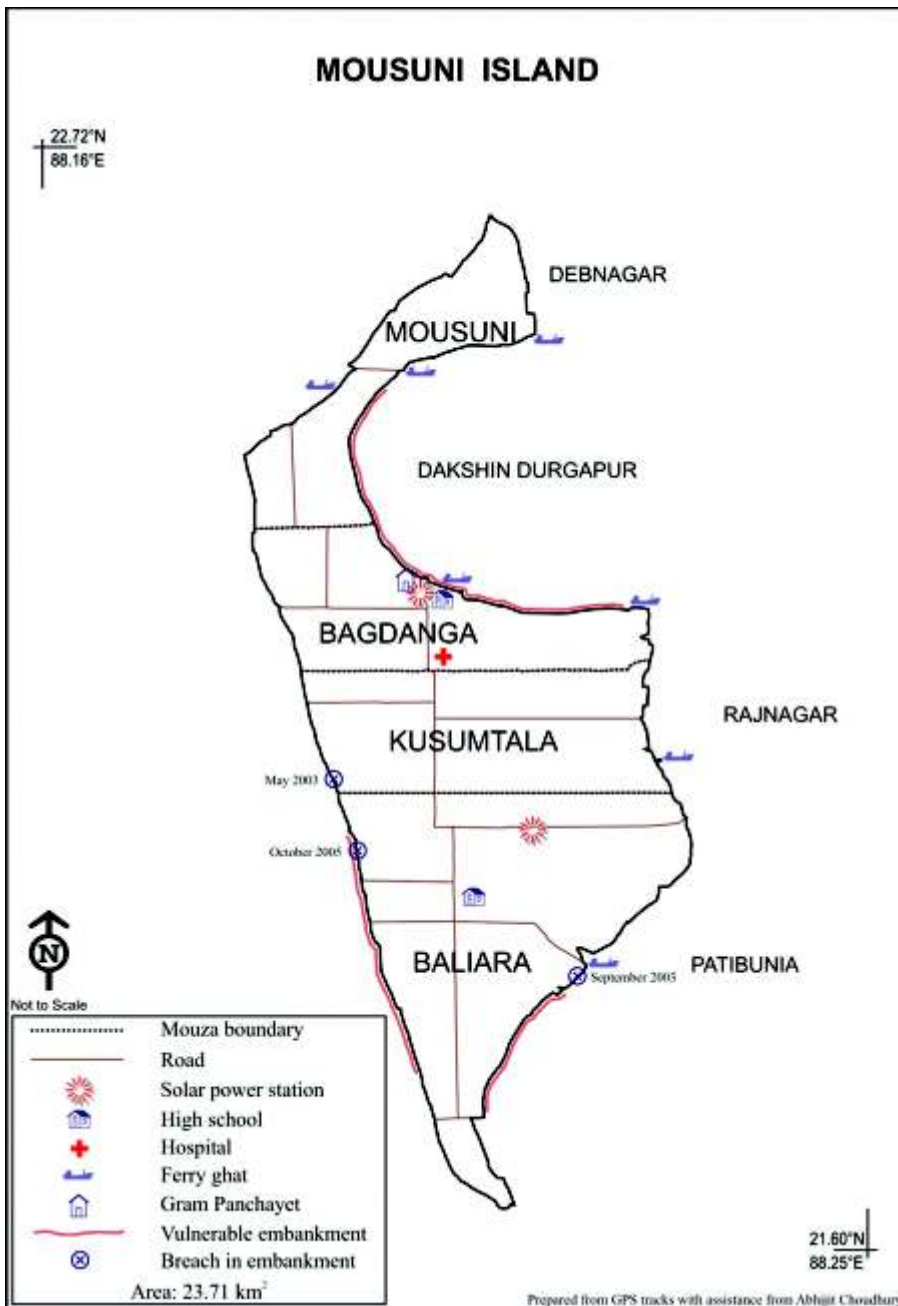


Figure 3.5: Mousuni Island