SUBSISTENCE AND BIODIVERSITY CONSERVATION IN THE SUNDARBAN BIOSPHERE RESERVE, WEST BENGAL, INDIA

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SUBSISTENCE AND BIODIVERSITY CONSERVATION IN THE SUNDARBAN BIOSPHERE RESERVE, WEST BENGAL, INDIA

DISSERTATION

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the College of Arts and Sciences at the University of Kentucky

By
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Lexington, Kentucky

2014

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ABSTRACT OF DISSERTATION

SUBSISTENCE AND BIODIVERSITY CONSERVATION IN THE SUNDARBAN BIOSPHERE RESERVE, WEST BENGAL, INDIA

My dissertation research investigates the impacts of biodiversity conservation on the local population living in the Sundarban Biosphere Reserve (SBR). More specifically, the research examines the impacts of conservation on local fishing communities living on the edge of the Sundarban Reserve Forest. In addition, it examines the causes and characteristics of conflicts between the biosphere reserve managers and the local fishing communities over the resource use of the biosphere reserve. The research project also explores the impacts of ecotourism on the local population that lives on the edge of the Sundarban Tiger Reserve (STR). STR is one of the important components of the larger biosphere reserve and the core area of the STR overlaps with the core area of the SBR.

Findings from research indicate that the current management of the SBR in many ways replicates a fortress conservation model in which local fishermen are denied access to the fishing grounds in the core and sanctuary areas of the STR. Furthermore, the regulation of number of boats through the Boat Licensing Certificate (BLC) creates an avenue for illegal fishing in the STR. Illegal fishing makes fishermen more vulnerable to tiger attacks as the fishermen try to avoid the patrolling forest guards and hide themselves deep in the forest. Fishermen also pay frequent fine for illegal fishing and face harassments from the biosphere resource managers. The confiscation of BLCs and fishing implements also leads to significant loss of fishing time. Additionally, the research shows how the characteristics of a fortress conservation model continue to live on despite there was no instances of eviction during the formation of the Sundarban Tiger Reserve in 1973. In sum, this dissertation transforms our overall understanding of a fortress conservation model and suggests that we need to consider broader environmental and political history of a region to understand conservation in a given territory.

KEYWORDS: India, Sundarban, biodiversity conservation, political ecology, resource-access struggles, fishers, rural livelihood
Priyanka Ghosh
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July 19, 2014
Date
SUBSISTENCE AND BIODIVERSITY CONSERVATION IN THE SUNDARBAN BIOSPHERE RESERVE, WEST BENGAL, INDIA

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To Ma, Baba and Didi
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CHAPTER I

Introduction

The Sundarban mangrove ecosystem is the largest mangrove ecosystem in the world, and is shared between India and Bangladesh at the mouth of the Ganges-Brahmaputra delta. The Indian part of the Sundarban is known as the Sundarban Biosphere Reserve (SBR). In the face of global climate change and human pressure on this coastal mangrove forest resource of the SBR (Figure 1.1), biodiversity conservation and social justice must be balanced to reduce the conflicts between state resource managers and the local populace. This research project addresses the problem of mitigating conflict between protected area managers and local users of forest resources. The conflict between biodiversity conservation and social justice is a common theme among geographers working at the intersection of environmental conservation and development (Peluso 1992; Moore 1993, 1996; Neumann 1998; Brown 1998; Nygren 2004). The West Bengal state government and educated urban elites of Kolkata encourage eco-tourism as the primary strategy for integrating environmental conservation and economic development, and reducing conflict over access to the resources, in the Sundarban region. This has often proven to be a strategy fraught with difficulty (Bookbinder et. al. 1998; Stem et. al. 2003; Bruyere, Beh, and Lelengula 2009). It remains unclear, in the SBR, how to achieve both biodiversity conservation and social justice for those living on the edges of a protected area.

The conflict is not simple. Since 1980s the implementation of strict biodiversity conservation measures by the state Forest Department to protect the SBR have prohibited any kind of extractive activities (e.g., the collection of fuelwood or honey) in the core region of the Biosphere Reserve, have regulated the number of fishing boats in the core and buffer regions through the Boat Licensing Certificates (BLCs), and have banned motorized fishing in the core and buffer regions. All of these forest conservation and wildlife protection measures threaten the subsistence of rural inhabitants of the SBR (Patel and Rajagopalan 2009). The local fishers are now having trouble earning their livelihood in traditional ways, and there are few alternative
livelihood options. Their responses often take the form of illegal spatial transgressions, as when the local fishers illegally fish in the prohibited fishing zones of the SBR for which they did not obtain various kinds of fishing permits (BLCs, seasonal permits for fishing, and dry fuel cost) from the Forest Department. Illegal fishing in the SBR creates tensions between the local biosphere resource managers and the local fishers. These tensions heighten when the local fishers are caught by the patrolling forest guards, are charged with violation of the fishing regulations in the SBR, and experience coercive conservation policies such as the seizing of BLCs until fines are paid. Illegal collection of honey, bee wax, and timber from the forest also constitute offences (Basu 2007).

The landscape of resource protection and conflict over livelihoods is frequently seen around the world where impoverished rural populations abut protected areas. This research examines the impact of the biodiversity conservation on the local people living in the Sundarban Biosphere Reserve. The research also examines the causes and characteristics of the conflicts specifically between state resource managers and the local fishing population. Moreover, as ecotourism development is encouraged by the state government as a path to local prosperity, this research assesses the role of eco-tourism as a viable alternative source of income for the local people, including the local fishing communities, and a way of reducing the anthropogenic pressures on the Sundarban forest and forest-based fishing. In light of the colonial and post-independence conservation related conflicts this research work attempts to answer the following questions.

**Overarching Research Question:** How does biodiversity conservation in the Sundarban Biosphere Reserve impact the livelihoods of local rural populace?

**Question 1 (Q1):** How do control and conflicts over access to the forest-based fishing by the state Forest Department affect local fishing communities of the Sundarban Biosphere Reserve?

**Question 2 (Q2):** What are the impacts of ecotourism on the livelihoods of the local communities?
Sub-question 2.1 (SQ 2.1): Does ecotourism generate any income (direct and indirect) for the local fishermen and reduce the chances of conflicts with the biosphere resource managers?

Significance of the Research

The significance of the research lies in its relevance to rural development and biodiversity conservation. It both broadens and deepens the literature of resource struggles on forest land and international conservation politics in protected areas as it addresses the question of how both bio-diversity conservation and social justice can be achieved through the positive involvement of those living on the boundaries of protected areas. The broader goals of this research lie in its connection to ongoing debates in social science and policy on conservation strategy. The research addresses the colonial legacy of resource management in modern-day Bengal, and also examines the role of ecotourism in integrating conservation and development in India. By analyzing the impact of strict conservation measures on the impoverished rural population of Sundarban, this study provides the detailed analysis of the socio-economic, political, and environmental factors shaping the SBR as a contested space among multiple actors such as government officials, local people, and the stakeholders involved in ecotourism.

The research is timely and appropriate as it focuses on the livelihood issues in a coastal area when rising sea levels and global climate change are threatening the existence of this mangrove ecosystem—the largest in the world—and the countless endangered species that rely on it. This research will be significant as it will encompass the issues of social justice and bio-diversity conservation together in a coastal protected area like the Sundarban, and thereby will contribute in the field of political ecology of the developing world.

Relevant Literatures

This research is inspired by studies of struggles over access to natural resources in other parts of Asia, Africa, and Latin America, studies which emphasize the unity of economic, ecological, and cultural issues (Escobar 2006). For this research project, I rely on four different
literatures: political ecology, the history of colonialism and conflict in India (including the Sundarban), work on protected area management including eco-tourism, and lastly literature on mangrove ecology and global climate change.

**Political Ecology**

The theoretical background of this research is based on the political ecology literature focusing on the intersection of environmental conservation and struggles over access to the protected environment. The term political ecology was coined by Wolf in 1972 (Robbins 2004) and it was most famously defined by Blaikie and Brookfield (1987, 17) as combining “the concerns of ecology and a broadly defined political economy.” As a branch of Human Geography, political ecology lacks a coherent theoretical framework; rather, it is a loosely knit body of interdisciplinary research drawing on works from political economy, cultural ecology, ecosystem science, social movement theory, cultural anthropology, ecological anthropology, environmental history, and feminist theory (Walker 1998).

Political ecologists of the 1980s, such as Blaikie (1985) and Bunker (1985), turned to neo-Marxism to overcome the limitation of apolitical nature of ethnographic research conducted by many cultural ecologists earlier. It is notable that the emergence of political ecology was rooted in third world environmental problems. In this early phase scholars such as Watts (1983), Blaikie and Brookfield (1987), and Bunker (1985), focused on how global capitalism influences natural resource use and the decision-making processes of grassroots actors, such as rural land manager in the third world who in turn aggravate problems like soil erosion.
In the 1990s, the field branched out in new directions, embracing poststructuralism; work related to biophysical ecology received less scholarly attention. Instead, it drew attention to the

Figure 1.1. The Sundarban Biosphere Reserve (SBR) is divided into core, buffer and transition areas. The Sundarban Tiger Reserve (STR) is a part of the larger SBR. The core of the STR overlaps with the core of the SBR. The transition area is the densely settled area located outside the buffer region. Gosaba and Namkhana blocks, located within the transition area, are the primary and secondary research sites selected for the project.

(Cartography by Kar and Ghosh)

In the 1990s, the field branched out in new directions, embracing poststructuralism; work related to biophysical ecology received less scholarly attention. Instead, it drew attention to the
micro-politics and day-to-day struggle of humans while interacting with the physical environment (Walker 2005). It also explored how the close nexus between power and knowledge controls access to the land and natural resources (Peluso 1991 and 1992; Neumann 1998). This post-structural turn in Political Ecology gave birth to a persistent and unresolved debate centered on the question: “Where is the ecology in political ecology?” (Walker 2005, 73). Walker (2005) argues that scholars like Zimmerer and Bassett are critical of the notion that political ecology has become merely a field of politics, and a great amount of research in political ecology is still centered on biophysical nature. In the 1990s political ecology began to be applied not only in the case of third world environmental problems but also in first world urban-industrial settings.

Political ecologists of the 21st century (Robbins 2003a; McCusker and Weiner 2003) are also more interested in using geospatial techniques or tools such as satellite imageries, aerial photography, GIS mapping and data analysis software to show regional land use/land cover changes, and to link them with global environmental change (Zimmerer and Bassett 2003). In other words, the use of geospatial technologies provides a scope to link the detailed local scale ethnographic research with the broader scale, though it often faces certain methodological and epistemological challenges (ibid. 2003). More specifically, political ecologists are working at the intersection of “geospatial technology, knowledge, and representations of landscapes” (ibid., 12) and, while studying the land use/land cover change, they are exploring how certain types of knowledge are produced by using these geospatial techniques.

Political ecology is the primary research framework defining this project. It has been widely used in understanding struggles over access and control of resources in “spatially defined conservation units” (Zimmerer and Bassett 2003, 5), such as the SBR, and in exploring the socio-political-economic causes, characteristics, and consequences of resource-access struggles among different social groups (Peluso 1992; Neumann 1998). Political ecology demonstrates that analysis of past and present institutional, political, and economic structure is necessary to understand the political dynamics of material and discursive struggles over the environment all
around the world (Moore 1996; Peluso 1992; Peet and Watts 1996; Peluso and Watts 2001; Robbins 2004; Bryant 1998; Rocheleau and Ross 1995; Nygren 2004). Drawing theoretical and methodological inspiration from the detailed studies of the political struggles over natural resources in the colonial period (Neumann 1995, 1998, and 2004; Peluso 1992), this investigation is theoretically informed by two major themes of political ecology literature, themes which are shared with the literatures of ecological anthropology, development studies and environmental history: struggles over meaning, and struggles over access. These two forms of struggles are not separate from each other; rather understanding of one form of struggles requires an equal understanding of other. Often these struggles take a form of everyday resistance for the disadvantaged and impoverished people, who do not revolt overtly against the existing socio-political system, rather adopt a covert way of constant struggle between economically divergent social groups. Scott’s (1985) ethnographic work in the small village of Sedaka, located in Kedah state of Malaysia, examines this everyday form of struggle, which is not “merely a struggle over work, property rights, grain, and cash… also a struggle over the appropriation of symbols” (XVii). Political ecologists have also examined the link between environment and violence to understand why conflicts and violence occur in some places and not in others, and why people adopt either an open, well organized form of resistance or more fugitive ‘local discursive struggles’ (Peluso and Watts 2001). Through numerous empirical case studies Peluso and Watts (2001) show that violence is site-specific, and conflicts are deeply rooted in the ecology, history and social relations of that specific site. Struggles and conflicts over the environment – often treated separately – are both embodied simultaneously in any real-world struggle over resources (Moore 1996). These two fundamental and overlapping themes of political ecology help me to address the influence of past material and discursive resource-access struggles – for example, especially in India, around the ideology of “scientific forestry” (Bryant 1998) – on the present resource-access-struggles of the SBR.
Political ecology is also immensely useful to understand the gender based resource-access struggles in the world. Carney (1996) and Schroder’s (1997; 1999) work in Gambia explore the similarities and differences of gender based resource-access struggles of men and women. Carney (1996) shows how disruptions in the gender division of labor in a foreign-aid development project in Gambia, for example, led to gender conflicts within individual households and eroded Mandinka women’s existing rights on lowland rice growing areas. The incident also shows that development planners often do not consider gender as an important criterion in the development strategies, which leads to heightened struggles over women’s access to land and agricultural resources. In many cases like Gambia, women’s struggles over access to the biophysical resources may be related even to linguistic features, such as the usage of certain terms (e.g. maruo and kamanyango) related to resource or land tenure which define female’s land rights and curtail women’s economic independence and decision making power within the households (Ibid.).

Feminist political ecologists are successful in providing an understanding of gendered spaces and landscapes in the rural areas where women have relatively greater control over resource management than men (Rochleau and Edmunds 1997; Leach 1992). They have also recognized “in-between” spaces in rural landscape which are not important to men, but significant to women in terms of resource use (Fortmann and Bruce 1988; Leach 1992; Rochleau and Edmunds 1997). These “in-between” spaces include road-side bushes, small gardens near the house, the small space between men’s trees; or the degraded land on the hill slopes. Women collect fodder, firewood, medicinal plants, and grasses from such “in-between” spaces which help them to meet their personal and household needs (Rocheleau 1991; Rochleau and Edmunds 1997). In short, research on gendered space in political ecology has helped to understand the politics of gendered resources at different scales such as household, community and beyond (Rochleau and Edmunds 1997).
Political ecology scholarship suggests that the idea of a pristine, empty, wild, and mythical nature (Neumann 1995) serves as a useful discursive element of resource management in the SBR. This rhetorical frame of pristine nature or “first nature” (Walker 1998) informs both the wildlife conservation in the SBR’s core, and the development of eco-tourism industry in the SBR’s buffer region, attracting thousands of tourists interested in the wildlife and ecology of the area. The notion of preserving nature without human agency (Neumann 1998) in the highly protected core area of the SBR, where any kind of human intervention is prohibited, casts the SBR as a place where nature and wildlife can be “consumed” by affluent outsiders through eco-tourism (Neumann 2003). This stands in distinct contrast with the “landscape of production” created by British colonialism, and the landscape of subsistence utilized by the current residents of South 24-Parganas. Only limited human access is permitted to the fishermen in certain parts of the buffer and core regions of the Biosphere Reserve by the West Bengal Forest Department. I aim to discover whether the transformations in the social meaning of nature in the SBR have created (and can create) significantly different social relations, and whether the struggles over access have been truly transformed by the struggles over meaning.

Social History of India and the Sundarban

The general historical background of forest-based conflicts in colonial India provides enormous scholarly resources to aid in assessing the current pattern of natural-resource utilization and resource-access struggles of rural people in the Sundarban. After the 1857 Sepoy Mutiny (the first revolt of Indians against the British rule\(^1\)), the British colonial government invested in railway development as a part of the military policy. Sal, teak, and deodar trees were used to make railway sleepers and royal navy, and rampant deforestation occurred after 1857 (Guha and Gadgil 1989; Flint 1998). During the early decades of colonial rule, the British were indifferent

\(^1\) Sepoy Mutiny is the first large scale uprising of the Indians against the British rule in 1857. It is also known as the India’s First War of Independence, which was initiated by the Indian soldiers first, but later native rulers and common people joined. This large scale revolt was spatially concentrated in Northern and Central parts of India. The British government brutally suppressed the rebellion by using military force.
to forest conservation and forests were considered as obstacles to agricultural expansion. The forests were quickly consumed as the Indian railway expanded from 7678 km of line to 51,658 km in between 1870-1910 (Guha and Gadgil 1989, 145). The rapid expansion of the railway shed light on the fact that “India’s forests were not inexhaustible” (Guha and Gadgil 1989, 145). The demand for timber provided the initial thrust to conserve the forest land of India for commercial purposes, and the Forest Department was established with the help of German foresters in 1864 (Ibid.). The first Indian Forest Act of 1865 did not institute true state resource planning in that it did not establish absolute state control over forest estates (Gadgil and Guha 2000). The inadequacy of the first act led to the more stringent Act of 1878, which divided Indian forests into three categories: reserved, protected, and village or communal (Guha 1990; Rajan 1998).

Gadgil and Guha (2000), and Guha (2005) outline the genesis, geographical spread, and different forms of community resistance to the centralized state control over forest while discussing the conflicts over the forest and pasture land in colonial India. Guha and Gadgil (1989) discuss the impacts of colonial forest management policies on cultivating classes and artisans irrespective of their castes. Both authors present a vivid description of forest-based conflicts in British India between the peasants and the colonial forest department, and show how the commercial exploitation of forest was contrary to the “subsistence ethic of the peasants” (Ibid., 123). The grievances against the restrictions of forest use frequently generated rebellions among native people in colonial India, such as Rampa rebellion in 1879-1880. (Guha and Gadgil 1989). Examples of collective resistances towards colonial forest policy were found from Thana district of in Bombay Presidency (present-day Maharashtra) (Saldanha 1998). Saldanha (1998) presents a detailed case study of the Thana district which analyzes the impact of 1878 Forest Act on tribal and non-tribal (small cultivators) people living in the district. According to this case study, cultivators had to obtain a pass from the forest department if they wanted to collect forest products. In the colonial period, the tribal people of Thana and Kolaba districts of current Maharashtra were prevented from picking certain forest products such as “apta and tembhurni
leaves, dead wood, and grass” (Saldanha 1998, 713) from which they used to earn their livelihood. The major reasons for local people’s grievances against the 1878 Forest Act were that it changed the existing grazing pattern practiced by the local people and reduced the land available for free animal grazing (Ibid.). The law also brought a ban on shifting cultivation as the British considered shifting or *jhum* cultivation as a non-lucrative and primitive method of cultivation in comparison to sedentary agriculture (Guha and Gadgil 1989).

The marginalized rural people of colonial India (including several tribes) opposed large scale commercial forest operations by performing illegal hunting, grazing, and shifting cultivation. Unauthorized appropriation of lands, thefts, bribing the forest officials and firing the forests were adopted by the local people to challenge the colonial forest management policy (Saldanha 1998). In some instances tribes like the Chenchus of Andhra Pradesh desperately became bandits to earn their regular livelihoods (Guha and Gadgil 1989). Guha and Gadgil (1989) show that the resistances to the state forest management in the colonial period did not always take open and militant form. The example of Jaunsar Bawar, the hilly region of Dehra Dun district (located in current state of Uttarakhand, India) provides several everyday forms of resistance practiced by the villagers of the Jaunsar Bawar. In this account, the most common among forest crimes was the pilfering of government timber by the villagers, when timber was transported downstream along the river Yamuna and its major tributary, the Tons. Other forms of everyday resistance were infringement of forest laws and defacement of government marks (Ibid.).

These overt as well as covert struggles over forest resources must be understood as simultaneously struggles over physical access and over the meaning of scientific forestry. The literature from the Indian subcontinent points out how the ideology of scientific forestry was introduced in colonial India for the purpose of earning revenue through commercial timber production (Guha 1990, 2005; Grove 1995). This ideology was based on the concept of sustained-yield, which estimates the wood mass of individual trees and the entire homogeneous
stands. This idea of sustained-yield led to the transformation of mixed forests into homogeneous forests containing commercially valuable species through plantations, which triggered the conservation of valuable trees through formation of protected and reserve forests areas. The state seized acres and acres of woodlands in India adopting a custodial approach, which strengthened the state’s control over the territory of pristine forests. The ideology of scientific forestry served as a useful tool to restrict local people’s access to the forest resources, which resulted in inevitable conflicts between the local communities and the state forest officials (Guha 2005). Shiva (1991), Sivaramakrishnan (1995, 1999), Gadgil (1992), Guha (1990; 2005), and Rangarajan and Shahabuddin (2006) all consider scientific forestry to have been essentially a project of revenue generation for the colonial state through the creation of protected and reserved forests in colonial India. Although no scholar has worked on the formation of forest conservation and protected areas in the Sundarban during the colonial period, the scholarly works on the state’s monopoly over forests, forest conservation, and social conflict are important in helping the researcher to understand the meaning of past and present conflicts and struggles over the resources in the Sundarban.

The literature specifically on the Sundarban suggests that the current human-tiger relationship in the region is complex: the tigers of the Sundarban are not only perceived as ferocious animals and man-eaters by the local people, but also as supernatural entities (Mishra 2007). The present complex human-animal relationship was influenced by the British in colonial India. Bengal tigers were represented by the colonial government as threats to rural population and state revenue (Pandian 2001; Rangarajan 2001; Jalais 2008). Today, the physical hazards of the native tigers in the Sundarban are combined with the hazard of political conflict that is emerging with the growing conservation interest in a “glamorous national animal” as the focus of national and international wildlife conservation measures (Jalais 2008, 33). The state government’s emphasis on the conservation of tigers in the Sundarban has increasingly led to their representation as “tourists tigers” or “cosmopolitan tigers,” the image of which crosses
national boundaries, attracting thousands of tourists in the Sundarban region (Jalais 2007 and 2008). Although tigers are accepted as an inevitable part of the lives of the Sundarban people (Mandal 2007), local inhabitants often express grievances that the state’s investments in tourism and wildlife protection intensify the problematic human-animal relationship through an unequal distribution of resources between human beings and wild animals (Jalais 2008). The loss of lives in the prohibited parts of the SBR is considered to be due to illegal activity, and therefore is not compensated by the Forest Department, which affects the local people’s forest-based livelihood (Patel and Rajagopalan 2009). Therefore, the physical presence of tigers in the forests as well as the image of a “cosmopolitan tiger” as an endangered species, both intensifies local people’s resource-access struggles in the region.

Protected area management

Protected areas (such as biosphere reserves, national parks, sanctuaries, and nature reserves) play an important role in the conservation of the world’s biodiversity. The early parks and protected area managers (especially North American park managers) adopted a romanticized vision of primitive areas where preservation of scenic beauty and conservation of biodiversity was considered to be the first and foremost priority (Nepal and Weber 1995). The history of protected area management indicates that policies concerning management of protected areas have changed from a traditional exclusionary approach to a more participatory approach including local communities in the management policies living outside the protected areas (Brandon and Wells 1992; Berkes 2004; Mannigel 2008; Misra et. al. 2009). The vast literature in the field of protected area management has characterized the negative impacts of the classic exclusionary approach as leading to resource-access conflicts between resource managers and local communities around the protected areas (Maikhuri et. al. 2001; Negi and Nautiyal 2003). These conflicts occur around the violation of customary rights on forest use, grazing land, hunting wild animals, loss of access to non-timber forest products, and loss of livestock (Ibid.). Other important negative effects of the exclusionary approach include: social and cultural
disintegrations, displacement and relocation of local people, and loss of culture (Nepal and Weber 1995). Scholarly work on protected area management suggests that the restrictions on traditional resource use are often followed by illegal logging, hunting, poaching, and grazing, which lead to degradation of the parks (Brandon and Wells 1992). Since the organization of the Third World Congress on National Parks in 1982 and with the launching of Biosphere Reserves Action Plan in 1984 by the Man and Biosphere Program (MAB) of the UNESCO, the orientation of nature conservation changed towards more pragmatic and human-centric approaches, keeping their focus on the solutions of resource conflicts, which address local communities’ development issues (Nepal and Weber 1995). Currently conservationists recognize that attention must be paid to the subsistence needs of the local people living outside the protected areas as a way of protecting the parks from degradation, with the overall goal of reducing local hostility toward biodiversity conservation (Western and Wright 1994; Stem et al. 2003). This has been implemented by linking biodiversity conservation with local socio-economic development through a broad range of initiatives, including Integrated Conservation-Development Projects (ICDPs) (Stem et al. 2003). Eco-tourism serves as one of the tools of ICDPs to achieve conservation and development “hand-in-hand” (Ibid.).

It is believed that eco-tourism is the fastest-growing sector among the different forms of tourism (Campbell 1999). Developing Countries like China (Yuan, Dai, and Wang 2008) and India (Misra et al. 2009) are increasingly interested in adopting eco-tourism as a support and development strategy for protected areas. Although in theory eco-tourism should provide some benefits to the local residents and should maintain ecological integrity through allowing only minimal impact to the protected environment, there is considerable debate over the meaning and real effects of eco-tourism (Wall 1997; Campbell 1999). This debate will shed light on my assessment of the eco-tourism activities in the Sundarban region and its role as an alternative strategy of rural development and bio-diversity conservation.
Contemporary protected-area managers also face new challenges in global climate change and sea level rise: coastal and marine protected areas such as the SBR are vulnerable to submergence, species and genetic diversity loss, and destruction of the marine food chain (Halpin 1997; Soto 2002; Hannah 2010). No research-led prescriptions for management changes in the SBR will be effective without awareness of these hazards and their importance to state and global biodiversity stakeholders.

The extensive literature on protected area management has also addressed the need for assessment of local people’s attitudes towards parks and protected areas in order to reduce the conflicts between the local people and the management authority (Rao et al. 2003; Silori 2007). Some of the conflicts mitigating mechanisms involve “interactive planning, holistic social impact assessment, synergistic multicultural interaction and mediation, and negotiation and joint problem solving” (Bidol and Crowfoot 1991; Nepal and Weber 1995, 15). Researchers (Hough 1991; Nepal and Weber 1995) have emphasized a bottom-up approach for effective management of the protected areas, which requires local people’s participation and which build village level institutions to foster conservation efforts. Among other conflict-resolution strategies, sharing economic benefits of the protected areas among local people, understanding indigenous methods of conservation, establishing buffer zones, and spreading environmental education among community members to widen and deepen their attitudes towards conservation are all relevant conflict mitigation mechanisms (Hough 1991; Nepal and Weber 1995). The outlook for protected area management is not bleak, and there are successful examples of joint management of natural resources of the protected areas where local people are involved in the decision-making processes. One such example is Wood Buffalo National Park in Canada (Nepal and Weber 1995). There, sharing economic benefits of the parks and protected areas with the local people, and allowing local people to continue their subsistence activities, such as animal grazing, worked to change local people’s hostile attitudes towards the protected areas (Sharma 1990). In the Sundarban, in the 1990s, the state Forest Department has adopted similar initiatives by forming
Eco-Development Committees (EDCs) in 25 fringe villages around the STR. The objective of forming EDC was to reduce rural people’s dependence on the forest resources (Dhar 2007). In exchange of preventing timber theft and poaching, the EDC members receive various benefits from the forest department including construction of roads, wells, brick jetty, and canals (Ghosh 2008). Here in the Sundarban, people are strictly not allowed within the protected areas to collect honey, or to catch fish, unless local people obtain a permit from the forest department during the fishing and honey collection season. The broader objective of the EDCs is to protect the biodiversity of the protected areas and to provide alternative income opportunities for local people so that local people are no more rely on the forest resources (Dhar 2007). This research also aims to understand the role of EDCs on the local people in the fringe villages of the STR.

**Mangrove Ecology and Global Climate Change**

The term ‘mangroves’ is a combination of Portuguese and English words ‘Mangue’ and ‘grove’ respectively (Naskar and Guha Bakshi 1987). In Portuguese, ‘Mangue’ refers to a mangrove tree or bush (Ibid.). In general mangroves are an ecological group of halophytic plant species in two different families that are found in tropical and sub-tropical coastal areas in the world (Upadhyay, Ranjan, and Singh 2002).

The spatial distribution of global mangroves is between latitudes 25°N and 30°S (Valiela, Bowen, and York 2001). More specifically, all mangroves are spatially limited to tropical climates where the average monthly minimum air temperature is greater than or equal to 20°C (Chapman 1976; Ellison, Farnsworth, and Merkt 1999). New World mangroves are found in the Americas and West Africa, while the Old World mangroves are found in Madagascar, Persian Gulf, and in the Indo-Malaya and Australian regions (Upadhyay, Ranjan, and Singh 2002). The global mangrove population is generally divided into 70 tree, and shrub species which form 27 genera, 20 families and 9 orders (Tomlinson 1986; Stewart and Popp 1987; Ball 1988; Duke et al. 1998; Ellison, Farnsworth, and Merkt 1999). These 70 diverse species share morphological adaptations to saline environment such as pneumatophores, sclerophyllous leaves, tidal dispersal...
of propagules, and vivipary. The total area occupied by the mangroves in the globe is 181000 sq. km. (Spalding et al. 1997; Alongi 2002). The world mangrove species diversity drastically declines from the Indo-West Pacific (IWP) region to Caribbean and Western Atlantic (Ellison, Farnsworth, and Merkt 1999). Scholars (Tomlinson 1986; Ricklefs and Lantham 1993; McCoy and Heck 1976) have provided two hypotheses to explain this mangrove biodiversity anomaly: one is the ‘center-of-origin hypothesis’ and other is ‘vicariance hypothesis’ (Ibid.). The first hypothesis states that all mangroves in the world originated in the Indo-West Pacific (IWP) region in the late Cretaceous to early Tertiary period and later dispersed to the Atlantic, Caribbean, and Eastern Pacific (ACEP) region (Ibid.). McCoy and Heck (1976) put forwarded the ‘vicariance hypothesis’ and they argued that most modern mangroves originated on the shores of the Tethys Sea in the late Cretaceous period and subsequent continental drift resulted in their current distribution pattern. Later in situ diversification generated regional species diversity (Ibid.).

Since the early 80s, destruction of mangrove forests by anthropogenic activities and assessment of present and future status of world mangroves have attracted scholarly attention worldwide. Valiela, Bowen and York (2001) have assessed the status of world mangroves, the present magnitude of mangrove areas and the loss of mangrove habitats due to human use of mangrove areas. They found that mariculture practices are responsible for more than half of the global mangrove loss (Ibid.). The rate of mangrove loss varies one continent to other and percentage loss of mangrove forest areas is the highest in Asia (36%), comparative to other continents, whereas the world has lost 35% of its total mangrove covers (Ibid.).² Elsewhere in a similar endeavor, Alongi (2002) critically examined the present and future status (up to year 2025) of mangroves. Eong-Jin (1995) and Alongi (2002) discuss major threats to mangrove resources, which include population pressure, commercial exploitation of mangrove forests for

² The estimates has been done on the basis of available data on mangrove cover in between late 970s and early 1980s (Valiela, Bowen, and York 2001).
timber and wood-chips, pond aquaculture, global warming and sea level rise. Thomason (2006) has examined the effects of shrimp aquaculture development on the mangrove ecosystem and on local communities living in the Esmeraldas Province of Ecuador. The research focuses on how mangrove forests and its products like cockles become the fundamental basis of people’s livelihoods in the region and how the use and allocation of mangrove based resources are divided along the lines of gender and age (Ibid). Her research shows that only 0.6% of the local people of the Ecological Mangrove Reserve Cayapas-Mataje (REMACAM, located in the Esmeraldas Province), are employed in the shrimp industry and 85% of the Cayapas-Mataje community depend on fishing and cockle gathering from the mangrove forest. The research also revealed that the expansion of shrimp farms had led to the loss of cockle-gathering grounds in the community, which in result mostly affected women who primarily depend on this for their livelihoods. The local people had responded towards mangrove loss by organizing grass-root resistance movements and by creating the REMACAM ecological reserve, where local people devised a novel environmental stewardship practice, known as ‘custodias.’ Under this resource management practice, each local community gains access and control to the mangrove forests for their traditional resource use (Thomason 2006). In an earlier study of the impact of shrimp aquaculture on mangrove forest and people’s livelihood, Alier (2001) discusses the conflicts between mangrove conservation and commercial shrimp export concerning “environmental entitlements, the loss of access to natural resources and environmental services, the burden of pollution, and the sharing of uncertain environmental risks” (726).

Recently, scholars (Field 1995; Lovelock and Ellison 2007) have identified relative sea level rise as one of the major threats to the global mangrove community. To date most of the authors (Valiela et al. 2001; Alongi 2002; Primavera 1997; Duke et al. 2007) have considered relative sea-level change as a less significant threat than non-climatic anthropogenic factors such as the conversion of mangrove forest land for aquaculture development. However, there is no doubt among scientists that global sea-level rising is taking place and, according to the
Intergovernmental Panel on Climate Change or IPCC (2001) prediction, the sea level may rise by 3-12 cm by 2025 (Alongi 2002). Evaluation of the impacts of a 12 cm rise in sea level on mangroves is difficult to predict (Ibid.) as all sea-level changes are site-specific (Eong-Jin 1995). Gilman et al. (2008) reviewed mangrove vulnerability to sea-level rising and responses to the predicted climate change, and according to their study, the Pacific Island mangroves will have the greatest danger because of relative sea-level change. Their detailed discussion on mangrove vulnerability to relative sea-level rise links it to the rate of change in elevation of mangrove sediment surface, which is controlled by geomorphic (e.g. sediment accretion and erosion), hydro-geologic (e.g. fluctuation in ground water table), and biotic factors (Ibid.). Gilman et al. (2008) have also discussed how mangroves will response to site-specific relative sea level falling and rising by migrating seaward or landward. A recent study conducted by Loucks et al. (2010) estimates that a 28 cm sea level rise by 2070 will cause a 96% decline of Bangladesh’s tiger habitat in the Sundarban. Considering the year 2000 as baseline, their researches have shown how the total tiger habitat in the Bangladesh Sundarban will diminish with change in sea level for eight different places within the Bangladesh Sundarban (Ibid.)

One of the recent developments in conservation of mangrove forest and climate change mitigation strategy is the “Reduced Emissions from Deforestation and Degradation” (REDD+). Based on the idea of providing financial incentives to conserve biodiversity, the REDD+ is proposed by many supranational institutions such as UNEP, World Bank, and the GEF to mitigate the effects of global climate change (Beymer-Farris and Bassett 2012). Beymer-Farris and Bassett (2012) have examined the environmental narrative used by the Tanzanian Government and the WWF to protect the mangrove forest cover of Rufiji Delta for the carbon forestry projects. The environmental narrative portrays local people as “poor stewards of the mangrove forests” (Beymer-Farris and Bassett 2012, 333) and thus intends to displace people from their own land. Beymer-Farris and Bassett (2012) argue that local communities dependent on forest resources will oppose the REDD+ policies as these policies do not consider the livelihood needs
of the local people. The authors point out that rather than population displacement, a mixture of agriculture and forestry is a more viable option which would conserve the region’s biodiversity in the long run.

**Research Design**

Political ecologists employ a range of qualitative and quantitative methods to explore conflicts over access to resources and impacts of those conflicts on the local people’s livelihoods. In this research, I adopted a mixed-method approach to explore the present conflicts between the state forest department and local fishermen over the use and resource management of the SBR, and the role of ecotourism as an alternative income opportunity for people living on the edge of the buffer area of the Sundarban Biosphere Reserve.

**I. Research Sites**

In 2011-2012, I conducted my fieldwork in two community development blocks of the District of South 24 Parganas, West Bengal, India. These are Gosaba and Namkhana; both are located within the transition area of the Sundarban Biosphere Reserve. I selected Gosaba as my primary research site in order to study forest-based fishing activity in the Sundarban region. This was appropriate as the uninhabited southern part of Gosaba shares a continuous common boundary with the reserved forest of the Sundarban. A large percentage of the population of Gosaba is engaged in both inland and marine fishing (Patel and Rajagopalan 2009). Discussion with the local fishermen in Gosaba during my preliminary fieldwork in 2009 also assured me that the forest-fringe villages of Gosaba are ideal sites for this research. As Gosaba is the only large settlement (current population 246,598) close to the Sundarban Reserve Forest (SRF), it is a focus and point of departure for tourism and eco-tourism, particularly around the Bengal Tigers. The popular locations for forest based eco-tourism (Sajnekhali, Sudhanyakhali, Netidhopani, Burirdabri, and Dobanki) are all approachable from Gosaba and therefore it is an ideal place to
examine eco-tourism as an alternative source of income for the inhabitants, as well as a revenue source for the government. Within Gosaba I worked at two *mouzas*³: Sadhupur and Pakhiralaya.

Namkhana was the secondary research site, a location where people are engaged in both small-scale forest-based fishing and large-scale open-sea commercial fishing. Within Namkhana, I focused on Frasergunj, one of the important fishing and fish landing centers of the southwestern Sundarban. Near Frasergunj, I conducted my research at two *mouzas*—Lakshmipur Abad and Amrabati. Both of these *mouzas* fall under the Frasergunj Gram Panchayat. Fishers from these two *mouzas* are involved in both in fresh and dry fishing. In addition, fishers from other parts of the Sundarban, such as Kakdwip, visit these two mouzas for their yearly dry fish business. Furthermore, the island of Jambu (Jambudwip) is easily accessible from the Frasergunj Fishing Harbor, from which thousands of fishermen were evicted by the state government of West Bengal. The conflicts over access to the fish-drying activity on the island of Jambudwip occurred between the state forest department and the local fishing community of Namkhana in 2002 (Mathew 2003). Therefore, Frasergunj provided an opportunity for comparative work on resource-access conflict with the primary research site in Gosaba, where fishers’ access to the fishing ground is restricted by the state Forest Department.

II. Researcher’s Background and Entering the Field

I was born in Kolkata, which is the nearest metropolitan city of the Indian Sundarban region. Living so close to the Sundarban region, I did not have any opportunity to visit the Sundarban forest nor did I feel strongly any initiative to travel by myself, partly because I did not have any relatives or friends from the district of South 24 Parganas where the Sundarban forest is located. My only encounter with the region occurred through geography text books in which the

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³ A *mouza* is the smallest administrative unit organized by the British in colonial India. The purpose was to collect revenues. Each *mouza* has a Jurisdiction List number or J.L.No. by which it can be identified. There could be one or more than one village in a *mouza*. The Census of India provides village level data and for them a *mouza* is equivalent to a village.
region’s geomorphology was explained as an active delta region which is continuously building and destroying its land mass through numerous crisscrossed river channels. I started considering working in the Sundarban region during my coursework at the University of Kentucky. In 2009, I visited the Sundarban region (Gosaba Block) as part of my preliminary fieldwork and gained significant knowledge about its geomorphology and ecology. During this time I met Mr. Tushar Kanjilal, the secretary of the region’s largest well known NGO, the Tagore Society for Rural Development (TSRD). Mr. Tushar Kanjilal, popularly known as master-mashai⁴, initiated The Rangabelia Comprehensive Rural Development Project in 1975. Since the 1970s, Mr. Kanjilal and the TSRD have relentlessly served the region for its socio-economic development.

In 2009, Mr. Kanjilal introduced me to Sabita Mandal, a health worker of TSRD, who lived on Satjelia Island, Sundarban. I first met Sabita in Lahiripur village, at one of the health Sub-centers of Rangabelia Comprehensive Rural Development Project. I talked to her about my research project and the possibility of an accommodation for my future fieldwork. She gave me her contact number for future correspondence. Later in 2011, I visited her house at Bakultala, Sadhupur mouza, located on the Satjelia Island, Gosaba. Most of the people of Bakultala catch fish in the tidal rivers of the Sundarban, and therefore live along the Pathar River which creates a natural boundary between the Sadhupur mouza and the Sundarban Reserve Forest (SRF). Thus entering my field site in Gosaba was not challenging for me due to my prior professional networks, established during my preliminary fieldwork. Initially, I decided to study the impact of ecotourism at Dayapur, Annpur and Jamespur—the nearby villages of Sadhupur. However, lodges at these places were located relatively far from each other and it was difficult to commute from Bakultala, Sadhupur. The only way to reach these hotels was either by walking or by mechanized vans, which were very infrequent in the late evening and night. Evening and night

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⁴ In Bengali master-mashai means teacher. More specifically it refers to a male school teacher. Mr. Kanjilal first arrived in the Sundarban to teach in Rangabelia High School in 1967. Please see: http://www.tsrd.org/Rangabelia.html
were the only times when I could reach the visiting tourists at these hotels. The distance of these hotels from Bakultala, Sadhupur and the infrequent van service made it quite impossible to conduct questionnaire surveys in the evening. In addition, access to some of the lodges was restricted such as the Sundarban Tiger Camp and the Sundarban Riverside Holiday Resort. These hotels occupy large areas and have high walls around them and, therefore, local people have limited-to-no access to the premises. One of the managers of such gated hotels asked me to obtain official permission from the head office of Kolkata in order to conduct surveys with their tourists. In another incident, one of the owners was surprised that I had entered into the hotel premises as an outsider and was able to talk to the lodge manager. The same owner further asked me to submit the survey questionnaire in order to conduct the survey with the tourists of his hotel. Here, I want to make a note that this type of gated hotel catered to the needs of international tourists and up-market domestic tourists who can afford the expensive package tours in the Sundarban. Considering the unwelcoming attitude of the owners and managers of the gated hotels, I moved to Pakhiraya, one of the popular entry points of ecotourism in the eastern part of the SBR. The lodge managers at Pakhiralaya were more welcoming than the lodge managers of Dayapur, especially as compared to the lodge managers of up-scale hotels. One of the reasons for this is that the hotels and lodges of Pakhiralaya mostly cater to the needs of the middle class and upper middle class domestic tourists. However, meeting some foreign backpackers is not unusual during the peak season of tourism, which is December-January. At Pakhiralaya, I did not have any prior contacts and I initially faced some challenges in terms of conducting surveys. I would argue that my entering to the field site of Pakhiralaya was quite striking. In December 2012, being disheartened by the interaction with the hotel managers at Dayapur, Prahlad, my field assistant and I took a mechanized boat from Dayapur, popularly known as bhutbhuti, to reach Pakhiralaya. At Pakhiralay jetty I met some young college students who were visiting the Sundarban region for their fieldwork in anthropology. I approached one of these students and they introduced me to the tour operator Ramen Mandal. Ramen is a resident of Pakhiralaya and
the only local tour operator of Pakhiralaya who operates a tourism business from Kolkata. Ramen introduced me to his brother Mrigen Mandal, the lodge manager of Krishnakunja. Through Mrigen Mandal, I became familiar with other lodge managers and hotel owners of Pakhiralaya, which significantly benefitted in terms of gaining access to the tourists who stayed in those lodges and hotels.

III. Researcher’s Positionality

Qualitative research in human geography involves a significant amount of social interaction and, therefore, a researcher’s positionality is significant as it influences such social interaction. A researcher needs to be aware of his or her own identity and how that identity shapes the overall research (Valentine 2005). Dowling (2005) points out the insider/outsider debate and states that a researcher’s positionality as an insider in a community mostly facilitates the research, because people generally feel comfortable to talk to an insider in comparison to an outsider, who does not belong to the same community. The argument in favor of an insider is that the information an insider collects is more valid than information collected by an outsider as the insider shares the same world view as their informants (Ibid.). During my fieldwork in the Sundarban, I experienced the boundary between being an insider/outsider. Being a native of the region I share the same ethnicity (Bengali) with people living in the Indian Sundarban region. Knowing Bengali language was a great advantage for me at the study site. It helped me to communicate and build rapport with the fishing communities at Gosaba and Namkahna Block. In 2011, when I arrived at Bakultala, Satjelia Island, Gosaba, I was immediately welcomed by the local people as I shared their culture, customs, language, and skin color. In this sense I was seen as an “insider”. However, I would argue that my positionality at my field site was unique. The fishing communities of Bakultala considered me as higher caste urban woman from Kolkata. My last name always reflected that I am not like them, which means I do not belong to the scheduled castes. This created a sense of “outsider,” which I think influenced the data collection process. Initially, I was considered closer to the urban scholarly communities of Kolkata than the
Sundarban fishermen who work diligently in the rivers and forests. However, as time passed in the field, and as people became familiar with my presence in the community, it was easier for me to overcome the boundary of insider/outsider. Furthermore, I was very hesitant to state explicitly that I study in the United States. I shared this information with my host family and some others at Bakultala, where I felt it was safe to share such information. My host family and their extended family members had prior knowledge that a researcher can come from a foreign university to conduct research in a remote village in the Sundarban. This is due to the reason that Dr. Annu Jalais lived with my host family when she conducted an ethnographic research in Gosaba, Sundarban in 1999-2001. Therefore, my host family and their family members welcomed me wholeheartedly and treated me as one of the family members. At Bakultala, it was hard for me to explain to all my interviewees about the location of the University of Kentucky. As villagers were not aware of such a university, it was hard for me to gain their trust. This is why I always did not explicitly mention about the University of Kentucky because that could create further distance between my interviewees and myself. However, this did not affect the research ethics as villagers understood that I came just like Dr. Jalais to learn about the Sundarban forest and local culture. Many of the villagers were amused by the fact that Dr. Jalais had sent her assistant to conduct further research on them. I did not confront this idea that much as this helped my interaction with my interviewees. Here, I would like to mention that when I became aware of the fact that I am sharing research site with Dr. Jalais, I communicated with her and asked her permission about conducting research at the same site. I also met her in 2011 at my study site which further benefitted this research.

In certain situations I referred to my previous institution, the University of Calcutta, at which I completed my Master’s degree in geography. People in Gosaba and Namkhana are familiar with the University of Calcutta, and I met families both in Gosaba and Namkhana, whose family members studied at the same university. So, being a former student of the University of Calcutta and possessing a letter from Professor Sunando Bandyopadhyay, the Head of the
Geography Department, University of Calcutta, facilitated my data collection process at the study sites.

IV. Research Methods

Political ecologists employ a range of qualitative and quantitative methods to explore conflicts over access to resources and impacts of those conflicts on the local people’s livelihoods. This research adopted a mixed-method approach, involving the combination of both quantitative and qualitative methods to explore the present conflicts between the state forest department and local fishermen over the use and resource management of the SBR. Political ecologists such as Robbins (2003b) have successfully used mixed methods to understand the differences in environmental knowledge between the local producers and resource managers and how those differences influence the conflicts over access to resources. Bassett and Zuéli (2003, 117) have also recognized the growing need of combining “multiple views” and “multiple research method” (e.g. surveys, group interviews, and GIS) to understand environmental change. Inspired by the use of mixed methods in political ecology, I used archival research, semi-structured interviews, informal interviews, and surveys in my dissertation. In addition, I used simple GIS techniques such as the use of a handheld Garmin GPS receiver to collect GPS points at my field sites to show spatial distribution of hotels and shops, popular ecotourism spots and routes in the Sundarban, and dry fish production centers (*khuntis*). Data for this dissertation research was collected over a 16 month period i.e. from May 2011 to November 2012. However, the pace of research work was very slow during the monsoon seasons (June, July, August and September) of 2011 and 2012. The details of each research method and the overall data collection process is described in the following sections.

Archival Research

Archival research is a form of historical research in which researchers generally examine past records and documents. Geographers have long used archival research in order to analyze present events and phenomena in the context of the past. For example, political ecologist
Roderick Neumann (1998) used archival research in Tanzania to address the conflicts between protected area managers and local people over the issue of land rights and land use. Social historians like Ramachandra Guha and Madhav Gadgil (1989) also conducted archival research in order to understand local people’s struggle over land and resource use in colonial India.

I conducted archival research at several Government offices and libraries in Kolkata. Government documents and reports were collected from the different offices of the West Bengal Forest Department and West Bengal Fishery Department. I also visited the Sundarban Affairs Department, Government of West Bengal, West Bengal Tourism Department and the Office of the West Bengal District Gazetteers, Higher Education Department. In addition, I visited several libraries in Kolkata such as the National Library, the library of Anthropological Survey of India, the library of The Ramkrishna Mission Institute of Culture, and the library of Directorate of Animal Resources and Animal Health, Government of West Bengal to collect books, articles and secondary data on the Sundarban Region. Government reports on colonial forest management in the Sundarban were also collected from the State Archives of West Bengal, National Library and the office of the Directorate of Land Records and Surveys, Government of West Bengal. Census data (2001 and 2011) and Community Development Block maps of Gosaba and Namkhana were collected from the Directorate of Census Operations West Bengal. Village level maps (mouza maps) for showing the current land use of a part of the study site (Bakultala, Satjelia Island) were collected from the office of the Directorate of Land Records and Surveys, Government of West Bengal. Land use data was collected from the Block Land and Land Reform Office (B.L. and L. R. O.) of Gosaba. I also consulted several websites such as the website of the Forest Department to obtain information about the research.

**Semi-structured interview**

A semi-structured interview is one of the popular forms of interviews recently carried out by social scientists. Before, discussing the advantages and disadvantages of the semi-structured interview, I want to briefly define what an interview is. According to Kvale (1996), an interview
is the exchange of views between an interviewer and interviewee. For Dunn (2005, 79), interviewing is “so much more than ‘having a chat’.” Semi-structured interviews share some characteristics of structured and unstructured interviews. This means they combine the flexibility of unstructured interviews and a certain degree of order and rigidity of structured interviews. Everyday life experiences, complex behaviors and motivations of the research subjects are best explored through semi-structured interviews (Dunn 2005).

At the primary research site of Gosaba, 35 semi-structured interviews were conducted with the fishing communities in three mouzas: Gosaba, Pakhiralaya, and Gosaba. At the Secondary site of Namkhana, 20 semi-structured interviews were conducted in two mouzas: Lakshmipur Abad and Amrabati. These interviews lasted from the minimum of 30 minutes to 1 hour. Fishermen were recruited through the snow ball sampling method, beginning with the key informants already known to the researcher. At Pakhiralaya, 25 local residents were interviewed to understand the impacts of tourism on their lives. Here, interviewees were selected through random sampling and every 10th house was selected for interviewing. The interviews were short in duration (15-20 minutes) as compared to the interviews with the fishermen.

All the interviews were recorded with a digital voice recorder. I also took notes at the same time to avoid losing any data due to device malfunction. I had a waiver for documenting consent forms from the Institutional Review Board (IRB) at the University of Kentucky. Therefore, my interviewees were not required to sign the consent form. Nevertheless, interviewees were provided a copy of the consent form and their permission was sought to use the digital voice recorder. They were also asked for permission to use their name. In this dissertation, I have used pseudonyms for people and places to maintain the confidentiality of my interviewees. Interviews with the fishing communities and local residents of Pakhiralaya were conducted in Bengali.

Semi-structured interviews were also conducted with the government officials (e.g. Forest, Fishery, and Tourism Department), NGO members, and scholars in Kolkata. Interviews
were conducted with key government officials of the West Bengal Forest Department such as the Director of the Sundarban Biosphere Reserve Divisional Forest Officer, and former Field Director of the Sundarban Tiger Reserve (STR). They were selected due to their expert knowledge about the Sundarban region and their professional positions. These interviews were only recorded in cases where the interviewees gave their permission. During all interviews, notes were taken to avoid any data loss due to technological errors. Interviews with the government officials were mostly conducted in Bengali. However, sometimes conversations occurred in English as well. Most government officials preferred to remain anonymous.

**Informal Interviews**

Though originally not mentioned in the research proposal, I conducted several informal interviews with residents of Gosaba and Namkhana. An interval interview lacks any kind of structure (Bernard 2006). An informal interview is also about writing down all the conversations occur during a particular day in the field site (Ibid.). During my stay at Gosaba and Namkhana, numerous such conversations took place with the fishing communities and other local residents of Gosaba. In many cases the starting point of such conversations was a local tea stall. At Pakhiralaya, Tiger Mor⁵ was the most important nodal point of meeting the lodge managers and owners in the late afternoon. Here, I would like to explain that in case of these informal interviews, my interviewees were aware of the fact that I was conducting a research in Gosaba Block and trying to understand impacts of conservation on local communities. The researcher recorded these conversations in her note book. It was found that people took the researcher more seriously when she used her note book and wrote down the information in front of them. During the conversation, the researcher verbally explained the purpose of interviews and asked for respondents’ permissions to take notes.

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⁵ *Mor* is a Bengali word which means intersection of two or more roads.
Questionnaire Survey

The questionnaire survey is widely used to collect information about people’s attitudes, behavior, opinions, and awareness regarding certain phenomena (Parfitt 2005). Most commonly, this method is used in market research to examine consumers’ behaviors before launching any new products in the market (Czaja and Blair 1996). Geographers have used surveys to address a range of issues such as people’s perceptions of natural hazards, shopping behaviors, travel patterns, and gender differences within households (McLafferty 2003).

A questionnaire survey was conducted at Pakhiralaya with the traveling tourists in the tourist season of 2011-2012. The aim of this survey was to understand ecotourism or tourism from tourists’ point of view who visit Pakhiralaya, Gosaba during the winter. The total number of tourists surveyed was 100. Surveys were conducted mostly in the evening, between 5 PM to 9 PM because this was the only time when tourists were available for surveys. The researcher and her field assistants administered the surveys at Pakhiralaya Ferry Ghat and at different hotels of Pakhiralaya. Every 5th visiting tourist was surveyed at Pakhiralaya. The respondents were informed that each survey would take 20-25 minutes to complete and their identity will be protected. The respondents were asked questions about their age, sex, nationality, religion, caste, occupation, level of education, family composition and income. Data was also collected on origin of tours, types of tours (package tour or self-arranged tour), cost of tours, duration of stay, tourists’ activities (e.g. photo taking) during the trip, tourists’ and spending on local items such as honey, crabs and other local artifacts (see survey instrument). Even though each survey took 20-25 minutes to complete, the response rate was quite high (83%). Of the 120 respondents who were approached, 20 of those respondents refused to participate. In a few cases surveys were stopped and were not counted. For example, in one occasion a man intervened during his wife’s interview before she discontinued the survey.
V. Data Analysis

In order to analyze interviews and field notes I used ATLAS.ti qualitative data analysis software. Interviews were first transcribed by using f4 transcription software. Interview transcriptions were then saved in Rich Text Format (.rtf) in my personal computer. These rtf files were then imported to ATLAS.ti for coding. Using the software vivo codes were generated such as “ancestor’s occupation”, “boat licensing certificate”, “black” and so on. Quotations for each of these vivo codes were also identified by using the software. Each codes and quotations were then read multiple times to identify major themes such as illegal fishing. The survey data which was gathered in the field was first tabulated in Excel spreadsheet. The data was analyzed using descriptive statistics. Percentages were calculated for closed answer questions such as types of tours (package tours and self-arranged tours), origin of tours, duration of tours, tourists’ activities during the tour, and tourists’ beliefs towards tourism as an alternative source of income for local residents of Pakhiralaya. The result of this data analysis is reported in chapter 4. Not all survey data was used in this dissertation, such as data on age, sex, nationality, education, and income of the tourists. The only data, which was relevant to the impact of tourism on local population including fishermen living at Pakhiralaya, Gosaba was used. The quantitative survey data on tourism was compared with the qualitative interview data on tourism to understand the difference in attitudes towards tourism among local people and visiting tourists. For example, 86% tourists believed that tourism provided alternative source of income to the local residents of Pakhiralaya. However, in reality, only 36% of the local residents of Pakhiralaya was dependent on tourism for their income.

VI. Validity and Limitations

This research project is more qualitative than quantitative in nature and therefore it is open to the same old critique that qualitative data is less reliable and research result cannot be generalized like the research result produced by the quantitative methods (Montello and Sutton 2013). However, the combination of survey and interview provided a scope for crosschecking the
data. Survey and interview findings were also consistent with my personal observation at the study sites. For example, the increasing trend of alcohol consumption among local people of Pakhiralaya was mentioned by both tourists and local residents.

There are some limitations involved in this research. First, I was able to spend more time at Bakultala, Satjelia Island, Gosaba, as compared to my secondary research site in Namkhana. Therefore, interviews conducted with the fishermen in Gosaba Block were more in depth in nature as compared to the interviews conducted in Namkhana Block. At Pakhiralaya, only those fishers were interviewed, who live near the Tiger Mor where most hotels are located. This means, fishers from Pakhiralaya Jele Para could not be incorporated in the research. Jele Para is the locality within the Pakhiralaya mauza where traditional caste-based fishers (jele) live. Only one of the eight fishers I interviewed at Pakhiralaya was from the jele para as the fishers of the jele para were reluctant to provide any information to an outsider. I realized this is because they had been interviewed and surveyed almost every winter by various college students majoring in Geography and Anthropology. From their past experience, the fishers of the jele para learned that dissemination of information about their livelihood did not bring any development for their community. So, when I arrived at jele para on my own with the interview guide and a tape recorder, nobody even bothered to ask what I was doing there in a scorching summer afternoon. So, the only interview I took at jele para was with the help of a local shopkeeper named Girin who knew my interviewee. Besides this, I was not able to interview the Field Director of the Sundarban Tiger Reserve (STR) as he was not willing to participate in a conversation. He was not available on his phone number when I tried to contact him. In 2009, when I was conducting my preliminary fieldwork, I met him for the first time at one of the Forest Department’s Offices in Kolkata. During that first meeting he raised questions on the research work and its benefits to the Forest Department. Furthermore, he was reluctant to take part in the research unless it could benefit him directly. However, in 2012, when I visited him at his office, he provided some data on the amount of fine charged by the Forest Department for fishing related offences.
The fieldwork took more time than I intended. One of the reasons was that I could only conduct the survey during the winter when tourists were mostly available. The survey on the tourists took so much time, that I had less time left for interviewing local people of Pakhiralaya. For the survey, several students accompanied me in the field. Initially, I wanted to employ one or two reliable and efficient students with a geography background throughout my research. However, soon I realized that finding a reliable field assistant who will take interest in the research for a long period of time was somewhat impossible. Considering this problem, several students worked as field assistants depending on their availability. Most of these students were from the University of Calcutta and Rabindra Bharati University. Most of them studied geography as a major during their BS and MS except one who completed a Masters in Archeology. However, this particular student was involved with the project for a very short time. Besides all these field assistants, there were two students who did not study geography in their undergraduate but took part in the research by their own interest for travel, adventure, and learning. During their bachelors one of them studied Zoology and other Philosophy. Their presence in the field sites of Gosaba and Namkhana always benefitted the data collection process. Recruiting different field assistants for the survey at different points of time was time consuming as I had to explain the survey questionnaire and the method of data collection each time. Because of these reasons, I had less time for conducting interviews with the local residents of Pakhiralaya and I could only interview 25 residents who were randomly selected across the Pakhiralaya mouza. Having said that, I believe that this limitation was offset by numerous informal interviews with the local hotel managers, local members of the Eco-development committee, and the local residents who used to gather at Tiger Mor in the late afternoon and evening. These informal interviews provided sufficient scope to cross-check the data.

Structure of the Dissertation

There are six chapters in this dissertation including this introductory chapter. This introductory chapter explores the literature in political ecology, social history of India in relation
to conservation, protected area management, and mangrove ecology and climate change. Besides delving deep into the literature, this chapter introduces the research questions and explains the research design with a focus on researcher’s positionality, research methods, data analysis and limitations of the research.

Chapter 2, “Environmental and Social History of the Sundarban Biosphere Reserve,” explores the geology, ecology, and social history of the Sundarban region. More specifically, the chapter provides information about the land reclamation history of pre-colonial and colonial period. In addition, it explores the human-animal conflicts around the Bengal tigers and other conservation related conflicts in post-independence India. In sum, this chapter provides a historical background of the region which is necessary to understand the present resource-access struggles of the local population living on the edge of the Sundarban Tiger Reserve (STR).

Chapter 3, “Biodiversity Conservation and the Rural Livelihoods in the Sundarban Biosphere Reserve,” examines the impacts of the Sundarban Biosphere Reserve on the local population, more specifically on fishermen. Furthermore, it shows how characteristics of a fortress conservation model still persists in post-independence India despite the existence of Eco-Development Committees (EDCs) which involve participation of local people in forest and wildlife conservation. The chapter looks at the complexity of resource use in the Sundarban region and demonstrates that the current conservation program in some ways demonstrates characteristics of a fortress conservation which is embedded in the colonial resource management policy.

Chapter 4, “Ecotourism as an Alternative Livelihood Opportunity in the Sundarban Biosphere Reserve,” demonstrates the impacts of ecotourism on local population living in the biosphere reserve. It also explores how ecotourism at Pakhiralaya, one of the fringe villages located outside the Sundarban Tiger Reserve (STR), is limited in its scope in providing alternative income opportunities to the residents of the village. The substantial economic benefits from the tourism business are received by the outsiders such as tour operators and hotel owners.
Chapter 5, “Conservation, Conflicts and Marine Fisherfolk of the Sundarban Biosphere Reserve” explores a specific case study of conservation related conflict on the island of Jambu. This chapter is an extension of the first chapter that shows the power of the fortress conservation model despite such ideas that biodiversity conservation cannot be successful without support from the local communities. Through the specific case study of Jambu Island, this chapter examines how conservation program in the Sundaraban retains characteristics of fortress conservation model and deprive people from their sources of livelihood.

Chapter 6, the concluding chapter, provides a summary of the research findings, provides recommendations to better integrate conservation and development in the Sundarban region, and some directions for future research.
CHAPTER II

Environmental and Social History of the Sundarban Biosphere Reserve

Introduction

Satjelia Island is one of the islands located in the eastern part of the Indian Sundarban. While I was there in 2011-2012, I met Suren on the bank of Pathar River. It was an early summer morning when the Sundarban Tiger Reserve (STR) was temporarily closed for fishing by the forest department. At this time, fishers remained busy mending their boats, cultivating their small plots of land, and occasionally working as wage laborers. Suren, a fisherman in the Sundarban, lives in one of the remote villages located on the edge of the Sundarban mangrove forest. When I met him for the first time on a mudflat formed by the Pathar River, he was painting his own dinghy with coal-tar and was preparing it for the upcoming fishing season. It would take two or three days to dry the coal-tar which he was painting on the back of the dinghy. He was standing on the murky mudflat facing the earthen embankment which runs parallel to the Hazrakhali khal and protects Bakultala, a community of fishers and crab catchers located in Sadhupur village on Satjelia Island. During my conversation with Suren I learned that coal-tar prevents corrosion by the saline river water and it makes a dinghy more durable. I asked him how he makes a living in a remote village located on the edge of the Sundarban forest. The conversation with Suren revealed how fishers in the Sundarban diligently work in the intermeshing network of rivers and creeks which are locally known as gang and khal or khanri, respectively. He explained how poor fishers and honey collectors risk their lives in the Sundarban forest knowing that they are highly vulnerable to tiger attacks. As I spent more time with the fishing communities in the Sundarban region, I deeply understood the social impact of conservation on the people living on the edge of the Sundarban Reserve Forest. Suren and the other fisher folks making their living in this region inform the following research which explores the impacts of biodiversity conservation on the people living in the Indian Sundarban region or in the Sundarban Biosphere Reserve. Here, local
people are still heavily dependent on the forest resources, and more than 60% of the region’s population is unemployed. My field work with Suren and others elucidates the struggles local people encounter in their daily lives in this remote and “underdeveloped” region of India known for its mangrove forest and magnificent Bengal tigers.

This chapter explores the environmental and social history of the Sundarban region. The first section provides a geological and ecological background of the region and discusses how the region derived its current and popular name. The second section investigates the pre-colonial and colonial land reclamation history of the Sundarban. The third section explores the recent socio-environmental history of the post-Independence Sundarban, with a focus on conservation of endangered Bengal tigers and its associated conflicts in the region.

The southernmost part of the Gangetic delta is known as the Sundarban region. The Sundarban extends between the river Hugli, which is one of the distributaries of the river Ganga in India, and the river Meghna which is a course of the river Brahmaputra in Bangladesh. The Ganga-Padma and the Padma-Meghna demarcates the region’s northern boundary, while the Bay of Bengal defines its southern limit. In 1947, the Sundarban region was politically divided into two units between the two sovereign states of India and Pakistan, more specifically East Pakistan, which was later known as Bangladesh in 1971. The larger part was included in present day Bangladesh and fell under the districts of Khulna and Bakhergunj (Mandal 2003).

The Indian Sundarban, or the Sundarban Biosphere Reserve (SBR), lies in the state of West Bengal and includes districts North 24-Parganas and South 24-Parganas, covering an area of 9,630 sq. km. The SBR is comprised of 19 community development blocks (Table 2.1) among which six are located in the district of North 24-Parganas, and the remaining 13 are located in the district of South 24-Parganas (Ibid.). Each of these community development blocks comprises of several mouzas, or villages. Each block is administered by a Block Development Officer (BDO).

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6 A mouza is the smallest administrative unit organized by the British in colonial India. The purpose was to collect revenues. Each mouza has a Jurisdiction List number or J.L.No. by which it can be identified. There
The villages in the SBR are administered under local village councils, or *Gram Panchayats*. *Gram Panchayat* is the lowest tier of the elected government and headed by an elected chief who is called *Gram Panchayat Pradhan* or simply *Pradhan* (Danda 2007). The Panchayat Institution in West Bengal is a three-tier system comprised of *Zilla Parishad* at the top, *Gram Panchayat* at the bottom and the *Panchayat Samiti* in the middle (Mandal 2003). The *Zilla Parishad* of South 24-Paraganas is responsible for the socio-economic development in the district with the help of *Panchayat Samitis* and *Gram Panchayats*. Generally, each *Gram Panchayat* is composed of four to five *mouzas*, and all *mouzas* in the SBR fall outside the forested area (Danda 2007). The total number of *Gram Panchayats* which fall under the SBR is 190. Among these 190 Gram Panchayats, 50 fall in the North 24-Parganas and the remaining 140 fall in the South 24-Parganas (Chatterjee, Bhuinya, and Mondal 2009).

The SBR is divided into core, buffer, and transition zones. The core and buffer zones of the SBR form the Sundarban Reserved Forest (SRF) covering an area of 4,263 sq. km (Mandal 2007). This means that less than half of the total SBR is uninhabited (Jalais 2010). The transition zone covers an area of 5,367 sq. km. and is the densely settled area of the reserve with monocropped agricultural land. The reserve forest area (4,263 sq. km.) of the SBR includes the Sundarban Tiger Reserve (STR) which covers an area of 2,585 sq. km. The core of the SBR and the core of the STR overlap and cover an area of 1,699.62 sq. km. (STR Annual Report 2008-2009). The buffer zone of the STR is only 885.27 sq. km. while the buffer zone of the SBR is 2,563.38 sq. km. (Ibid.). Nearly 4.5 million people live in the transition zone of the SBR, in the nineteen community development blocks (Danda 2010). Most of the forested part of the biosphere reserve falls within the thirteen blocks of South 24-Parganas. Geographically, the territory of Indian Sundarban is demarcated by the Bay of Bengal in the South, Bangladesh in the east and the river Hugli in the west. The Dampier and Hodges line forms the northern boundary could be one or more than one village in a *mouza*. The Census of India provides village level data and for them a *mouza* is equivalent to a village.

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of the Indian Sundarban named after William Dampier, the appointed Commissioner, and Lieutenant Hodges, the surveyor of the Sundarban (Mandal 2004). After surveying the region, Lieutenant Hodges prepared a map of the Sundarban in 1831(Ibid.). Since then the map has been considered the standard map of the region (Ibid.). There are 102 islands in the Indian part of the Sundarban, out of which 48 are forested and the remaining 54 are inhabited by people (Basu 2006, 99).

The Sundarban Biosphere Reserve (SBR) falls under the administration of the West Bengal Forest Department. Specifically, the SBR is administered by a director who is considered the head of the biosphere reserve. The Sundarban Tiger Reserve (STR), which is part of the biosphere reserve, is administered by the Field Director who also holds the rank of Conservator of Forests (CCF). The reserve forest, which falls outside the STR, is administered by the Divisional Forest Officer (DFO) and is under the jurisdiction of 24-Parganas South Forest Division. This reserve forest is part of the buffer area of the SBR and therefore is open to honey collection and fishing. However, there are three sanctuaries located in the 24-Parganas South Forest Division in which honey collection and fishing are not allowed. These three sanctuaries are the Lothian Island Wildlife Sanctuary, the Haliday Island Wildlife Sanctuary and the Chintamoni Kar Bird Sanctuary. The development activities in the transition area are monitored by the Sundarban Development Board (SDB) which was established in 1973 in order to initiate development in an underdeveloped, inaccessible region. Until 1994, the SDB was an adjunct of the Department of Development and Planning (Mukhopadhyay 2009). In 1994, a new department called the Sundarban Affairs Department (SAD) was formed and the SDB was placed under the SAD (Ibid.). Since its formation, the SDB worked in conjunct with other departments of the state government of West Bengal. The development activities of the SDB are mainly performed through the development of communication infrastructure, agriculture, social forestry programs, pisciculture and other socio-economic programs (Sundarban Affairs Department Administrative Report 2010-2011). The agricultural programs of the SDB, such as seed distribution among small
and marginal farmers and cotton and mushroom cultivation, have not been very successful among local residents of the Sundarban (Mukhopadhyay 2009). The SDB is also far from implementing any policies regarding flooding, loss of land due to river bank erosion or population displacement in the region (Ibid.).

The West Bengal Fishery Department has control over the numerous crisscrossed river channels of the Sundarban region. However, the department is somewhat non-functional over the jurisdiction of the STR. The fishing communities of the SBR are spread over two districts: North 24-Parganas and South 24-Parganas. All the fisher folk in the Sundarban region are considered marine fisher folk by the state Fishery Department. The total number of marine fishers in the North and South 24-Paragans is 237,987 (CMFRI 2010).

Section I: Geological and Ecological Background of the Indian Sundarban

In Bengali, the term Sundarban literally means beautiful forest. Sundar means beautiful and ban means forest. This ban or forest refers to the vast tract of mangroves that extends southward up to the Bay of Bengal. It is believed that the name Sundarban might have originated from sundariban which means a forest of sundari (Heritiera fomes) trees (De 1999). The region may also have derived its name from the Sanskrit word Samudrabana which means a forest located near the sea (Mandal 2003). Later, the word Samudrabana was vitiated into Sundarban (Chattopadhyaya 1999). During the Mughal period the region was known as bhati or bhatidesh which refers to a low land washed by tides (De 1999; Chakrabarty 2007). Recently, The Sundarban is referred to as the “tide country” by the renowned author Amitav Ghosh in his novel The Hungry Tide (Ghosh 2006).

Geological Background

Geologically the Indian Sundarban region is both part of lower Gangetic mature and active delta. The forested parts of the Indian Sundarban form the active delta as the islands are regularly formed and eroded by tidal currents. According to R. D. Oldham (1893) the entire Sundarban region of India and Bangladesh is formed by the debris carried and deposited by the
rivers Ganga, Brahmaputra and their tributaries (quoted in Mandal and Ghosh 1989). This was further established by the fact that no traces of marine deposits were found throughout the lower Bengal basin and the region was formed by the alluvial deposits (Ibid.). According to Wadia (1961), since the Tertiary period several tectonic movements occurred in the north-Western Punjab which resulted in the sediment deposition in the Bengal Basin and formation of the Sundarban region (quoted in Gopal and Chauhan 2006). Due to neo-tectonic movements between the 12th and 15th century, the Bengal basin tilted towards the east and in the 16th century the Ganga River shifted eastward to join Brahmaputra (Morgan and McIntire 1959; Snedaker 1991). In the middle of the 18th century Ganga-Padma and Brahmaputra again shifted towards the east (Snedaker 1991 quoted in Gopal and Chauhan 2006). The gradual eastward tilt of the Bengal basin influenced the overall hydrology of the Gangetic delta in terms of sedimentation and fresh-water flow (Gopal and Chauhan 2006). Due to diversion of fresh-water towards the east and due to sediment deposition, most of the distributaries of the Ganga River, such as Muriganga, Saptamukhi, Thakuran, Matla, Gosaba, and Bidya, have lost their connection and now only maintain their estuarine character by the heavy monsoonal rainfall (Cole and Vaidyaraman 1966 quoted in Gopal and Chauhan 2006). Due to the loss of fresh water sources the salinity has increased in the western part of the Indian Sundarban region (Chatterjee Sarkar 2010). The salinity decreases as one travels from the west to east. Thus, the eastern part of the Bangladesh Sundarban is demarcated as oligohaline which means salinity is less than 5 parts per thousand. On the other hand, the majority of the Indian Sundarban is polyhaline which means the salinity ranges between 18-30 parts per thousand (Gopal and Chauhan 2006).

Ecology and Climate

The Indian Sundarban region comprises a significant part of the world’s largest mangrove forest ecosystem. The global distribution of mangroves is confined between latitudes 25°N and 30°S (Valiela, Bowen, and York 2001). In other words, distribution of mangroves is limited to tropical climates with an average monthly minimum air temperature of 20°C or greater (Chapman
1976; Ellison, Farnsworth, and Merkt 1999). The Sundarban mangroves are part of the Old World Mangroves which are found in Madagascar, Persian Gulf, Indo-Malaya and Australian regions (Upadhyay, Ranjan, and Singh 2002).

The mangrove forest of the Indian Sundarban covers an area of 4,263 sq. km. and is known as the Sundarban Reserved Forest or the SRF (Mandal 2007). The mangrove forest cover, especially the SRF is located on the active delta and is separated by numerous crisscrossed tidal water channels and creeks, thus, forming an inaccessible ‘mangrove swamp’ (Mandal 2003). The mangrove forest cover of the Indian Sundarban can be divided into ‘true mangroves’ and ‘mangrove associated species’ (Gopal and Chauhan 2006). At the global scale, there are 65 true mangrove species belonging to 22 genera and 16 families (Kathiresan and Bingham 2001).

Among these 65 true mangroves, the Indian Sundarban has at least 30 true mangrove species (Gopal and Chauhan 2006). All these true mangrove species are salt tolerant and possess characteristics of viviparous germination\(^7\) and vertical pneumatophores\(^8\) (Naskar and Guha Bakshi 1987). The majority of the mangroves in the Sundarban are evergreen and medium to dwarf and/or semi-dwarf in height (Ibid.). According to Mandal (2003, 76), the mangroves of the Sundarban are broadly classified into two groups: “Salt water Heritiera Forest and Low Mangrove.” Both of these two groups form dense and impenetrable under wood. Sundari or Black mangrove (*Heritiera fomes*) belongs to the first group and has developed breathing roots or pneumatophores in order to adapt in the saline environment (Ibid.). *Golpata* (*Nypa fruticans*) which falls under the “low mangrove” is becoming almost absent in the Indian Sundarban (Ibid.,

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\(^7\) Viviparous germination: In this kind of germination the seeds germinate before they get detached from the parent mangrove tree. The newly formed root grows at least 30 cm before falling on the ground. This type of germination prevents the seeds to be washed away by the tide. Among mangrove trees *Kakra* (*Bruguiera*) has a very pronounced viviparous germination (Chowdhury and Vyas 2005).

\(^8\) Pneumatophores: Pneumatophores are aerial roots which supply sufficient oxygen to mangrove trees in a swampy, saline environment. In the Sundarban, the predominant soil type is clay loam which is poor in aeration. Therefore, mangrove trees have developed aerial roots or breathing roots which come out of the mud like spikes. These roots provide oxygen to the roots which are spread deep in the soil (Chowdhury and Vyas 2005).
Similarly, Sundari (*Heritiera fomes*) is not very common in the Indian part of the Sundarban and is mostly found in the Bangladesh part of the Sundarban (Gopal and Chauhan 2006). However, the occurrence of Sundari (*Heritiera fomes*) is much better in the South-eastern part of the Indian Sundarban as compared to the western part (Naskar and Guha Bakshi 1987). The mangrove trees which provide timber such as *Mat Goran* (*Ceriops tagal*), *Jele Goran* (*Ceriops decandra*), *Genwa* (*Excoecaria agallocha*), *Kala Baen* (*Avicennia marina*), *Kaora* (*Sonneratia apetala*), *Kankra* (*Bruguiera gymnorrhiza*), *Garjan* (*Rhizophora mucronata*), *Khalsi* (*Aegiceras corniculatum*), *Tara* (*Aegialitis rotundifolia*) and *Hentail* (*Phoenix paludosa*) occupy the flood plain and natural levees, river banks, point bars, and tidal shoals in the Sundarban (Das 2006). The mangroves on the intertidal zone of a river basin can be classified into stage I, II, and III mangroves. The stage I mangroves are found on natural levees and flood plains and are often called first generation mangroves. The subsidence of river banks causes destruction of stage I mangroves. The mangroves which grow on the subsequent natural levees and flood plains are called stage II mangroves or second generation mangroves. The third generation or stage III mangroves are found on point bars and tidal shoals or mid-channel bars (Ibid.). The succession of mangroves on a newly formed island in the Sundarban mangrove forest starts by *Dhani* grass (*Leersia hexandra/Porternea coaretata*), *Baruna* grass (*Avicennia officinalis*), and *Kaora* (*Sonneratia apetala*) (Mandal 2003). After stabilization of the soil, the island is occupied by *Goran* (*Ceriops tagal*), *Genwa* (*Excoecaria agallocha*), *Hentail* (*Phoenix paludosa*) and *Golpata* (*Nypa fruticans*).
Figure 2.1. Soil stabilization by *Dhani* grass (*Porterasia coaretata*) on a river bank in the Sundarban

In the subsequent period when the elevation of the island further rises and the island gets inundated occasionally *Kankra* (*Bruguiera gymnorhiza*), *Sundari* (*Heritiera fomes*) and *Passur* (*Xylocarpus molluccensis*) appear on the island and occupy a major portion of the island. *Garjan* (*Rhizophora apiculata*) and *Dhundul* (*Carapa abovata*) generally grow along the creeks (Ibid.).

The islands of the Sundarban regularly experience tidal inflow and outflow of water. There are two high tides (inflow of water) and two low tides (outflow of water) which occur within 24 hours. This means the tide in the Sundarban is semi-diurnal tide (Das 2006; Chatterjee, Bhuinya, and Mondal 2009). In general the tidal range varies from 3 to 5 meter. During the Spring tide the tidal range at the Sagar Island, located at the extreme west of the Indian Sundarban, varies from 6.5 to 7.5 meter. The highest tides in the region are experienced during the months of August-September while the lowest tides are experienced during February-March (Das 2006, 18).

The tidal activities in the Sundarban rivers produce extensive mudflats along the convex bend of the meandering river channels (Figure 2.2). The mudflats are often intersected by tidal
creeks and can cover an area from few square meters to hundreds of square meters (Das 2006). The mudflats in the Sundarban submerge under water during the high tides and emerge again during the low tides. Luxuriant growth of mangroves occurs in the interior parts of the mudflats (Chatterjee, Bhuinya, and Mondal 2009).

![Mudflat](image)

**Figure 2.2.** Development of mudflats along the meandering river channel

The climate of the Sundarban region can be identified as tropical oceanic (Das 2006) and is characterized by high temperatures and high humidity (more than 80%) throughout the year (Gopal and Chauhan 2006). The region gets the bulk of its rainfall during the South-west monsoon season which occurs from July to September. October through the first week of November is considered post-monsoon. Winter continues from mid-November to the end of February and is followed by a hot and humid summer from March to June. In the winter the temperature ranges from 10-25˚Celsius whereas in the summer the temperature ranges between 28-36˚Celsius (Das 2006). The region receives an annual rainfall between 1,500-2,400 mm (Ibid.). The amount of rainfall decreases from the south-east to the north-west. Thus Sagar Island, located in the south-western part of the Indian Sundarban, receives an average rainfall of 1,802.7 mm which is lower than the amount of rainfall received in the south-eastern part (Mandal 2003,
51). The velocity of wind increases in the summer while it decreases during the winter. In the summer (April-June) the maximum velocity of the wind is 16.7-50 km/hour while in the winter (December-February) the velocity of the wind is 10.7-11.8 km/hour (Das 2006, 14). During the summer months the region often experiences thunderstorms in the afternoons with squalls and hail (Gopal and Chauhan 2006). These thunderstorms are called nor’westers or Kal baisakhi which means “the disastrous winds of Baisakh, the first month of the Bengali calendar” (Ibid., 342). High summer temperatures drop when these thunderstorms occur in the lower Gangetic plain and people get temporary relief from the scorching heat.

The Sundarban region frequently experiences tropical cyclones with variable wind speed. The destructive cyclones generally occur in the months of May and October with a wind speed greater than 87 km/hour (Das 2006). The region has frequently been devastated by severe cyclones which periodically thwarted socio-economic development. For example the region experienced cyclonic storms in 1864, 1867, 1869, 1872, 1909, 1932, 1935, 1936, 1937, 1940, 1941, 1942, 1948, 1956, 1960, 1962, 1970, 1976, 1988, 2002, 2004, 2006, and 2009 (Chattopadhyaya 1999; Das 2006; Sarkar 2011). The latest severe cyclonic storm “Aila” occurred in 2009 in which the wind velocity was 110 km per hour (The Times of India May 25, 2009). The cyclone created havoc in the Indian Sundarban by displacing more than 24,000 villagers of Dayapur, Jamespur, Annpur, and Lahiripur, all located in the Gosaba block, district South 24-Parganas (Ibid.). Furthermore, the cyclone destroyed numerous mud-thatched houses, roads, wooden bridges, and completely stalled the transportation and communication systems in the villages of Gosaba (Figure 2.3).
Figure 2.3. A village house completely destroyed by the cyclone Aila in 2009

Cyclone Aila proved devastating to humans and animals alike (Figure 2.4). Around 767 km of embankments (Kanjilal 2011) were completely lost due to this severe cyclone which resulted in increasing river erosion, loss of agricultural lands and shrinking habitats for wild animals (Ghosh 2010).

Figure 2.4. The deadly cyclone Aila didn’t even spare the cattle. (Photograph by Directorate of Forests, Government of West Bengal, Summer 2009)
Section II: The Pre-colonial and Colonial History of the Sundarban

The following section provides a pre-colonial and colonial history of the Sundarban Biopshere Reserve. Instead of discussing the socio-environmental history of the region in a linear and chronological fashion, I would prefer to narrate the history by focusing on major themes such as representations of the Sundarban as a “wasteland,” the revenue generating efforts of the Mughal and British, and conservation initiatives of the Sundarban mangrove forest in the late 19th century.

Sundarban as a “Waste Land”

The earliest contribution to the study of the Sundarban was made by William W. Hunter. In 1875 he published the first volume of the Indian gazetteers or regional handbooks, A Statistical Account of Bengal where he presented a detailed account of the district of 24-Parganas and the Sundarban (Hunter [1875]1998). In this volume he represented the Sundarban as a “wasteland.” Following Hunter, Pargiter (2002) also described Sundarban as “waste.” Shiva (1991, 168) remarked that “the colonial concept of wastelands was not an assessment of the biological productivity of land but of its revenue generating capacity.” The forest districts of Chittagong, Darjeeling, Jalpaiguri, Chota Nagpur, Assam, and Sundarban in Bengal Province were considered a “wasteland” as these lands were uncultivated and did not generate any revenue (Ibid.). Hunter’s representation of the Sundarban as a “wasteland” is problematic as it left open the scope of the colonial government’s interventions in the Sundarban region on the basis of “rational (i.e. western) scientific principles to environmental management” (Walker 1998, 140). Guha (1990) also pointed out that Hunter’s designation of “sodden wasteland” to the Sundarban in 1875 prepared colonial policy makers to remove native people’s claim to the vast mangrove forest of the Sundarban and led towards its gradual exploitation (quoted in Greenough 1998, 240).

The representation of the Sundarban as “wasteland” in the colonial texts and documents helped the western colonizers to deny the human history of the region in the pre-colonial period.
Western scholars often have raised questions about human inhabitance in the Sundarban region and argued that the Sundarban region was unfit for cultivation and human habitation and only became available for agricultural activities and human settlement after the land reclamation policy implemented by the colonial government (Chattopadhyaya 1999). Western scholars such as Colonel J. E. Gastrell cast doubt on the fact that Sundarban had a glorious past and it was densely populated. In his *Revenue Survey Report*, Colonel Gastrell denied the glorious past of the Sundarban by saying that “[t]here can be no doubt that settlers did occasionally appear in the Sundarbans in olden times but there is nothing to show that there was even a general population in the Sundarbans…” (Hunter [1875]1998, 40; Chattopadhyaya 1999, 31). H. Beveridge also refused to admit the existence of any large settlement in the Sundarban. In his article “Were the Sundarbans Inhabited in Ancient Times?” (1876) published in the *Journal of the Asiatic Society of Bengal* he wrote “[i]t seems to me, however, to be very doubtful indeed that the Sundarbans were ever largely peopled, and still more so that their inhabitants lived in cities or were otherwise civilized” (Quoted in Hunter [1875]1998,117). The western geologists also argued against the permanent settlement of the region and ruled out the possibility of human habitation in the Sundarban region prior to the colonial period (Chattopadhyaya 1999). On the contrary, Indian scholars like Pratap Chandra Ghosh, Kalidas Dutt, and Satis Chandra Mitra supported the idea that Sundarban was highly populated prior to the colonial period. There are enough archeological evidences in the form of ruined temples, copper-cast coins, terracotta figures of goddesses, stone fragments, traces of wells and walls, relic of houses, which are found in the deltaic region of Sundarban, supporting the rich ancient history of the Sundarban (Ibid.). Indian scholar Pratap Chandra Ghosh mentioned about Pratapaditya who was one of the 12 Hindu Chiefs or Barah Bhuiyas in Bengal and who ruled the Sundarban region during Mughal emperor Akbar’s reign in the 16th century (Chattopadhyaya 1999; O’ Malley [1914] 1998). Pratapaditya was a legendary hero for Bengali Hindus. His father, Bikramaditya, established his capital in a place called Iswaripur, which is now located in Khulna district of Bangladesh. When Pratapaditya became the
ruler, he moved his capital to a place called Dhumghat in the Sundarban. There is much doubt regarding the actual location of this place but it was not very far from Iswaripur. He declared himself the ruler of lower Bengal including the Sundarban region and he defied the rule of Emperor Akbar. Many imperial generals were sent against him by the emperor but he defeated each one of them. Finally, Man Singh, the famous Rajput General of Akbar defeated him in 1589-1604 (Ibid.). During the reign of Pratapaditya the Sundarban was a prosperous region. The However, the prosperity lasted for a very short period of time (Mandal 2004). According to Pratap Chandra Ghosh the remains of ruined settlements in the Sundarban are found in Lot Nos. 116, 211, 165, and 146 (Chattopadhyaya 1999, 35). With the downfall of Mughal emperors the lower Bengal was gradually infested by Mughs and Portuguese pirates. These pirates created terror in the lower Bengal and controlled the water ways in the Sundarban (O’Malley [1914]1998). The Channel Creek, the branch of Hooghly River, was completely under the control of these pirates and became infamous as “Rouges River” (Ibid., 44). The oppression created by the Mughs and Portuguese pirates forced people to leave the Sundarban region (Mandal 2004). In 1680, the region faced a severe cyclone which carried away about 60,000 people (Chattopadhyaya 1999, 34). However, the cyclone and storm-waves of 1737 in the region caused a total loss of human habitation and depopulation (ibid.). As a result, in the eighteenth century, the British colonialists found the Sundarban as a vast tract of impenetrable forest land devoid of any human settlement.

The Revenue Generation from Bengal and the Sundarban

In the colonial period the British government took effort to clear and transform the vast mangrove forest land of Sundarban for agriculture and human habitation with an aim to generate revenue. However, the idea of land reclamation for revenue generation was not introduced by the British. Rather, they followed the trend of Mughal emperors who identified this vast mangrove forest land as a source of revenue long before the British took control of lower Bengal. Ascoli (1917) provides a detailed account of the revenue administration of Bengal in the Mughal period.
Like the colonial rulers the Mughals also considered Bengal as one of the important provinces (subas) due to its rich fertile soil (Ibid.). The revenues earned from Bengal “were three times as large as those of any other suba” (Ascoli 1917, 11). This definitely indicates the economic value of Sundarban which was a part of Bengal province in the pre-colonial period. Basu (2006) while pointing out the importance of the Sundarban in Indian history briefly discusses how the land of Sundarban had served as a source of revenue during the rule of Mughal Emperor Akbar in 1582. In fact, the vast forest resources of the Sundarban region caught Akbar’s attention (Mandal 2004).

In 1582, the emperor Akbar appointed Raja Todarmal as Diwan-i-Asraf or the Minister of Revenue in order to settle the revenue of a land extended between Hijli of Midnapore district and the southeastern plain (Basu 2006, 100). Therefore, the first revenue settlement of Bengal was made by Raja Todar Mal in 1582 and was known as Asli Jama Tumar “Original Royal Revenue Roll” (Ascoli 1917, 23; De 1994, 369). At that time, the revenue was determined on the basis of the “proportion of the produce of the soil” (Ascoli 1917, 22). During Akbar’s reign the Khalsa lands or rent paying lands Bengal province were divided into nineteen large administrative units which were called Sarkars (Ascoli 1917; De 1994). These Sarkars were divided into 682 parganas for the purpose of administration and collection of revenue. Each pargana was managed by a Chaudhari or Zeminder. The total revenue of Bengal was Rs. 10,693,152 (Ascoli 1917, 22-23). Later in 1658, Suja, the son of Mughal Emperor Shahjahan and brother of Aurangzeb, who was the Governor of Bengal, made the second revenue settlement. During his tenure the total number of Sarkars and parganas increased to thirty four Sarkars and 1350 parganas respectively. The revenue of Bengal also increased to Rs. 13,115,907. In Suja’s rent roll some portions of the Sundarban were assessed for the first time (Das, Mukherji, and Chowdhuri 1981). The perfect rent-roll was brought in the region during the rule of Murshidkuli Khan who was appointed as Dewan9 of Bengal by Auranzeb in 1701. The third revenue

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9 Dewan: Finance Minister of a province. The post was created by Emperor Akbar in 1579 (Ascoli 1916, 14).
settlement made by the Murishidkuli Khan in 1722 was also the last revenue settlement which
was made only thirty five years prior to the East India Company’s acquisition of the present 24-
Parganas in 1757 (De 1994). This third revenue settlement was known as Jama Kamiltumari or
complete revenue roll (Ascoli 1917). The total revenue was fixed at Rs. 14, 288, 186 which was
before extra collection or Abwabs (de1994). Though the Mughals did not use the term
“wasteland” for the Sundarban, their every effort to increase revenue from Bengal as well as
Sundarban supports Guha’s (1990) claim that the vast forest of Sundarban was designated as
“wasteland” by the British for the purpose of exploitation of its resources (quoted in Greenough

The year 1757 is remarkable in Bengal’s history as the Nazim or Nawab\textsuperscript{10} of Bengal,
Siraj-ud dula was defeated by the British in the battle of Plassey followed by a quick
“installation of Mir Jafar as Nazim of Bengal, Behar, and Orissa on June 29” (Ascoli 1917, 19).
From Mir Jafar the East India Company obtained a grant of an area of 882 square miles, located
mainly south of Calcutta and known as the 24- Parganas (Ibid.; Mandal 2003). This grant
provided the Company the right of a zemindar, or the proprietor of an estate, over the land. The
revenue was fixed at Rs. 2, 22, 958 which was paid by the company to the Nazim. This grant was
confirmed by a sanad, or deed, in 1758 (Ascoli 1917, 20) by which the entire 24-Paraganas was
given to Lord Clive by the Emperor of Delhi as a jaigir in return for his services to stop the revolt
instigated by the Emperor’s eldest son Shah Alam (Mandal 2003). These 24-Parganas are:
Akbarpur, Amirpur, Azimabad, Baila, Baridhati, Basandhair, Calcutta, Dakshin Sagar, Garh,
Hatiagarh, Ikhtyarpur, Khari-juri, Khaspur, Maidenmal, Magura, Manpur, Mayda, Munragacha,
Paikan, Pechakuli, Satal, Shahnagar, Shahpur, and Uttar Pargana (Mandal 2003). This zeminderi
right is the first significant territorial acquisition of the British in Bengal that did not provide de jure sovereign power to the company. The company was only a landholder under the Nazim of

\textsuperscript{10}Nazim/ Nawab: The term Nazim is applied to denote a Viceroy or Governor and the term Nawab is
honorary one. Actually the ruler of a province was known as Nawab-i- Nazim or Subadar in Mughal
period.
Bengal, but slowly became the *de facto* sovereign power in the province (Ascoli 1917). The commencement of actual British revenue administration occurred in 1765 when the East India Company was being appointed as *Dewan* of the provinces of Bengal, Behar and Orissa by the Mughal Emperor on condition of an annual payment of Rs. 26,00,000 (Ascoli 1917, 21).

In colonial period the Sundarban had been viewed as a “hostile wilderness” which could only be improved by deforestation, land reclamation, and cultivation (Richard and Flint 1990, 17). Prior to the deforestation, land reclamation, and cultivation by the colonial ruler in the Sundarban, the region became depopulated due to atrocities conducted by the Mughls and Portuguese pirates in the lower Bengal delta (Mandal 2004). In the first half of the 18th century, the European merchants such as English, Dutch, Flemish, and French fought among each other on the highway parallel to the Bhagirathi-Hooghly River which further forced the local inhabitants to leave the Sundaran region (Mandal 2003).

Since the acquisition of *Dewani* Bengal, Behar and Orissa in 1765, the East India Company became the supreme power in Bengal and the company focused on economic expansion in the deltaic wetlands of Bengal (Richard and Flint 1990). For “intensive exploitation of the soil, forests, and wildlife of the Delta” the East India Company started to grant land tenures to Bengali applicants in 1770 (Ibid., 18). In 1770, the first reclamation effort of the Sundarban forest and wetlands were made by Mr. Claude Russell, the Collector-General of 24-Parganas (O’Malley [1914] 1998). He granted leases of *patitabadi taluks*, or tenures for the reclamation and cultivation of wasteland, to the individuals who were interested to bear the risk of land reclamation (Ibid.). He allowed seven years of free rent after which the lessees were to be subject to an assessment according to the quality of the land (Pargiter [1934] 2002; Mandal 2004). During this time J. Rennell published a number of maps showing the extent of the Sundarban (Mukherjee 1996).

The next land reclamation and cultivation efforts were made in between 1770-1791 by Mr. Tilman Henkell, Judge and Magistrate of Jessore (now located in Bangladesh). In 1783, he
proposed certain plans to the Governor General Warren Hastings for the leasing out of plots of lands to the *raiyats*\(^\text{11}\) to establish a body of peasant-proprietors directly under the control of East India Company. He granted about 150 leases in 1785 and later established three government outposts for the purpose of defining the boundary of the Sundarban, encouraging the land reclamation, and protecting the dacoit-infested boat routes (Mukherjee 1996, 179). These three outposts were Henckellganj (subsequently corrupted to Hingalganj), Chandkhali, and Kachua (Mandal 2004, 66). The history of land reclamation in the Sundarban would be incomplete without mentioning the name of Sir Daniel Hamilton. In 1903, Daniel MacKinnon Hamilton, the chief of Mackinnon and McKenzie Company, took a lease of more than 22,000 acres of land including Gosaba Island in the Sundarban (Mishra 2007). After arriving in Gosaba, he started to reclaim land out of the forest. The tribal people were brought in the region from Chhotonagpur region of Jharkhand and Mayurbhunj district of Orissa to deforest the land and to build embankments. Sir Daniel launched the concept of a cooperative system in the Sundarban (Ibid.). Everyone was welcome in his estate irrespective of caste and creed. Ghosh (2006) describes in a vivacious manner the establishment of Hamilton *abad*, or Hamilton’s estate, in his renowned novel *The Hungry Tide*.


\(^\text{11}\) *Raiyats* means peasants.
The Conservation Initiatives and Revenue Generation from Indian forests

The rise of “one-dimensional scientific forestry” in the 19th century had an impact on land management and revenue generation in the Sundarban (Shiva 1991, 78). The Scientific forestry, or silviculture, is the “transformation of mixed forests into homogeneous stands of commercially valuable species” such as sal (shorea robusta) and teak (Shivaramakrishnan 1995, 18). Guha (1990) also remarks that the colonial system of forestry introduced by the British in India put emphasis on the revenue generation and commercial exploitation. The establishment of the Indian Forest Department in 1864 to fulfill the demand of fuel wood and timbers for the expansion of the railways all over India emphasizes the underlying commercial interest of the colonialists (Guha 1990). In 1865, the first forest act was passed by the British Government to claim those forests in the country which were at once needed for the expansion of Indian railway (Ibid).

Sivaramakrishnan (1995) states that in most of the provinces of colonial India the Forest Service was put under the Revenue Department. Referring to Stebbing (1926), he also states that the Forest Service was regarded “as a purely commercial concern---its chief raison d’ etre the production of revenue” (quoted in Sivaramakrishnan 1995, 10). Following this, Sivaramakrishnan (1995, 10) provides an estimate of revenue earning of the British Government that “[b]y 1920 net revenues from state forests had increased fourfold to 21 million rupees, from the 5.5 million rupees of 1880s.” Rangarajan and Shahabuddin (2006) also mention this aspect of revenue collection and reservation of land as Government forest in the British period (1878-1900) while discussing the historical background of displacement of local people from protected areas in India.

The process of land reclamation and expansion of agricultural land mostly for aman12 paddy cultivation in Sundarban continued in several phases until the colonial government realized the importance of forest preservation in the 1870’s. The early British effort to convert the

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12 Aman is a type of paddy grown in the state of West Bengal. The transplantation of aman paddy begins in early July and continues through August. It is harvested in late November to January.
Sundarban to revenue yielding tracts by unplanned clearing of the vast forestland slowed down in 1862 when Brandis, the first Inspector General of Forests, prepared a scheme to conserve the forest of Bengal (De1994). The state government took quick steps for conservation and leased out forest lands to Port Canning Company for management but this was cancelled later in 1868 (Ibid.). There is no reason to assume that the colonial government’s effort to preserve the Sundarban mangrove forests for conservation was guided by the ideologies and practices of environmentalism. Buckland (1902) pointed out that preservation of mangrove forest in the Sundarban was driven by the commercial interest of timber production, especially timber extracted from Sundari (*Heritiera fomes*) trees, which was highly valuable for construction of boats and “domestic architecture” (quoted in Richards and Flint 1991, 26). Similar instances of conservation are found in colonial Tanzania where forest reserves were established to secure control over resources and their management in the early twentieth century (Neumann 1998). In order to conserve the forest of Sundarban from extreme exploitation and to continue the supply of timber and fuel wood for the lower Bengal, the British Government designated the present part of the Indian Sundarban as “protected” forest by Act VII in 1878 (Richard and Flint 1991). In general, the forest act of 1878 was enacted to deny the century old customary rights of the peasants to the forest and forest products in India (Guha 1990). Instead, it was formulated “for the formal assertion of ownership over forests and waste by the colonial state” (Guha 1990, 68-69). Later Sundarban was designated as Reserved Forest under the Indian Forest Act of 1927 (Dey, Debnath, and Sikdar 2006). Under this Act, 9630 sq. km. of land was declared as Reserved Forest which is the total area of present Sundarban Biosphere Reserve (Ibid.).

**Section III: The Environmental and Social History of the Post-Independence Sundarban**

In the following paragraphs I analyze the post-independence socio-ecological history of the Sundarban region. The post-independence history of the Sundarban is marked by several distinct events which can be linked with the colonial history of the region. In order to explore the
nature-society relationship of the region in the post-independence period, I examine the region’s history under three broad themes such as post independence revenue generation, conservation and conflicts, and lastly development initiatives of the state and associated conflicts. Under the broad theme of conservation related conflicts I particularly focus on the tiger conservation initiatives and associated human-animal conflicts in the region.

**Revenue Generation from the Sundarban**

The post-independence socio-environmental history follows the colonial trend of revenue generation by creating a “landscape of production” (Neumann 1998) through encouraging numerous tourists in the buffer area of the STR. I argue that this idea that Sundarban is a “landscape of production” follows the colonial trend of reclamation of forest land for paddy cultivation. Hunter’s ([1875] 1998) description of the Sundarban dotted with rice fields points out the agricultural activities in the region, and hence it reinforces the idea of “landscape of production.” He well described the region as follows:

>a sort of drowned land, broken up by swamps, intersected by a thousand river channels and maritime backwaters but gradually dotted, as the traveler recedes from the seaboard, with clearings and patches of rice land.

(Quoted in O’Malley [1914] 1998, 2).

Furthermore, the preservation of the Sundarban mangrove forest by the British government in the late 19th century was guided by the commercial interest of timber production as the Sundarban mangrove forest provided timber for Calcutta and 24 Parganas (Hunter [1875] 1998). After independence of India, this production of timber was continued by the state Forest Department until the 1990s. Until 1994, the Forest Department organized two timber coupe in a year: one during the summer which is officially termed rough weather timber coupe and other during the winter which is called fair weather timber coupe by the forest officers (STR Management Plan 2000-01-2009-10). In addition, the post-independence Sundarban region generates a significant amount of revenue from tourism. A study carried by the South Asian Network for Development and Environmental Economics (SANDEE) on the estimates of the recreational value for the
Indian Sundarban in 2005-06 calculated that the annual recreational value of the region is about Rs. 15 million, equivalent to US$ 377,000 (Guha and Ghosh 2009). Therefore, since the colonial period the vast tract of the Sundarban region served as a “landscape of production” (Neumann 1998). Not only the Sundarban was a “landscape of production” (Neumann 1998) but also the colonial writers represented it as a “landscape of consumption” (Ibid.) based on the idea of “recreation and contemplation” (Frykman and Lofgren 1987; Williams 1973; quoted in Neumann 2003).

The idea that the landscape can be consumed for pleasure was originated in the form of landscape painting in the 19th century Europe (Neumann 1998). The representation of landscape in those paintings always concealed the presence of rural poor employed in daily labor. Land was framed in a way where an outsider can enjoy the beauty of a landscape from a certain position. However, for the insiders, for example the peasants, there is no such pleasure of consumption of landscape. The beauty of a landscape does not even appeal to them. Thus, 19th century landscape painting created a duality between insider and outsider where the outsider had a “visual control” over the landscape devoid of poor working class (Ibid.). With the expansion of industrial capitalism in the 19th century the European culture started to divide the landscape into two spheres: “practical and aesthetic” (Ibid., 21). By the end of the 19th century this division created two separate spatial spheres: Landscape of production and Landscape of consumption (Ibid.). The process of preservation of the wilderness by creating national parks and protected areas for recreation by the British in colonial Africa produced two spatially separated “landscape of production” and “landscape of consumption” (Neumann 2003). Colonial rulers confined the agricultural production outside the territory of national parks and protected areas. Thus, a spatial dualism had been created by which production and consumption, preservation and development had been divided into two completely separated spheres (Neumann 2003). The landscape of production separated human settlement and all human activities from the landscape of consumption which was the pristine nature of the countryside. Therefore, since the mid-
nineteenth century there was an effort to preserve pristine nature in the form of national parks and protected areas where nature can only be consumed and appreciated (Neumann 1998).

The Sundarban as a “landscape of consumption” has been constructed as early as Hunter’s *A Statistical Account of Bengal* ([1875]1998) in which human presence was represented as insignificant. The fascination for a pristine nature has been thoroughly reflected in his writings:

*The southern portion of the Sundarbans, which comprises the jungle tract along the seashore, is entirely uninhabited, with the exception of a few wandering gangs of woodcutters and fishermen. The whole population is insignificant.*


The spatial zoning of the SBR as core, buffer, and transition in the post-independence period to some extent reflects spatial dualism of production and consumption. In the case of the Sundarban, the landscape of production and consumption merges as human residents are not completely denied access to the buffer areas of the SBR. People of the Sundarban can obtain a pass from the Forest Department in order to enter the buffer area to collect non-timber forest products such as wax and honey. In the buffer area, the West Bengal government encourages tourism in some places like Sajnekhali, Sudhanyakhali, Dobanki, Lothian Island Sanctuary and Kalash Beach (Dhar 2007). In a typical tour in the Sundarban, tourists board a mechanized boat or launch and consume the beauty of mangrove forest while cruising through the water channels.

After independence, the idea of “landscape of consumption” was continued to be reflected. In 1983 the World Wild Fund (WWF), a non-profit organization, declared that “the Sundarbans [are] one of the World’s great wild places [and] the opportunity to have visited is a long remembered privilege” (quoted in Greenough 1998, 247). The same idea to enjoy the “first nature” (Walker 1998) which is unaltered by the human activities is also found on the official web site of the Sundarban Biosphere Reserve where the “nature” is described as “pristine.”

Even in 2003, when the Sahara India Group proposed their controversial ecotourism project

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(worth of $155 million) in the region, they region was portrayed as a place having “[e]xclusive, beautiful virgin beaches” (Sylvester 2004)\(^\text{14}\).

R. Mallick (1999) argued that like the colonial rulers, the post-independence leftist state government of West Bengal also recognized the potential value of the region in terms of revenue generation from ecotourism and developed a business interest in conservation of wild life focusing on the famous Royal Bengal Tiger. Although the West Bengal Government could not develop the region as a tourist spot due to poor infrastructure in the late 1970s, the idea of future tourism business in the Sundarban certainly influenced the state government’s policy when it led the brutal eviction (using police force) and violent massacre of thousands of refugees who settled on Marichjhapani and its adjoining islands in Sundarban.

**Conservation and Conflicts in the Sundarban**

Conservation of the mangrove forest and wildlife in the Sundarban has frequently created conflicts between the state and the local community. The remarkable and brutal among such conflicts is the conflict of Marichjhapani which occurred in 1979 between the Government of West Bengal and the East Bengali refugees who migrated to West Bengal after partition of India.

**Marichjhapani Massacre**

Marichjhapani is a forested island, having an area of 125 square miles (Jalais 2005, 1759), located in the buffer region of the Sundarban Biosphere Reserve. After the partition of Bengal in 1947 millions of Bengali refugees came to West Bengal from the present day Bangladesh, which was known as East Bengal at that time. The movement of the refugees occurred in several waves

\(^{14}\) This quotation is taken from the article “Sahara and the Sundarbans – Ecotourism or Megatourism?” written by Alex Sylvester in 2004. The article can be accessed from the following web link.  
every now and then. The migration of the Hindu Bengali refugees from East Bengal had a close co-relation with the caste and class structures. The upper class elite Hindus migrated first and were able to settle in West Bengal as they had wealthy relatives in Kolkata and its suburbs. Later flows of migration were comprised of poor Hindus who belonged to lower economic classes and most of them were untouchables (Mallick 1999; Jalais 2005). Being poor and having no social ties in Kolkata, the lower caste refugees had no means to survive in the city and were completely dependent on the West Bengal government’s relief. They had to accept the Congress government’s decision of dispersing them in central India, mainly in the Dandakaranya which was basically an area dominated by the tribal people (Mallick 1999; Jalais 2007). Therefore, it was extremely difficult to adjust in a different socio-economic environment which was alien to the people of East Bengal. The refugee resettlement camps made by the Congress government were almost like prisons and the mere adverse situations in the camps often generated resentment among the refugees. The situation created an opportunity for the Left dominated opposition party to make a strong position in the state politics of Bengal. The communist party claimed and later promised the resettlement of the refugees in West Bengal, especially in the Sundarban. In 1977, the scenario of the state politics changed and the Left Front came in power which was a coalition government of several parties but dominated by the one party that is CPM (Communist Party Marxist), which had the power to decide all government policies. As the Left Front supported the refugees earlier, the refugees of Dandakarnya started to move back in the Sundarban in the hope of having their land in a place with which they felt culturally connected. Thousands of refugees left the resettlement camp in the Central India and settled in the Marichjhanpi Island of the Sundarban. The Left Front members had internal disagreement on this issue and the members of the dominant CPM took this as an unauthorized encroachment of the Reserved Forest land of the state government (Mallick 1999). With the help of the police force, the state government started an economic blockade in January 1979 and by April and May 1979 the refugees were brutally
evicted from the Marichjhapi island “for violating the Forests Acts” (Jalais 2005, 1757; Jalais 2007).

In a similar manner, like the Marichjhpanpi incident, the state government employed police force to evict marine fishers of the Sundarban from the Island of Jambu in 2002-03. In these two conservation related conflicts the West Bengal government predominantly focused on protection of ecology and ignored basic human rights. In the case of Marichjhpanpi R. Mallick (1999, 119) remarked that “The Marichjhapi refugees were environmentally unfriendly and so offered no campaign opportunity for national or international conservation groups.” Similarly transient fishers of the Jambu could not project themselves as environment friendly people of the Sundarban and therefore could not retain their fishing rights on the Island of Jambu.

People of the Sundarban believe that Sundarban tigers have developed their man-eating habit after the incidence of Marichjhpanpi (Jalais 2005) which I think a sort of farfetched argument as in the colonial period there was no dearth of man-eating tigers in the Sundarban. The land reclamation and clearing of forests in the Sundarban often faced obstacles from the man-eaters (Chattopadhyaya 1999). According to Jalais (2005) the people of the Sundarban believe that the defilement of the Sundarban forests due to the government’s violence and the stress that was put thereafter to create superior image of tigers in relation to the local residents of the Sundarban, helped to transform the royal and colonial image of the Bengal tigers as man-eaters. The colonial and “romanticised vision of nature” and wildlife especially of Royal Bengal Tiger produced by the urban elites changed over time and in opposition the new image of man-eating tigers had been established by the marginalized and poor people of the Sundarban. This new representation of tigers as man-eaters could be considered as the initiation of the human-animal conflict as tigers slowly became the enemies of the local people and the local people became the “tiger-food” (Ibid., 1757). The importance of the tigers over local inhabitants of the Sundarban in the post-independence attempt of conservation of tigers, the frequent human-animal encounters during fishing, crab, honey and prawn seed collection, and the incidences of tiger straying all add to the
struggles over access to the Sundarban forest and their resultant conflicts between the state forest
officials and the local fishers living close to the boundary of the Sundarban Reserve Forest.

Fishers’ Eviction from the Island of Jambu

The eviction of traditional fishermen from the island of Jambu by the West Bengal Forest
Department in 2003 is another example which shows Sundarban people’s struggles over access to
the forest land and seasonal fishing ground. The island covers an area of 20 sq. km. Since 1943
the island had been declared a part of the Sundarban Reserve Forest under Section 20 of the
Indian Forest Act, 1927 and located at the mouth of river Hugli in the Bay of Bengal (Mathew
2003; Chakma and Bandyopadhyay 2012). It is easily accessible from Frasergunj as it is about 8
km southwest of Frasergaunj, which is the only fishing harbor in the district of South 24
Parganas, West Bengal. Since the island falls under the Sundarban Reserve Forest, the island is
controlled by the West Bengal Forest Department. Precisely it is controlled by the 24-Parganas
South Forest Division, under the Divisional Forest Officer (DFO).

Since 1955, a small part of Jambudwip or Jambu Island has been used by the transient
fishing community for drying fish (Ibid.). A study on this transient fishing community of West
Bengal was conducted by Bikash Raychaudhuri in 1966-67 and published by the Anthropological
Survey of India under the title “The moon and net: study of a transient community of fishermen at
Jambudwip” (1980) also supports the fact that the fishermen are not recently engaged in such
activities but it has been continued at Jambudwip since the decades of 1950s-60s. Since 1968 the
forest department had issued permits to the fishermen for drying fish on the island (Mathew
2003). The transient fisherfolk had paid fees to the forest department for the consumption of dry
fuel wood from the island (Dubey 2005). Each year, from October to February, fishermen mostly
living in the district of South 24-Parganas (mainly from Kakdwip, Namkhana, Sagar, Pathar
Pratima), Midnapur and other nearby districts visit this island for fishing and fish drying
(Raychaudhuri 1980; Mathew 2003). This traditional source of livelihood went under threat
when the West Bengal Forest Department set fire the makeshift sheds and fishing implements at
the end of the fishing season of 2001-02 claiming that fish drying activity was a “non-forest activity that cannot be permitted under the Forest (Conservation) Act, 1980” (Mathew 2003, 46). Additionally, they defended their eviction on the basis of the order of the Supreme Court in 1996 which basically instructed to all the States and Union Territories to remove all encroachments from the reserved forest. Following the verdict of 1996, the Ministry of Environment and Forests (MoEF) directed to all the states and union territories of India to regularize only those encroachments which occurred before 1980 and to evict all others by September 30, 2002 (Ibid, 47). Soon after this order of the MoEF, the West Bengal Forest Department instructed the fishermen of the Jambu to leave the island with their all fishing implements (Ibid.). In this conflict between the state and Sundarban marine fishers it is noteworthy that how the two different departments of the West Bengal Government quarreled against each other on the same issue. While the State Fisheries Ministry supported the demand of retention of the customary right of the fishermen, the Forest Department was against it arguing that the fish drying activities on the Jambu Island endanger the mangrove forests (Dhar 2003).

Conservation of Tigers: The Statistics and Management of Human-Animal Conflicts in the Sundarban

This sub-section focuses on the conservation of tigers in the post-independence period in India. Nevertheless, a brief pre-colonial and colonial history of human-tiger relationship is necessary in order to understand the context of tiger conservation in the twentieth century India. Conflict between human and tiger was a quite a common characteristic of human-tiger relationship in both Mughal and British India.

In India, tigers (Panthera tigris) are found in six different landscapes. These are: Shivalik Hills and the Gangetic Plains, Central India, Eastern Ghats, Western Ghats, North-Eastern Hills and Brahmaputra Plains, and the Sundarban (Jhala et al. 2011). The habitat of the tigers in the Sundarban is predominantly different than other tiger habitats of the Indian subcontinent. In the Indian Sundarban, the Bengal tigers have efficiently adapted themselves
with the daily tidal fluctuations of the river water, salinity of the creeks and the swampy ground infested with breathing roots or pneumatophores. Bengal tigers in the Sundarban prefer to live in the Sundari (*Heritiera fomes*) and Hental (*Phoenix paludosa*) forests as these trees grow on relatively higher ground than other mangrove trees and therefore not subject to inundation except during the high tides (Chattopadhyaya 1999). Tigers in the Sundarban frequently travel from one island to the other and therefore, they do not have any fixed territorial boundaries. The Sundarban tigers are very adept to swim long distances and they can cross water channels up to 8 km wide (Chaudhury and Chaudhury 1974 and 1994 quoted in Das and Bandyopadhyay 2012, 118).

In the Indian Sundarban, the Bengal tiger is the topmost predator in both the aquatic and terrestrial food webs. Bengal tigers in the Sundarban survive on fish, crab, turtle, and water monitor, which cover 17% of their total diet (Das and Bandyopadhyay 2012). The remaining 83% of their diet comes from wild boar (*Sus scrofa*), spotted deer or cheetal deer (*Axis axis*), rhesus monkey, otter, lesser cat and bird (Sanyal 1998). A study was conducted to identify the key prey species of tigers in the Bangladesh part of the Sundarban in which tiger scats were analyzed. According to tiger scat analysis it was found that spotted deer currently constitute 69% of total prey. Wild boar and Rhesus Macaque constitute the remaining 15% and 5% of the prey species. Like other wild animals in the Sundarban, the tigers drink saline river water. Survival in a mangrove swampland is hard, and due to this, the average weight of the Sundarban tiger is 150 kg, which is relatively lower than the weight of other tigers of the Indian subcontinent (Das and Bandyopadhyay 2001).

Since the colonial period the human-animal conflict mainly with the Royal Bengal Tigers in the Sundarban is an age old phenomenon. Pandian (2001) analyses the Mughal and British hunting practices which were necessary for both Mughal emperors and colonial rulers to represent them as “caring and responsible sovereigns” in India (80). He argues that imperial hunt in Mughal period was a political practice to convey the message of the powerful emperor about
his ability to pursue the punishments of the unruly subordinates (Pandian 2001). The hunt as a metaphor of rule was thus essential to cultivate welfare among the subjects in the Mughal “garden of empire” (Pandian 2001, 90). Hunting was one of the most “violent and visible spectacles” of “predatory care” through which colonial rulers rescued colonial subjects from the “tyranny” of man-eating tigers and at the same time established political authority over Indian Territory (Pandian 2001, 80). Pandian (2001, 84) discusses the problematic nature of human-animal relationship in colonial India especially with tigers who were often portrayed as “oppressive figure terrorizing the rural populace” in the hunting narratives. Hunting for protection of rural folks was symbolic of “brave white men defending hapless mothers whose children fell prey to wild beasts” (Rangarajan 2001, 25). Following Pandian, Jalais (2008) nicely represents the problematic nature of the relationship between the British and the tigers in colonial India. She (2008) portrays how tigers were considered as “worthy enemies” of the British as they were symbol of power of the Indian monarchs. The tigers were also regarded as “tremendous threats to governmental agrarian revenue” (Jalais 2008, 27). Rangarajan (2001, 22-23) also specifies this and mentions that “[f]ewer tigers meant more cultivation and more revenue.” The image of a tiger was embedded in the minds of the British office personnel as “a flesh-eater that dared to eat people” (Ibid. 25). The antagonism against the tigers reflected in the tiger’s description by the colonial sport hunters who represented it as “a cunning, silent, savage enemy” (Ibid.). Slaying of a man-eating tiger was thus considered an achievement in the sport of hunting in the British period. In addition, killing a tiger was a measure of power to the colonial rulers against the Indian emperors. Tipu Sultan, the king of Mysore in Southern India had a musical organ “constructed in the form of a life-size tiger pinning an Englishman to the ground, jaws clamped around his neck while his arm waved ineffectually in the air” (Pandian 2001, 79). The organ was made after a widely known incident of tiger attack in 1793 when a large sized ferocious Bengal tiger jumped on “the young son of noted general Sir Hector Munro” in the mangrove swamp land (Ibid.). After Tipu’s defeat in 1799 at Srirangapatnam, the same musical device generated an
inverted idea that tigers are enemies and became cause of the construction of medals for the all British soldiers “featuring a British lion pinning a tiger onto the ground” (Pandian 2001, 79). On the contrary it was necessary to heighten the symbolic “royalness” of the tigers (due to its several qualities of beauty, intelligences, strength) because it provided a scope of enjoyment by measuring the strength of a British man against an Indian ruler “who stood his ground by virtue of his strength” (Jalais 2008, 28).

In the twentieth century, the hunt of tigers for pleasure and prestige was replaced by the “prestige of conserving and saving” these wild animals (Jalais 2008, 28). In other words, the tigers which were once the prime target of the sport-hunters became the worldwide symbol for conservation of the wildlife (Rangarajan 2001). In the beginning of the twentieth century India had about 50,000 tigers which decreased to only 1800 in 1972 when the Project Tiger was taking its shape (Wheeler 2009, 27). There was a growing concern for the conservation of big cats in the 1960s in India which gained its momentum during the conference of International Union for the Conservation of Nature or IUCN, held in New Delhi in 1969 (Krishnan 2006). In the venture of Project Tiger (a forty million rupee project), the primary thrust came from the new generation of conservationists in India who were not obsessed by the pride and joy of sport-hunt or shikar and from some higher level administrative bureaucrats who had “aesthetic and scientific” concerns. Among these people were the prime minister Mrs. Indira Gandhi, M.K. Ranjitisinh—an officer of the Indian Administrative Service and last but not least Kailash Sankhala, “a forester who was a strong critique of shikar and commercial forestry” (Rangarajan 2001, 99).

According to the senior State Forest Department official Pradip Sukla (The Times of India [New Delhi], October 20, 2008), “[v]illagers are not supposed to enter a number of islands earmarked as tiger territories, but they seldom follow the rules, get attacked and claim compensation.” Sanyal (2001) mentions that normally woodcutters; fishermen and honey collectors are the victims of Sundarban tigers. Among these three kinds of permit holders, fishermen are the worst sufferer. He also discusses about the man-eating behavior of Sundarban
tigers. According to Sanyal (2001) the first studies of man-eating behavior of Sundarban tigers was conducted by Hubert Hendrichs, a German scientist, in Bangladesh Sundarban in 1975. Hendrichs found a positive correlation between salinity of the creek water and propensity of man-eating. During the peak salinity period which coincides with the honey collecting season of April and May, the number of attacks is the highest (Ibid.). Jalais (2008) also refers to the Hendrich’s conclusion regarding the man-eating behavior of the Sundarban tigers which suggests that the increased brackishness of the Sundarban rivers forces the tigers to depend on the “sweetness” of “human blood to obtain a certain dietary balance” (29). This observation of Hendrich’s raised a series of debates and counter debates among the scientists (Jalais 2008). However, Hendrisch’s postulation was subsequently supported by Chakrabarti in 1979 (Sanyal 2001). Chakrabarti (1971, 19) remarked that “[s]alinity of water is probably the most important factor responsible for a good percentage (25%) of tigers turning into man-eaters.”

Jalais (2008) also discusses about other hypotheses apart from the brackishness of the water. One of these hypotheses suggests that Sundarban tigers have no idea about their territory. In the Sundarban the daily high tides wash away the boundaries of the territory of a tiger which it marks with its urine. Therefore, they often swim into the fringe villages and attack cattle and human beings. The other views suggest the prolonged swimming during the high tides could be the reason for aggressive behavior of the tigers (Jalais 2008). Another common view of the scientists is that as the “monkey and deer flesh in the Sundarbans was salty, their meat was not good enough and had to be supplemented with human flesh” (Jalais 2008, 29).

Chakrabarti (1971) mentions that the Sundarban tigers attack and kill human beings in the morning (between 7 to 8 a.m.) and in the afternoon (between 3 to 5 p.m.) when honey collectors, fishermen, shell collectors prepare to return to their camps. He (1971) thinks that Sundarban tigers are mistakenly considered as “inherent and designed” man-eaters. He classifies them into three categories according to the behavior pattern. The first category comprised of two sub categories. These two sub-categories are inherent and designed man-eaters (25%) and the
non-man-eaters which is rest 75%. The inherent and designed man-eaters may turn into aggressive man-eaters (80%) and the lusty and adventurous man-eaters (rest 20%). The second and third categories are comprised of undersigned man-eaters (15%) and the circumstantial man-eaters (60%) respectively. The second and third categories are actually from the balance 75% of the first category which is comprised of the non-man-eaters (Ibid.). In the line of Chakrabarti’s classification, Sanyal (2001) discusses about circumstantial man-eaters, designed man-eaters, and aggressive man-eaters. He also talks about how a circumstantial man-eater may turn into a designed man-eater and from a designed man-eater to an aggressive man-eater. When tigresses maul the honey collectors or fishermen to protect their cubs they are designated as circumstantial man-eaters. If a circumstantial man-eater repeats killing of human beings as it becomes aware of the physical strength of them, it turns into a designed man-eater. Cubs of designed man-eaters can learn how to hunt human beings from the beginning and may turn into aggressive man-eaters who attack humans from the front (Ibid). Sanyal also (2001) presents the man-eating trend over a time period of 1975-1995 in the Sundarban region. In a similar fashion, Basu (2007, 150) provides a statistics about tiger and crocodile victim cases from 1990 to 2001 and then in 2002 and afterwards. The more recent data available from 1985 to 2008 reveals that during the last 24 years the highest percentage (63. 58%) of people attacked by tigers were fishermen. The crab collectors (16.2%) ranked second and honey collectors (13%) ranked third considering the percentage of people attacked by tigers in the same time period (Das and Bandyopadhyay 2012, 143).

Several measures have been taken to minimize the human-animal conflicts in Sundarban. Mandal (2003) describes the preventive measures to reduce human-animal conflicts in Sundarban. Sanyal (1998) provides a timeline for preventive measures taken in the Sundarban Tiger Reserve to reduce killings of human beings by tigers (Table 2.2). Some example of these measures are, “stoppage of permit for collection of hental (leaf)”, digging of sweet-water ponds within the forest to change the drinking water habit of tigers, “releasing farm-bred wild pigs in
the micro-localities of the prey-depleted buffer zone to reduce tiger straying inside the habitation areas”, and “tranquillisation and capture of tigers which stray out in the villages and their translocation into the core area or zoo garden” (Mandal 2003, 219-220). The total number of people killed by tigers in the Sundarban in 1973 to 1982 was 358 which means on average 44.7 people were killed by tigers each year (Chowdhury and Sanyal 1985, 2). To reduce the human-animal conflicts and deaths of the local population the Forest Department introduced human dummies equipped with electric wires. The experiment began in 1983 to manage the man-eaters in the buffer area of Sundarban Tiger Reserve (Ibid.). In this method, electrified clay models dressed as honey collector or wood cutter are kept in the jungle “charged to 230 volts by an energizer and a 12-volt battery source” (Sanyal 1987, 431). When the man-eaters attack these dummies they get the electric shock. The average number of victims reduced from 45 per year (1975-1982) to 21 per year (1983-1985) since the method has been introduced in 1983 (Sanyal 1987, 431). Sukumar (1998) also refers to this method while discussing the “psychological warfare” as a process of management of animal-human conflicts. Sukumar (1998) also describes of a simple trick by which tigers are deceived in the Sundarban. In this method, honey collector, fishermen, and wood cutters enter in the buffer zone wearing a rubber mask “at the back of the head” (Sukumar 1998, 311) resembling a face of a man. As the tiger attacks from behind, they think they are being watched by the man and thus they become reluctant to attack the person. About 2500 rubber masks were distributed among locals between November 1986 to October 1987, who were permitted to enter in the deep forest and not a single man wearing mask was attacked by the tiger (Sukumar 1998; Jalais 2008). The government officials believed that the dummy trials have reduced the number of attacks to human beings half (Sanyal 1987; Jalais 2008) whereas the villagers were not so convinced and according to their observation killing of human beings have been increased over the years (Jalais 2008). In 1994, the Forest Department introduced a headgear made of fiberglass covering head, neck, and chest. At present this type of headgears are only available to Forest Department’s staff and provide a higher degree of
protection as compared to rubber masks (Das and Bandyopadhyay 2012). Since 1994, the local residents living on the edge of the STR started catching tiger prawn seeds in the buffer area which somewhat reduced the human-animal conflict in the forest and forest-fringe areas (Sanyal 1998).

Development Initiatives of the State and its Associated Conflicts

The debate between the conservation and development is a never ending issue in the region. Time and again the state government of West Bengal has taken initiatives to develop the Sundarban region arguing in favor of the economic development and poverty reduction. The proposal of a nuclear power plant installation and development of a mega tourism project in the post-independence Sundarban created resistance from the local population and urbanites of Kolkata. In the following paragraphs I explore such debate in detail.

Energy Policy and the Conflict in the Sundarban

The debate between the conservation and development appeared in the forefront in July 2000, when “The Statesman, an Indian national daily paper” published a report on “the setting up of a proposed nuclear power plant in Sundarbans” (Mukhopadhyay 2005, 1). The West Bengal State Government proposed to set up a nuclear power plant at Jharkhali, one of the islands in Basanti block of the Sundarban, considering that it would help to develop the region by generating electricity (Jalais 2007). This plan of the Left Front Government, which is a coalition government and dominated by the Communist Party of India-Marxist (CPI-M), was protested from local non-governmental organizations who were concerned for the environment and ecology of the region. Mukhopadhyay (2005) examines the anti-nuclear campaign at Jharkhali, Sundarban, and argues against the standard narrative of South Asian environmental movements where the colonizers, the state, and the market are considered as the agents of environmental degradation, while the local people are portrayed as the nature’s protectors and conservators. Although the Left Front Government at district level was keen to promote the establishment of a nuclear power plant saying that “the plant will help develop the poverty-ridden area…” (The Statesman, 10 July 2000 quoted in Mukhopadhyay 2005, 4), the Communist Party of India-
Marxist (CPI-M) and the Revolutionary Socialist Party (RSP), the two major constituents of the Left Front Government argued for and against the power plant respectively in case of local level politics. Mukhopadhyay (2005), depending on the regional and local level news paper reports, unravels the dynamics of local politics to show that often the local level party politics differ from the state level politics having different political agendas. While the members of the CPI-M and RSP in the city Kolkata and in the district were busy in making arguments for setting up the power plant at Jharkhali, the local RSP members of Jharkhali were against the state government’s decision by saying that “[j]ust because we are part of the coalition government, does it mean we should accept all the decisions of the CPI-M?” (Bera quoted in Mukhopadhyay 2005, 10). In fact Jharkhali was an important place for both the parties in terms of local level electoral politics (Mukhopadhyay 2005). RSP had a stronghold in Jharkhali and the dominance of their members in the island was a threat to CPI-M in terms of local level leadership. Therefore it was necessary for the CPI-M to mobilize local support in the name of nuclear power development and to erase the RSP from the Jharkhali. On the contrary, RSP propagated anti-nuclear campaign to protect their electoral base convincing people that establishing a power plant would be a dreadful attempt as it would displace thousands of people from their land. It should be noted that after the partition of India RSP helped to settle migrants of Bangladesh at Jharkhali and thus gained their support in local electoral politics. Therefore, the politics of installing a nuclear power plant is associated with a land based politics and it was important for RSP to protect their supporters from the future displacement and hence to protect its vote bank (Ibid.). Thus Mukhopadhyay (2005) shows us that installation of a power plant at Jharkhali is not clearly beyond the conflict of interests between the two parties who were united in the state level. This kind of politics provides a “fragmented view of state politics; a politics that is marked by disjunction and disunity rather than uniformity and coherence” (Mukhopadhyay 2005, 10).
**Ecotourism Project and the Conflict in the Sundarban**

In 2003-2004, the residents of the Sundarban again confronted with another development issue which hardly could be reasonable considering the ecological vulnerability of the region. This time, the effort was to develop a huge ecotourism project by the Sahara India Group\textsuperscript{15} including “5-star floating hotels, high-speed boathouses, land based huts, luxury cottages” and an “eco-village” (Ghosh 2004, 1). Pankaj Sekhsaria (2004), who is an environmental activist describes Sahara’s ambitious project (worth of over Rs. 5000 million) as “modern day tourism blockbuster” and a “death knell of the extremely fragile and unique Sunderbans”\textsuperscript{16}. Although Sekhsaria (2004) did not clearly state what could be the possible ecological damages, he points out the likely displacement of local people due to restrictions imposed on fishing within the project area as Sahara wants virgin beaches of Sundarban. Sylvester (2004) while opposing the Sahara’s project commented that “rather than being ecologically and socially sustainable, the project could have potentially damaging implications for the Sundarbans Tiger Reserve, the surrounding mangrove forest and the indigenous communities”\textsuperscript{17} (Ghosh 2004) and Jalais (2007) both criticize Sahara’s project while mentioning the irony that the same left government violently evicted East Bengali refugees from the island of Marichjhapi on the ground of conservation of mangrove forest. Mukhopadhyay (2005) also reminds the changing political stance of the Left-front Government stating that “[t]he Left-front government’s decision to install a nuclear power plant in the Sundarbans was surprising in view of the fact that the same government once evicted the refugees of Marichjhapi island in the name of conserving the delta’s rich wildlife”\textsuperscript{(3)}.

\textsuperscript{15} Sahara India is a business group in India having diversified business interests in finance, infrastructure and housing, media and entertainment, consumer products, manufacturing, and services and trading. The travel and tourism is part of the services and trading division. The detail about this corporate business group is available at: \textcolor{blue}{http://www.sahara.in/index.html}

\textsuperscript{16}Sekhsaria’s (2004) article is available at: 
\textcolor{blue}{http://www.thehindu.com/thehindu/mag/2004/06/13/stories/2004061300440700.htm}

\textsuperscript{17} Alex Sylvester’s write up is available at
\textcolor{blue}{http://www.indiaresource.org/issues/globalization/2004/saharasunderbans.html}
Discussion

Since the land reclamation effort in the 18th century, the socio-environmental history of the Indian Sundarban region is marked by the colonial effort of revenue generation from the vast mangrove swamps of the lower Gangetic delta. The large scale deforestation of the Sundarban for paddy cultivation urged the colonial rulers to conserve some parts of the mangrove forest for effective future use in order to provide timber and fuelwood for Kolkata and its surroundings. This protection of mangrove forest in the late 19th century was also guided by the economic interest of timber exploitation. So, initially the conservation effort was to halt the reckless destruction of Sundari (*Heritiera fomes*) and other valuable timber producing trees such as *passur* (*carapa obovata*), *Garan* (*Ceriops roxburghianus*) and *Genwa* (*Excoecaria agallocha*). Hunter ([1875]1998) in his *A Statistical Account of Bengal* identified 30 major timber producing trees in the Sundarban. This unique trend of commercial exploitation of forest also continued in the post-independence period. The first working plan for the 24 Parganas Forest Division which was adopted immediately after independence identified five timber felling series: Basirhat Rough-Weather, Basirhat Fair-Weather, Matla Rough-Weather, Matla Fair -Weather and Namkhana (First Working Plan for the 24 Parganas Forest Division, Vol. II, 1949-50-1958-59, 3). However, since the formation of the Sundarban Tiger Reserve in 1973 timber felling was restricted only in the buffer area for providing livelihood to local people (STR Management Plan 2000-01-2009-10). Since 1998 the Forest Department completely stopped timber felling in the Sundarban (Dhar 2007). The complete halt in timber production did not bring any change in the Sundarban mangrove forest’s role as a “landscape of production” (Neumann 1998) as the region continuously provides revenues to the state through wild honey collection and ecotourism. In 2010-11, the Sundarban Tiger Reserve produced 14, 300 Kg. honey which provided a revenue of Rs. 817,350 ($ 15,195.19) (STR Annual Report 2010-2011). In the tourist season of 2010-11 the state government earned Rs. 3,814,054 ($ 70,833.85) only from the Sundarban Tiger Reserve (Ibid.). Today, the Sundarban region in India serves both as a “landscape of production” and
“consumption” (Neumann 1998) for the urban upper class people. Each winter, during the tourist season, the urbanites of Kolkata as well as urbanites of other parts of India flock to the region in order to consume the scenic beauty of the mangrove forest in few days. These urban tourists hardly take any initiatives to learn the life struggles of the Sundarban people who diligently work in the tidal forest and rivers to make a mere living. The voice of these diligent people remains to be unheard to the people living outside the Sundarban region.
Table 2.1. Population and area of the 19 community development blocks of the Sundarban Biosphere Reserve, West Bengal, India

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>South 24-Parganas: CD Blocks</th>
<th>Area in Sq. km.</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Canning I</td>
<td>187.86</td>
<td>244,627</td>
</tr>
<tr>
<td>2</td>
<td>Canning II</td>
<td>214.93</td>
<td>195,967</td>
</tr>
<tr>
<td>3</td>
<td>Basanti</td>
<td>404.21</td>
<td>278,592</td>
</tr>
<tr>
<td>4</td>
<td>Gosaba</td>
<td>296.73</td>
<td>222,822</td>
</tr>
<tr>
<td>5</td>
<td>Jaynagar I</td>
<td>131.01</td>
<td>219,090</td>
</tr>
<tr>
<td>6</td>
<td>Jaynagar II</td>
<td>186.25</td>
<td>209,145</td>
</tr>
<tr>
<td>7</td>
<td>Kultali</td>
<td>306.18</td>
<td>187,989</td>
</tr>
<tr>
<td>8</td>
<td>Mathurapur I</td>
<td>147.3</td>
<td>164,650</td>
</tr>
<tr>
<td>9</td>
<td>Mathurapur II</td>
<td>227.45</td>
<td>198,281</td>
</tr>
<tr>
<td>10</td>
<td>Patharpratima</td>
<td>484.47</td>
<td>288,394</td>
</tr>
<tr>
<td>11</td>
<td>Kakdwip</td>
<td>252.74</td>
<td>239,326</td>
</tr>
<tr>
<td>12</td>
<td>Sagar</td>
<td>282.11</td>
<td>185644</td>
</tr>
<tr>
<td>13</td>
<td>Namkhana</td>
<td>370.61</td>
<td>160627</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>North 24-Parganas: CD Blocks</th>
<th>Area in Sq. Km.</th>
<th>Total Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Haroa</td>
<td>152.81</td>
<td>182,499</td>
</tr>
<tr>
<td>2</td>
<td>Minakhan</td>
<td>157.12</td>
<td>168,233</td>
</tr>
<tr>
<td>3</td>
<td>Hasnabad</td>
<td>155.44</td>
<td>177,470</td>
</tr>
<tr>
<td>4</td>
<td>Sandeshkhali I</td>
<td>181.20</td>
<td>140,446</td>
</tr>
<tr>
<td>5</td>
<td>Sandeshkhali II</td>
<td>197.27</td>
<td>136,247</td>
</tr>
<tr>
<td>6</td>
<td>Hingalganj</td>
<td>230.40</td>
<td>156,568</td>
</tr>
</tbody>
</table>

Source: Census of India, 2001
Source of North 24 Parganas data: Census of India, 2001
http://web.archive.org/web/20070927041813/http://www.wbcensus.gov.in/DataTables/02/Table4_11.htm
Table 2.2. Preventive Measures Taken in the Sundarban Tiger Reserve to reduce tiger attacks and killings of human beings

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Average</th>
<th>Measures Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1975</td>
<td>63</td>
<td></td>
<td>Digging of freshwater ponds</td>
</tr>
<tr>
<td>1976</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1977</td>
<td>37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1978</td>
<td>48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1979</td>
<td>52</td>
<td>48</td>
<td>Phoenix permit discontinued</td>
</tr>
<tr>
<td>1980</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1981</td>
<td>29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>41</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>1983</td>
<td>21</td>
<td></td>
<td>Electrified dummy introduced</td>
</tr>
<tr>
<td>1984</td>
<td>16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1986</td>
<td>25</td>
<td>22.5</td>
<td>Human face-mask introduced</td>
</tr>
<tr>
<td>1987</td>
<td>22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1988</td>
<td>17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1989</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1990</td>
<td>35</td>
<td></td>
<td>Both dummy and face-mask discontinued</td>
</tr>
<tr>
<td>1991</td>
<td>40</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td>43</td>
<td>39.3</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>33</td>
<td></td>
<td>Dummy, face-mask restarted (limited way)</td>
</tr>
<tr>
<td>1994</td>
<td>7</td>
<td>30%</td>
<td>30% permit holders diverted to prawn seed catching in buffer zone</td>
</tr>
<tr>
<td>1995</td>
<td>5</td>
<td>11.5</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CHAPTER III
Biodiversity Conservation and the Rural Livelihoods in the Sundarban Biosphere Reserve

Introduction

The Sundarban—the world’s largest mangrove forest ecosystem, lies in the world’s biggest delta of Ganges-Brahmaputra, encompassing an area of 25,000 square kilometer (Das 2006) in both India and Bangladesh. However, Indian Sundarban, which is also known as Sundarban Biosphere Reserve (SBR), alone covers an area of 9,630 Square kilometer (Ibid.) in the state of West Bengal (Figure 3.1). About half of the SBR is forested and the other half is inhabited.

In the light of the historical background of fishing rights and forest based conflicts in colonial India, this chapter demonstrates the impacts of biodiversity conservation on rural population living on the edge of the Sundarban Tiger Reserve (STR). STR is one of the significant components of the Sundarban Biosphere Reserve (SBR). The impacts of conservation on the rural people help us to understand how the current conservation strategy in the Sundarban to some extent follows the fortress conservation model in which a conservation program should be free from human presence. Considering the colonial forest conservation policy which imposed restrictions on local people’s access to forest-based resources and resource utilization, I argue that the colonial forest management still persists in post-independence India, which in part ignores the need of subsistence of the rural people. For example, fishers in the Sundarban are denied access to forest-based resources which in this case are different varieties of edible and economically viable fish. However, the current conservation model in the SBR cannot be labelled as colonial or fortress conservation as the reality is much more complex. Therefore, this chapter explores the complexity of biodiversity conservation in the SBR and why such complexity matters.

The first section of the chapter explores the concept of fortress conservation model and how that model is problematic. In this section, I also introduce the concepts of community-based
conservation and neoliberal conservation as these types of conservation models coexist with fortress conservation model in many different parts of the world. The second section introduces the concept of the biosphere reserve which counters the idea of fortress conservation model by bringing together two separate ideas of conservation and livelihood development. The second section also provides a summary of institutional management of the SBR and STR which is necessary to understand how institutional management of the STR reduces the opportunities of the Sundarban people in terms of earning livelihoods from the forest. This second section also introduces the concept of eco-development which is based on the idea of people’s participation in conservation and thereby, counters the fortress conservation model. The third section provides an overview of present forest-based resource access struggles of the local fishers’ in the Sundarban with a background on forest-based conflicts in colonial India. Finally, the discussion section demonstrates how biodiversity conservation in the SBR retains some characteristics of colonial resource management and perpetuates the fortress conservation model as well as how it is different and unique from such model of conservation.

**Section I: Conservation Models: Fortress Conservation**

The term fortress conservation simply means conservation of biodiversity in a specific territory—for example, a national park in which human presence is denied. In other words, the goal of biodiversity conservation can be achieved if ecosystem is allowed to function well without any disturbances created by human activities (Neumann 2005). Thus, protected areas are created to conserve biodiversity, which has led to denial of access to the resource users living in and around the protected areas. In many cases, the formation of protected areas has led to the complete eviction of local communities. The history of parks and protected areas points out that the fortress conservation model is very much linked with the idea of wilderness. This means that protected areas conserve a natural area which is pristine and which has no history of human land use (Ibid.). The protection of wilderness by creating a protected area was first put forward by the establishment of Yellowstone National Park in 1872. The early conservation literature on
Yellowstone and other national parks, such as the Glacier National Park in the United States, is completely silent about the Native American people who lived within the park boundary (Neumann 2004). Recently, scholars such as Spence (1999) have shown that Yellowstone was the home for many Native American tribes who had a significant impact on the ecology of the area (Neumann 2005).

It can be argued that Yellowstone is the seed from which the idea of pristine nature germinated and was later transported to Africa. The fortress conservation model, which was introduced in the formation of Yellowstone National Park, was subsequently followed in the conservation models of Africa, especially in East Africa. For example, in Ethiopia, the Omo National Park was formed to preserve “Ethiopia’s ‘most unspoiled’ wilderness” (Turton 1987, 179 quoted in Neumann 2005), which ignored its history of human habitation. There are ample cases where the advocates of fortress conservation blamed the local population for the destruction of wildlife and ecology. For example, in Glacier National Park, the park managers opposed Blackfeet Indian hunters because their hunting practice was seen as detrimental to big game. However, later park managers were confronted with the overpopulation of elk and deer within the park boundary (Warren 1997; Spence 1999; Neumann 2005). Researchers have shown that eviction of local populations from the protected areas and the denial of access to natural resources were often based on a lack of proper ecological data. Homewood and Brockington (1999) have examined the case of Mkomazi Game Reserve in Tanzania where thousands of pastoralists were evicted in 1988. The basis of the eviction was to protect the threatened biodiversity of savanna grassland from human use. Homewood and Brockington (1999) have shown that there was a lack of ecological data that could justify how land use by the local pastoralists was detrimental to the vegetation and large mammals.

In colonial East Africa, the fortress conservation model also created a binary between the ideas of conservation and development that came out from the idea of European modernization (Neumann 1995; Neumann 2002). The British rulers in East Africa adopted a reform agenda in
which economic development was given importance. In other words, the British wanted to create a modern Africa in which Africans’ rudimentary agricultural and livestock practices could be developed by applying science and technology. To create this modern Africa, a stable workforce was necessary to the colonial government and for this relocation and concentration of people at one place was necessary. The creation of parks and protected areas followed by the mass eviction of native Africans from their land served the purpose of population concentration outside the parks (Neumann 2002).

The parks in East Africa were created to keep nature intact without any development intervention (Neumann 1995). In other words, development intervention was allowed outside the park boundaries. The origin of this kind of binary of conservation and development is embedded in the eighteenth and nineteenth centuries’ landscape painting, which originated among the capitalists landowners in England. The tradition of landscape painting generated a particular way of “seeing” the land where observers are detached from the observed object – land—and thus, two distinct spatial spheres are created: landscape of production (land used for practical purpose) and landscape of consumption, i.e. land used for aesthetic observation and recreation (Ibid.). This spatial dualism had largely transformed the land rights and land use of Africa’s native population (Neumann 2003).

The implementation of the fortress conservation model leads to conflicts as this type of conservation denies local communities’ access to “common property resources such as fuelwood, building materials, medicines, and wild animals” (Neumann 2005, 134). For example, due to formation of protected areas, the local pastoralists in East Africa have lost 20,000 square kilometres of grazing land (Ibid., 133). A specific example can be drawn from the case study of Arusha National Park, Tanzania, where Meru people lost their traditional land use practices such as herding and agriculture (Neumann 1998). The loss of traditional land use practices led to the conflicts between the park managers and Meru people in the form of frequent “natural-resource crimes,” such as collection of fuel wood, illegal hunting and grazing, and cutting of grass for
fodder (Neumann 1998, 163). The forest management in Java in colonial and post-colonial periods also provides ample examples of forest-based conflicts in which peasants collectively resisted against the Dutch, Japanese, and Indonesian forest policies (Peluso 1992).

Community-based Conservation or Participatory Conservation

Community-based conservation or participatory conservation emerged as a reaction against the fortress conservation model. According to Hutton, Adams and Murombedzi (2005), Adams and McShane’s (1992) research in Africa made people aware of the social and environmental injustices associated with fortress conservation. People started to protest against the fortress conservation model as it violates customary rights to use land and resources. In many countries, the protests against the fortress conservation were also parts of the larger independence struggles resulting into participatory models of conservation and development (Argiyrou 2005 quoted in Vaccaro, Beltran and Paquet 2013). Hutton, Adams and Murombedzi (2005) suggested that in the late 1970s, the conservationists started to understand that a top-down conservation model will not be possible to maintain in the long run in the face of rising democracy in many countries. For example, in the mid 1980s, many newly elected democratic governments in Southern Africa started to recognize the demands and needs of local communities to better access to the natural resources of protected areas (Fabricius 2004).

Following the understanding of the importance of a community approach to conservation, community based conservation or participatory conservation was recognized in the third and fourth Word Congress on National Parks in 1982 and 1992 respectively (McNeely 1992; Hutton, Adams and Murombedzi 2005). Community approach to conservation was also recongined in the concept of biosphere reserve put forward by the UNESCO in the 1970s (Hutton, Adams and Murombedzi 2005). The emergence of the concept of sustainable development in the late 1980s also provided an impetus to community-based conservation as community based conservation provided a link between environmental conservation and development (Vaccaro, Beltran and Paquet 2013). The narrative of community-based conservation produced many different
initiatives such as community-based natural resource management or CBNRM (Fabricius et al. 2004), Joint Forest Management or JFM (Neumann 2005) and integrated conservation and development projects (Wells and Brandon 1992).

The emergence of community-based conservation or participatory conservation brought a significant change in the practice of conservation in which human land use were accepted within the protected areas (Vaccaro, Beltran and Paquet 2013). Furthermore, it devolved control from the state or from the central authority to local communities living in and around the protected areas either through co-management or through complete management such as in the case of community-based conservation (Vaccaro, Beltran and Paquet 2013; Igoe and Croucher 2007).

For example, Zimbabwe’s Communal Areas Management Programme for Indigenous Resources or CAMPFIRE which received attention internationally in terms of an innovative example of community-based conservation (Sibanda 2004).

CAMPFIRE was first introduced in two districts of Zimbabwe in 1988 and by 1995 there were 25 districts in total that joined the program (Neumann 2005). Although this program provided authority to local communities to earn revenue from the wildlife in communal areas controlled by the rural district councils, the impacts of the CAMPFIRE were limited. Sibanda (2004) explained that the local communities could not completely support CAMPFIRE as the Zimbabwe government did not pass on the property rights to the communities themselves. In an evaluation of CAMPFIRE program in the Zambezi Valley, Sibanda (2004) demonstrates how the impacts of CAMPFIRE were limited to improve local people’s livelihoods and how the distribution of revenues were uneven. Sibanda (Ibid.) had shown that direct economic benefits or cash benefits from the CAMPFIRE at the household level were small and did not provide enough incentives for community participation in conservation. Similar to CAMPFIRE, India Eco-developemnt Project (IEP) is another example of community-based conservation initiative which was implemented in India under the broader context of integrated conservation and development projects (ICDPs). The principal goal of the ICDP and or eco-developemnt project was to reduce
people’s dependence on forest and diversiy income from other sources (Varma 2009). One of the major problems of the ICDPs is that often communities cannot connect themselves to conservation goals and simply participate to gain economic benefits from the project (Ibid.). In a study conducted in the Sasan Gir National Park and Santuary, India, Varma (2009) shows that IEP was successful to improve the relation between the forest officials and Maldharis—a forest dwelling pastoral community of Gir. However, IEP failed to change people’s attitudes towards natural resource consumption.

**Neoliberal Conservation**

Recently, the biodiversity conservation has become influenced by neoliberalism (Adams and Hutton 2007). This means, the nature has become commodity and the existence of nature depends on the market price (McAfee 1999; Büscher and Whande 2007). The most striking feature of this type of conservation is the increasing involvement of private sectors and corporate world in biodiversity conservation (Adams and Hutton 2007; Büscher and Whande 2007). One of the reasons that private sectors are increasingly being involved in managing protected areas is that biodiversity conservation can bring money and can act like an “image makeover” (Büscher and Whande 2007, 31). For example, petrochemical company Shell has projected itself as “environmental friendly” after long protests against its polluting activities in the Niger delta in Africa (Ibid.). The growing involvement of corporate world in managing protected areas also creates complex questions on land rights and issues related to ownerships and administration (Adams and Hutton 2007). The neoliberal conservation is also characterized by the concepts of private protected area (Langholz and Krug 2004) and parks controlled by private sectors in conjunction with the government agencies, NGOs, and/or local communities (Adams and Hutton 2007). However, this kind of private-public or hybrid resource management does not guarantee improvement in management and there are examples, where this kind hybrid resource management has created conflicts between conservationists and local people (Ibid.). For example, in 2004, Guji people were forcefully evicted from the Nechasar National Park in
Ethiopia by the government officials and police after the African Parks Foundation (APF) came into an agreement with Ethiopian Government to manage the park (Ibid.).

The rise of ‘direct payments’ for ecosystem services including biodiversity conservation is also influenced by neoliberal thinking (Balmford and Whitten 2003). The concept of direct payment for conservation emerged from the idea that local communities bear the highest cost of conservation and therefore, they should be compensated (Ibid.). There are examples which demonstrate relative success of using ‘direct payment’ for conservation as in the case of Europe where farmers were compensated for protecting wildlife in their land (Miranda et al. 2003; Hutton, Adams and Murombedzi 2005). The ‘direct payment’ approach also encourages market-based initiatives in conservation in which private companies pay the producers for the various ecosystem services (Balmford and Whitten 2003). ‘Direct payment’ approach can be understood through the example of payment for ecosystem services (PES) projects such as wetland mitigation banking (Robertson 2004). Another example is watershed conservation in Columbia and Ecuador in which hydroelectric companies are involved in upstream forest conservation (Balmford and Whitten 2003).

Neoliberal conservation is also very much linked with the emerging phenomenon of ‘green grabbing’ (Fairhead, Leach and Scoones 2012). The term “green grabbing” was first coined by John Vidal, the editor and journalist of The Guardian (Ibid.). “Green grabbing” is a process by which land and resources are appropriated in the name of protecting environment (Ibid.). Here, appropriation is involved with the “transfer of ownership, use rights and control over resources” (Ibid., 238). Under the process of ‘green grabbing’, environment and its services such as soil, biodiversity, hydrological cycle, all are commoditized and sold under the logic of ‘green’ market economics (Ibid.). Appropriation of land for green projects, such as carbon forestry projects, can transform livelihood of people as in the case of Reduced Emissions from Deforestation and Degradation or REDD in Tanzania (Beymer-Farris and Bassett 2011) or in the case of biofuel production in Sierra Leone (Anane and Abiwu 2011). The dynamics of green
grabbing can also occur in the intersections of neoliberal conservation, ecotourism and land grabbing (Ojeda 2012). However, Fairhead, Leach and Scoones (2012) conclude that the outcomes of green grabbing are highly dependent on the contexts in which they occur. In sum, neoliberal conservation and the dynamics of green grabbing need further research in many different settings.

**Section II: The Concept of Biosphere Reserve and the Management of the SBR**

The concept of biosphere reserve emerged in 1974 to combine conservation and sustainable development under UNESCO’s Man and Biosphere Program (Guziova 1998). The Man and Biosphere Program or MAB program is the first international environmental program which put emphasis on the idea that conservation of natural resources could be achieved without compromising their economic benefits (Batisse 1982). In this sense, the concept of biosphere reserve does not deny the human presence within the conservation unit. The MAB should perform three functions: 1.) biodiversity conservation focusing on conservation of landscapes, species, ecosystems and genetic diversity, 2.) economic and human development which is socio-culturally and ecologically sustainable and 3.) a logistical function which includes demonstration, research, education, training and monitoring relating to conservation and sustainable development (Phillips 1998). In order to perform these functions, the spatial organization of a biosphere reserve includes a well protected core area surrounded by one or several buffer zones. The core and buffer zones play specific functions (Batisse 1982). The core area should represent a major ecosystem of world significance and should be large enough to promote “in situ conservation of the genetic material of this ecosystem” (Batisse 1982, 102). The core zone is mainly for conservation with minimal human interference while certain land-use activities such as grazing, fishing, timber extraction are allowed in the buffer zone (Ibid.). This simple zoning can be altered according to different geographical, ecological, and cultural situations (Ibid.).
Figure 3.1. The Sundarban Biosphere Reserve (SBR) is divided into core, buffer and transition areas. The Sundarban Tiger Reserve (STR) is a part of the larger SBR. The core of the STR overlaps with the core of the SBR. The transition area is the densely settled area located outside the buffer region. Gosaba and Namkhana blocks, located within the transition area, are the primary and secondary research sites selected for the project. (Cartography by Kar and Ghosh)

Since India’s independence the Sundarban region has gained several protected area (PA) designations such as Critical Tiger Habitat (2007), Sundarban National Park (1984) and Wild Life Sanctuary (1976) (Patel and Rajagopalan 2009) under the Wild Life (Protection) Act (WLPA), 1972 (later amended in 2002 and 2006). The Sundarban Tiger Reserve (STR), formed in 1973
under the Project Tiger of Ministry of Environment and Forest, forms a significant part of the Indian Sundarban and is one of the original nine tiger reserves in India (ibid.). However, until 2006 the STR was not given a PA status as there was no such legal category under the WLPA, 1972 (Ibid.). In other words, The WLPA, 1972 recognized only two categories: national park and sanctuary. The Sundarban National Park located within the STR was declared a World Heritage Site in 1987 (Danda et al. 2011). The Sundarban region was designated as Biosphere Reserve under the United Nations Educational Scientific and Cultural Organization’s (UNESCO) Man and Biosphere (MAB) program in 1989 (Mandal 2007).

The Indian Sundarban or the SBR comprises of 102 islands among which 48 are forested and 54 are inhabited (Basu 2010). The inhabited islands were populated by people coming from different parts of India. The southern islands, which are located right along the border of the STR, are mainly settled by immigrants from present day Bangladesh. For example, people from Khulna, Barishal and Jessore districts of Bangladesh settled in different islands of Gosaba Block during the first half of the twentieth century. There are nineteen community development blocks in the SBR which are spread over those 54 islands. Among these nineteen blocks six blocks are located in North 24-Parganas and remaining thirteen blocks are located in South 24-Parganas (Mandal 2003, 31).

18 National Park: Under the Wild Life (Protection) Act, 1972, different state governments of India have the rights to declare an area as national park considering the importance of the area from ecological, zoological and geomorphological point of view. In a national park, destruction, removal, and exploitation of wild life including forest products are strictly prohibited. Grazing of livestock is strictly prohibited in a national park. In addition, entering of livestock is not allowed unless “such livestock is used as a vehicle by a person authorized to enter” a national park (Wildlife Protection Society of India 2005, 29). Similar legal protections apply to a sanctuary. The Chief Wild Life warden may grant a permit to enter a sanctuary for investigation of wildlife, photography, tourism, and scientific research (Wildlife Protection Society of India 2005).

19 The six blocks of North 24-Parganas are: Haroa, Minakhan, Hasnabad, Sandeshkhal I, Sandeshkhal II, and Hingalganj. The thirteen blocks in South 24-Parganas are: Canning I, Canning II, Basanti, Gosaba, Jaynagar I, Jaynagar II, Kultali, Mathurapur I, Mathurapur II, Patharpratima, Kakdwip, Sagar, and Namkhana (Mandal 2003, 31).
In order to manage the resources better, the State Forest Department has divided the biosphere reserve into three zones: core, buffer, and transition. The Sundarban Reserve Forest (SRF) includes both core and buffer areas and covers an area of 4,263 square kilometer (Mandal 2007). The transition area covering an area of 5,367 square kilometer (Ibid.) is the densely settled area of the SBR having a population of 4.5 million (Danda 2010). The STR comprises a part of the SRF covering an area of 2,585 square kilometer. The core area of the SBR and the core area of the STR overlap with each other. Until 2007 the core used to cover an area of 1,330 square kilometer (Patel and Rajagopalan 2009). This did not include Netidhopani 1-3 and Champta 1-3 forest blocks (STR Management Plan 2000-2010). At present the core covers an area of 1,699.62 square kilometer (STR Annual Report 2008-2009) (Table 3.1). The old core area (1,330 square kilometer) also comprises the area of the Sundarban National Park. Therefore, since 2007 the old core area was extended to include those aforesaid forest blocks. The newly formed core area of the STR is also called Critical Tiger Habitat (Ibid.). The rationale used by the Forest Department for setting up the core area was: “to serve as centres for ecological differences and ecological processes as also to maintain a good percentage of the key habitats, elements of conservation importance. The different floral and faunal species should co-exist in pristine glory without any external influences” (STR Management Plan 2000-01-2009-10, 47-48). The core area is only open for scientific research and monitoring (Ibid.).

The buffer area of the STR covers an area of 885.27 square kilometer (Table 3.2) and is a part of the larger buffer area of the SBR covering a total area of 2563.38 square kilometer (4263-1699.62). The buffer area is further divided by the State Forest Department into two zones: the **recovery zone** and the **multiple use zone**. The rationality behind this form of zoning in the buffer area was to avoid any adverse anthropogenic impacts on the core zone. The recovery zone comprises of two forest blocks: Pirkhali and Panchamukhani while the multiple use zone comprises of four forest blocks: Jhilla, Arbesi, Harinbhangar and Khatuaajhuri under Basirhat

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20 Interview with the present Director of the Sundarban Biopshere Reserve (SBR) on Tuesday July 31, 2012
Range (STR Management Plan 2000-01-2009-10). The recuperation zone, which covers an area of 362.42 square kilometer, is also known as Sajnekhali Wildlife Sanctuary. This sanctuary and/or recuperation zone is legally open only for ecotourism. Fishing and honey collection are not allowed in the sanctuary because of the presence of high density of wildlife. The biosphere reserve managers of the department hold this idea that allowing a group of fishermen in the sanctuary would disturb the wildlife. They are of the view that thousands of tourists just pass on through the rivers and they do not disturb the wildlife as they are not allowed to disembark on the river bank and/or mudflats during their trips in the sanctuary. Tourists are only allowed to disembark on the ground where land based forest camps are set up such as Sajnekhali, Sudhanyakhali and Dobanki within the sanctuary. The Forest Department allows regulated fishing, honey and bee wax collection in the multiple use zone (Ibid.). The core or Critical Tiger Habitat of the STR is completely prohibited for any kind of economic activities and human interference including ecotourism. Until 2011-2012 tourists were allowed at Netidhopani ecotourism spot which falls under the newly formed core area or Critical Tiger Habitat. In July 2012 the Supreme Court has passed an order to ban ecotourism in the core area of tiger reserves in India.\(^{21}\) Later, in October 2012 the Supreme Court decided to lift the ban on tourism in the core area of the tiger reserves after the National Tiger Conservation Authority (NTCA) had prepared guidelines for tiger conservation and tourism in the core area.\(^{22}\)

**Management outside the STR: The Origin and Role of EDCs**

Here, under the management of the STR, I should briefly introduce the concept of Eco-development Committees (EDCs). An understanding of eco-development is necessary to comprehend the complex nature-society relationship in the SBR. Furthermore, the existence of EDCs in the fringe villages of the STR demonstrates why the present conservation model in the


\(^{22}\) Please see this newspaper article from The Times of India: [http://goo.gl/mek3jK](http://goo.gl/mek3jK)
Sundarban cannot be simply labeled as fortress conservation. The EDCs were formed in the villages located on the boundaries of the STR in the 1990s. Currently, the total number of EDCs surrounding the STR is 14 (STR Annual Report 2008-2009). The total registered members under these 14 EDCs are 4,483 (STR Annual Report 2007-2008). Each EDC has an executive committee in which the members are elected by the local villagers. The number of members in the committee varies in between 6 to 11. In addition, at least 30% of the elected members should be women. The elected members of the executive committee will elect a secretary among them who is also designated as Joint Convener. The local Beat Officer acts as member Convener and his position is equal to the secretary of the EDC elected from the local villagers (West Bengal Forest Department 1996).

The origin of EDCs in the Sundarban is embedded in the concept of Joint Forest Management (JFM) in West Bengal. The concept of JFM first emerged in the western Midnapore, West Bengal, in the 1970s, in order to “create a new relationship between” the government and local communities living in close proximity to the forest (Sarker and Das 2006, 1). The post independence forest management policy in India was largely focused on commercialization in which contractors were given permits to harvest timbers. This created discontent and anger among local resource users who were dependent on the forest mainly for fuel wood (Sarker and Das 2006). In western Midnapore, the discontent took such a form that poor villagers considered the Forest Department and the contractors as their enemies (Ghosh 2008). They often responded to the forest management by stealing timber, physically assaulting the forest department’s staff and intentionally destroying tress in the forest (Ibid). When the revenue from the forest significantly dropped in the western Midnapore, the West Bengal Forest Department realized that without cooperation from the local villagers, the forest cannot be

23 14 EDCs surrounding the STR are Dayapur, Pakhiralaya, Dulki, Sonagaon, Jemspur, Lahiripur-Chargheri, Bidhan Colony-Luxbagan, Lahiripur-Santigachhi, Annpur-Rajat Jubilee, Bijoynagar, Mathurakhand, Satyanarayanpur, Amlamethi, and Bally.

24 The Beat Office is the lowest administrative unit of the Forest Department.
protected. Hence, in 1972 the department experimentally introduced a joint management policy in which local villagers of Arabari, Midnapore, were provided free access to Non-timber Forest Produce (NTFP) and employment. In exchange, the villagers became responsible to protect a block of forest (Ibid.). The success of Arabari became a model for other forest areas in West Bengal and later for India. In 1990, JFM became an integral part in the National Forest Policy of India (Jodha 2000). Thus, introduction of JFM was a significant change in Indian forest policy moving from a conventional top-down forest management to the community based conservation.

The goals of the EDCs are to seek people’s participation from the fringe villages located on the boundaries of protected areas such as sanctuary and national parks in order to protect and develop such areas (West Bengal State Forest Report 2006-2007). One of the important purposes of EDCs is to implement administrative policies in the villages surrounding the STR (Chatterjee, Bhunia and Mondal 2009). EDC members also cooperate with the Forest Department officials to capture a strayed tiger. EDCs also help impoverished people to find temporary employment with the Forest Department as cook in the patrolling boats. EDCs around the STR are also eligible for 25% of the total revenues earned from tourism (West Bengal Forest Department 1996) which is then used for development work.

Many local residents of Sadhupur mouza and Pakhiralaya admitted that initially, the EDCs in the fringe villages of the STR were engaged in some development activities such as construction of irrigation canals, jetties, community halls to organize any public meeting, digging tube wells to supply drinking water, building of brick paths, and distribution of van-rickshaws. EDC also encouraged local women to form self-help groups and these groups were supplied goats, chicken and ducks to run their small businesses. However, EDCs are not beyond criticism and EDC executive committee members were accused of taking bribes while distributing van-rickshaws to the local people. Furthermore, local women of Satjelia Island complained that the goats distributed by the EDCs were useless as those did not survive in the long run. The EDC

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25 Van-rickshaws or vans are non motorized vans. These are three wheeled vehicle pulled by humans.
committee members are also accused of misusing government funds and often are called “big thieves” by the local people. Most of the fishers who were interviewed complained that they did not receive any benefits of EDCs nor the EDC executive members, more precisely the secretary (also called Joint Convener) of the EDC help them to communicate with the Forest Department upon confiscation of their fishing permits.

Formation of EDC helped the Forest Department to reach out to the local people. Prior to the 1990s and in the 1990s there was hardly any relationship between the villagers and the Forest Department’s officials. Due to the frequent problem of tiger straying into the villages adjacent to the STR, problem of cattle lifting by the strayed tigers in the village, the villagers considered the department officials as their enemies. Due to this animosity between the local people and the forest officials, many tigers were killed by the villagers in the 1990s. This kind of killing of tigers in the hand of the villagers is called revenge killing (Figure 3.2). For example, in July 2001, a strayed tiger was killed by local villagers at Pakhiralaya. The big cat was hiding in a bush. At least, 500-1,000 people were gathered to kill the tiger. Interestingly, the incident occurred at a place which was within 500 meter from the Sajnekhali Range Office, located just opposite to Pakhiralaya (Vyas 2004). The tiger was killed into pieces, put into gunnysacks and thrown into a river (Ibid.). The Forest Department staff was scared and none of them reach to the spot fearing the physical assaults in the hand of mob. The formation of EDCs definitely helped to stop revenge killings by the villagers and it also helped spreading awareness among people regarding the conservation of big cats.
**Figure 3.2.** Revenge killing of a tiger by the villagers in the Sundarban in the 1990s. This has been completely stopped now by the Forest Department. The picture has been collected from the Mangrove Interpretation Center at the Sajnekhali Wildlife Sanctuary, STR

**Section III: Present and Past of the Forest-based Resource Access Struggles**

This section explores the present nature-society relationship in the Sundarban especially in and around the fringe villages of the Sundarban Tiger Reserve (STR). At first, a brief historical account of forest-based resource-access struggles in colonial India is necessary to understand the present forest-based resource access struggles. Hence, in the light of the colonial forest and forest-based resource management, this section describes the impacts of regulated economic activities in and around the STR. In addition, it explains the present problem of illegal fishing in the STR and causes of such illegal fishing linked with the problem of accessing Boat Licensing Certificate (BLC). Second, before demonstrating the impacts of the regulated economic activities on the fishing communities in the Sundarban, an analysis of different forest-based economic activities and how those different activities are perceived by the local people are necessary to understand the current pattern of resource use in the SBR. Third, a detailed socio-economic profile with a historical account of early settlement of the Sundarban fishers is
necessary to understand the current problem of access to forest based resources in a protected area, like the STR. In general, the section and sub-sections demonstrate how resource-access struggles in the Sundarban are somewhat similar to and dissimilar from the struggles over access to forest-based resources in colonial India. Furthermore, this section shows how present management of the Sundarban mangrove ecosystem cannot completely rule out the characteristics of the fortress conservation model which fail to address local people’s needs in terms of earning livelihood.

**Forest-based Resource Access Struggles in Colonial India**

In colonial India, rural communities were not allowed access to forest-based resources such as collection of fodder for domestic animals as well as picking *apta* and *tembhurni* leaves (Saldanha1998, 713). The Forest Conservation Act of 1878 brought a ban on shifting cultivation, or *jhum* cultivation, as the British Government considered shifting cultivation a non-lucrative economic activity and a primitive method of farming in comparison to sedentary agriculture (Guha and Gadgil 1989). The marginalized indigenous people of colonial India (including several tribes such as Baiga) opposed large scale commercial forestry operations through illegal hunting, grazing, and shifting cultivation. Illegal encroachment of lands, thefts, bribing the forest officials, and setting forest fires were adopted by the local people to resist the colonial forest management policy (Saldanha 1998). The protest against the state forest management in colonial India did not always take militant form (Guha and Gadgil 1989). Instead, it was mostly in the form of covert resistances, such as pilfering government’s timbers, violation of forest laws and damaging government symbols (Ibid.).

Now, if we look at Bengal, we will find that, in 1878, the Sundarban mangrove forest in the lower Gangetic delta had already been conserved by the British Government to ensure the continuous supply of timber, fuelwood and other forest products to the residents of Calcutta (Richard and Flint 1990). Formation of “protected” and “reserved forests” in the Sundarban in 1878 did not lead to any eviction of local populations as there were no settlements within the
forest. Furthermore, in order to halt the reckless destruction of valuable mangroves such as *Sundari* (*Heritiera fomes*), permits were given to local people to cut timber, firewood, and other forest products (Presler 1991). For example, in the reserved forests the permit holders were charged ½ an anna per maund for Sundari trees and ¼ anna per maund for firewood (Ascoli [1921] 2002).

In the British period, fishers in Bengal enjoyed their customary fishing rights without paying any fees and without any restrictions imposed on them (Patel and Rajagopalan 2009). In his *A Statistical Account of Bengal* (1875; 1998, 19) Hunter acknowledged people’s customary fishing rights by saying that “The right to fish in the navigable channels of the Sundarbans is public, and no revenue for it is now collected on behalf of the Government.” According to the “hunting, shooting and fishing rules” of the Indian Forest Conservation Act of 1878, no license or permit was required for fishing in the tidal rivers of the Sundarban (Trafford 1905). Curtis (1933, 17) also acknowledged the fact that, in the Sundarban, “no restriction has ever been made with regard to the fishing in the rivers and creeks interlacing the forests.”

Since 1932, the fishers needed to register their boat with the Forest Department in order to catch fish within the reserve forest of the Sundarban (Bisht 2001). In the 1930s, fishers could fish anywhere in the Sundarban because the Project Tiger was not declared by that time (Sanyal 2011).26 According to the Bengal Forest Manual compiled by F. Trafford, the Deputy Conservator of Forests (1905), people who were involved in trading timber or other forest products were needed to measure their boats at certain toll stations and also needed to register their boats at the respective toll station where forest department officials had measured the boats. Mr. Trafford, the Deputy Conservator of Forests, in the Bengal Forest Manual (1905) explained the boat measurement and registration process in the following manner:

> Any persons trading in timber or forest produce, or desirous of purchasing and removing forest produce from the reserved and protected forests of the Sundarbans, may, if they so

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26 Interview with former Field Director Mr. Pranabes Sanyal on Wednesday, August 17, 2011 at his residence in Kolkata.
desire, and in place of having their boats as heretofore measured on every occasion that they enter or leave those forests or pass any of the forest toll-stations, have their boats measured once for all, and such measurement registered by the Deputy Conservator of Forests or his subordinates at any of those toll-stations,...
Such registration will hold good for the period of one year, and may be renewed after the expiry of that period.
Any boat the measurement of which so registered will not be liable to further remeasurement or detention, either within the forests or at the forest-toll stations, provided –

1) that the boat does not contain any forest produce other than that entered in the permit
2) that the boat does not exceed the registered burden, as shown by the mark on the water-line.

(Trafford 1905, 78).

Furthermore, the forest department reserved the rights to stop and examine the boats in transit through the Sundarban reserve forest (Trafford 1905). After India’s independence, the Forest Department allowed a free passage to the Sundarban fishers in the tidal waters of the mangrove forest if they had registered their non-mechanized country boats with the Forest Department by paying the annual registration fee and paying the cost of dry firewood for each fishing trip (First Working Plan for the 24-Parganas Forest Division, 1949-1959). However, since the formation of the tiger reserve in 1973, the Forest Department became more stringent in applying forest and wildlife conservation policies that gradually made fishing difficult in the numerous crisscrossing rivers of the STR.

Range of Economic Activities in the SBR/STR

At present, people who live on the edge of the buffer area of the Sundarban Biosphere Reserve (SBR) are allowed to engage in three types of economic activities—fishing, catching crabs and honey collection. Mostly fishers who catch fish, they also catch crabs. However, there are some fishers who are only involved in catching crabs. All these activities are legally allowed only in the buffer area of the SBR and strictly prohibited in the core area of the SBR. I have discussed fishing and honey collection in great detail later in this chapter.
Outside the Sundarban Reserve Forest (SRF), local populations are also engaged in another economic activity that is collection of Tiger Prawn (*Penaeus monodon*) Seeds in the rivers and creeks. In West Bengal, Tiger Prawn Seeds (TPS) are available in the brackish estuaries throughout the year. However, the quantity of the seeds varies according to season (Bhattacharya 2010). TPS are collected from rivers and estuaries when they are in postlarvae stage PL 20, 9-14 mm (Jalais 2010, 220). The price of seeds varies according to season and it reaches in its peak during the winter when the availability of seeds in the rivers becomes scarce. The price falls during the monsoon when seeds become readily available (Table 3.3).

In West Bengal, the tiger prawn seeds are called *bagda meen* and the collection of *meen* from the rivers is called *meen dhora*. This occupation is predominantly taken up by women who try to earn some extra cash by catching *meen* and thus add to their family income (Figure 3.3). During my fieldwork on Satjelia Island, Gosaba, I was introduced to some women who are involved in catching *bagda meen* from the rivers and creeks. Most of these women whom I talked to were either just literate or studied up to primary (Grade I to IV). Some of these women started catching *meen* when they were 10-13 years old. Most women who started catching *meen* in their childhood, wanted to help their parents to raise their families. One of the other reasons mentioned by these women was to earn some pocket money in their young age. Women who started catching *meen* after their marriages mostly did so to sustain their families as their husbands’ incomes were not sufficient.

To catch *bagda meen*, women wade through the saline water near the bank of a river. The collection of *meen* occurs in several attempts and each attempt at least lasts for 30 minutes. In each attempt, women usually cover a distance of 0.5 km along the river bank. Women use rectangular shaped nylon nets which are basically drag nets attached to a bamboo frame. The length of a rectangular shaped net is usually 52 inch and the breadth is 28 inch. The price of such a net is Rs. 90-100. However, the size of the net varies and so does the price. After catching the
seeds, women sell the seeds to local prawn seed dealers in the village. These dealers of Satjelia sell the seeds to different fisheries of Najat and Malancha located in

The tiger prawn seed collectors of the Sundarban have a good understanding of high and low tides which determines the time of net pulling. According to Ashima, a resident of Satjelia, during the high tide, a large number of prawn seeds enter the rivers and creeks. She explained that when in the early morning the high tide water starts to recede and the mudflats start emerging from the river water, the TPS collectors run to the river bank with their fine rectangular shaped mosquito nets. Although TPS collectors catch prawn seeds every day, the quantity of seeds increases during the spring tide or bhora kotal or bhorani. Bhorani is counted from the thirteenth day to the seventh day of each phase of the lunar calendar (Bhattacharya 2010). Therefore, primarily, one can catch prawn seeds twice a month – just before and after the full moon and new moon days. Sabita, a relative of Ashima, explained that during the morani the catch is low. Morani is counted from the eight day to twelfth day of the each phase of the lunar calendar (Bhattacharya 2010). Catching of TPS by fine nylon nets has a negative impact on the wetland ecosystem. The TPS collectors only collect the prawn seeds from the fine nylon net and throw other fish hatchlings on the river bank. This destructive way of catching bagda meen destroys other variety of fish, prawn and their hatchlings.
Forest-based Economic Activities in the SBR: The Local Perception

This sub-section explores how local communities in the SBR perceive forest-based economies. This local understanding is important as this highlights that the local populations do not differentiate among different economic activities in the forest such as fishing, honey collection and catching of crabs. All economic activities in the forest are termed as “jongol kora” in local dialect, the literal translation of which is “do the jungle” or “do the forest.” Therefore, fishing, catching crabs, honey and bee wax collection are broadly categorized under “jongol kora.” Fishers, crab catchers and honey collectors frequently use “jongol kora” to describe their occupation. All these socio-economic groups are loosely formed based on their occupations and cannot be considered as strict social categories because people from one group may overlap with another. Fishers and crab catchers may go for honey collection during the summer when they need immediate cash. Some fishers only catch fish but not crabs. Apparently fishers do not want to distinguish between “do the jungle” and “fishing” or machh dhora. Here, “fishing” also includes catching crabs.
During my stay on Satjelia Island, the topic addressing the differences between “do the jungle” and “fishing” created a prolonged discussion which revealed how fishers’ opinions differ, among those who enter the Sundarban forest for their livelihood. Some fishers opined that there is no such difference between *jongol kora* and *machh dhora*. They said once a person enters into the realm of the forest, he is vulnerable to all sorts of adversities including tiger attacks. Fishers are as vulnerable to tiger attacks as the honey collectors who walk on the islands in search of honey. Tigers in the Sundarban are excellent swimmers and there have been many instances when tigers attacked fishers at night while they were asleep in their boats. Others argued that both activities are not the same and a person must put more thought into explaining the concept to an urbanite who never lived in the Sundarban region. Hiranmoy Majhi, a 47 year old fisher from Bakultala, explained that honey collection is more risky than fishing. Honey collectors, often called *moule* in local dialect, are highly vulnerable to tiger attacks as they walk long distances on the forested land in search of beehives. While they are walking they are less attentive to tigers because they are focused on the tree tops where the beehives are located. A honey collector is less likely to notice a tiger if it hides itself in a *hental* (*Phoenix paludosa*) bush due to their proximity to the bush. So, accidents can happen within a fraction of a second. Hiranmoy further explained that fishers row their dinghies in the river. So, one among three to five team members can see a tiger from a distance and can alert others. Then all fishers in the dinghy shout loudly and try to avoid the tiger by quickly rowing their boat away. If fishers see a tiger on the mudflat and if their dinghy’s location in the river is close to the tiger, the fishers quickly move to the middle of the river. If a tiger jumps in the river and try to embark on the dinghy, then fishers try to fight off the tiger with their oars or with long bamboo sticks. According to Hiranmoy, fishers have slightly better chance to survive as compared to honey collectors who don’t have team members to alert him of a pouncing tiger. Hiranmoy also said that those who used to cut wood in the forest both legally and illegally, were considered people involved in “doing jungle.” At present wood cutting in the Sundarban is a rare phenomenon as the state forest department has
completely banned timber felling in 2001 (STR Annual Report 2011-2012). In the past, poachers and people who were involved in illegal honey collection and wood cutting in the forest, were also considered people engaged in “doing jungle.” Illegal activities in the forest are known as “black” among fishers in the Sundarban. In a narrower sense, the term “black” implies to illegal hunting of wild animals or poaching. However, in a broader sense the term applies to illegal collection of honey and wood in the forest. Like the honey collectors, the wood cutters and poachers are highly vulnerable to tiger attacks, and therefore these occupations involve high risks as compared to fishing. Charan, a fisher from Bakultala, explained why people who do “black” are highly vulnerable to tiger attacks. Illegal honey collectors, wood cutters and poachers enter deep in the forest and stay on the land for a long time. In contrast, fishers do not need to disembark on the land unless their fuel wood runs out. According to Charan, fishers do not spend a whole day on the land like the honey collectors or woodcutters. Therefore, they are not vulnerable to tiger attacks like the people who do “black.” Fisher like Hiranmoy believes fishing in the forest is not equal to “doing the jungle” and one should understand the difference between the two on the basis of risk.

Ranjan, another fisher from Bakultala supported the view that honey collection involves greater risk than fishing by saying that there is a great deal of difference between working on land and working in water. According to him any work on the forested island such as catching crabs from the holes or catching fish using khalpata jal in the creeks involves greater risk than catching fish merely from the dinghy where you do not need to set your feet on the ground. However, the available statistics provide a different picture. In 2009-2010, the forest department recorded eight incidents and death injuries caused by tigers in the STR. Among these eight incidents, seven incidents indicate that people, who were attacked by tigers, were all involved in fishing (STR Annual Report 2009-2010). These days reporting an accident to the Forest Department has become easier due to use of cell phones. Local people call the Forest Range office as soon as they come to know about an accident in the forest or on the edge of the forest. It should be noted
that those incidents are only reported in which the victims entered the forest with proper
documentations. Each year there are some people who enter the forest without valid permits and
are killed by tigers. In these cases, local people do not report to the Forest Department (Das and
Bandyopadhyay 2012).

If we consider tiger prawn seed collectors within the group of fishers, then fishers are the
most vulnerable groups in terms of tiger attacks followed by crab collectors and honey collectors.
The data available from primary (village survey) and secondary sources (death registry offices at
the block level) shows that between 1985 and 2008, 65.51% of the total people killed by tigers
were fishers, 16.22% were crab collectors and 13.81% were honey collectors (Das and
Bandyopadhyay 2012). This database covers 15 community development blocks of North and
South 24 Parganas which are Gosaba, Basanti, Hingalganj, Kultali, Namkhana, Patharpratima,
Canning I, Canning II, Jaynagar I, Jaynagar II, Kakdwip, Mathurapur I, Mathurapur II,
Sandeshkhali I and Sandeshkhali II (Ibid.). The following sub-sections provide detailed account
of socio-economic status of the Sundarban fishermen and examines fishing and honey collection
in detail.

**Socio-economic Profile of Sundarban Fishers**

After agriculture, fishing is one of the major ways of earning a livelihood in the
Sundarban. The Sundarban fishers are considered marine fishers as they catch fish in the estuaries
as well as in the open sea. The district of South 24 Parganas, in which 13 blocks of the Sundarban
fall, has a marine fisher folk of 197,781 spread over in 68 Gram Panchayats (CMFRI 2010).
Among the several community development blocks of South 24 Parganas, Gosaba (Figure 3.4)
shares an immediate boundary with the STR. The landless people, who live in several villages of
Gosaba and those adjacent to the boundary of the STR, frequently visit the mangrove forest for
fishing, crab, wild honey and prawn seed collection (Figure 3.5 and Table 3.4). According to a
recent enumeration conducted by the Fishery Extension Officer (F.E.O.) of Gosaba, the total
number of marine fishermen in the block is 9,427 (Discussion with the Fishery Extension Officer,
Gosaba 2011). In a discussion with the F.E.O. of Gosaba I was informed that it is hard to count the number of genuine fishermen who venture into the forest for fishing. The statistics may vary year to year because in some years some people might not catch fish in the forest and opt for daily wage labor in cities or opt for some other businesses.

Figure 3.4. Gosaba Block shares a boundary with the Sundarban Tiger Reserve (STR). Gosaba Block is the primary research site.
Figure 3.5. The percentage distribution of land holdings among fishers of Gosaba, South 24 Parganas, West Bengal. Here, the land holdings only include the land on which fishers live i.e. homestead. The land holdings are measured in *katha*; 1 *katha* is equivalent to 720 sq. feet or 66.89 sq. meters. According to the fishers, ideally, a rich person in Gosaba should have 2 acre of land. There are people in Gosaba who have 20-25 *bigha* of land and therefore they are considered rich people.

The ancestors of the fishers in Gosaba originally lived in present day Bangladesh and migrated in Gosaba Block during a time when Daniel Hamilton, the Scottish entrepreneur, arrived in Gosaba in 1903. During the British period, the vast mangrove forest land in the Sundarban was divided into large parcels which were called lots. These lots were distributed to individuals on a condition that they would initially cultivate the land free of rent and later, when the production from the land was sufficient, pay a certain amount of rent to the government according to the quality of the land. Daniel Hamilton took a lease of 22,000 acres of land from the British government covering lots no. 143, 148 and 149 (Mishra 2007; Mukherjee 1996). Gosaba and Rangabelia, the two *mouzas*\(^{27}\), and the entire Satjelia Island, all are located in the present day Gosaba block and fall under these three lots.

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\(^{27}\) A *mouza* is the smallest administrative unit organized by the British in colonial India. The purpose was to collect revenues. Each *mouza* has a Jurisdiction List number or J.L.No. by which it can be identified.
Most of the fishers who catch fish and crabs in the Sundarban forest are *Paundra Kshatriya, Namasudra, and Jele* by caste. All of these castes are at the lowest tier of the caste system in India and belong to the *Sudra* caste. *Paundra Kshatriyas* are locally known as Pods and the term “pod” has a derogatory meaning in Bengali which means “arse.” Therefore *Paundra Kshatriyas* in the Sundarban do not refer to themselves as pods as it is offensive (Jalais 2010) and prefer the term *Paundra* or *Paundra Kshatriya* which is much more respectable. All of these castes are considered “depressed” or “scheduled” castes according to the census record of India. The majority of my interviewees from the Gosaba block were *Paundra Kashtriyas*.

Interestingly *Namasudras* and *Paundras* do not claim themselves as caste-based fishers or *jat-jele*. Caste-based fishers are those who are fishermen by their caste-based occupation such as fishermen belong to the caste called *Jalia-Kaibartya* (Hutton 1963 quoted in Pramanik 1993). *Namasudras* and *Paundras* were the two major land-holding castes of undivided Bengal who migrated and settled in the Sundarban mainly from Khulna and Jessore districts of present day Bangladesh, when the British government took initiative to turn the vast mangrove forest into agricultural land (Chakrabarty 2007). However, Hunter (1875; 1998, 36) in his *A Statistical Account of Bengal* indicated that *Paundras* were “cultivators, fishermen, and woodcutters.”

Many of the fishers, belonging to the *Paundra Kshatriya* caste, whom I interviewed in Gosaba Block, informed me that their forefathers were primarily engaged in agriculture before migrating to the Indian parts of the Sundarban and slowly started catching fish and crabs mainly for their subsistence. So, in the case of the *Paundras*, fishing inside the Sundarban mangrove forest, as an occupation, could be considered a gradual addition to earning a livelihood after settling in the

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There could be one or more than one village in a *mouza*. The Census of India provides village level data and for them a *mouza* is equivalent to a village.

28 “Scheduled Caste” (SC) is a term given by the Government of India to identify groups of people who had been socio-economically marginalized and disadvantaged prior to India’s independence and remain so after independence.
reclaimed forest lands. In contrast to the *Namasudras* and *Paundras, jeles* are the traditional fishing castes and include *Malo, Rajbanshi* and *Bagdi* people (Chakrabarty 2007).

Fishermen in Gosaba generally have a low level of education. Only three percent of my total interviewees in Gosaba studied beyond secondary level (above 10\textsuperscript{th} grade). 20 percent of the total interviewees were illiterate that means they did not know how to read and write in any language including Bengali. Bulk of the fishermen mostly obtained primary and secondary education. The average family size of fishers in Gosaba is five. 71 percent of the interviewed fishers in Gosaba have a family size of 4-8 and 26 percent have a family size below four. The following two diagrams provide graphical representations of level of education and family size of fishing communities of Gosaba and (Figure 3.6 and 3.7)

![Fishermen's Level of Education in Gosaba, South 24 Parganas, West Bengal](image)

*Figure 3.6. Level of education among fishermen of Gosaba, South 24 Parganas, West Bengal*
Figure 3.7. Family Size of Fishermen in Gosaba, South 24 Parganas, West Bengal

Socio-economic Profile of Bakultala—A Community of Fishers and Crab Catchers

This sub-section explores the socio-economic profile of Sundarban fishers in a small community named Bakultala located in Sadhupur mouza, Satjelia Island, Gosaba. I provide this specific example to demonstrate the physical and social environment of local residents living on the edge of the Sundarban Tiger Reserve (STR). Furthermore, this sub-section highlights the struggles of the early settlers in the Sundarban who reclaimed the land out of the mangrove forest.

My interviewees from Bakultala reported that their grandfathers and fathers migrated from different villages of Khulna district of Bangladesh such as Harinagar-Munshiganj, Koyra-Betkashi, Kalabagi-Chhutorkhali, and Shyamnagar in the 1920s and 30s. When I visited Bakultala in 2011 and 2012, the total population of this community was 1,151 and the number of households was 220. The total number of households in Sadhupur mouza is 1,731 (District Census Handbook South 24 Parganas, 2011). The average size of a fisher’s household in Gosaba is 5.
The fishers of Bakultala live along the Pathar River, which creates a natural boundary between the Sundarban mangrove forest and the inhabited portion of the Gosaba block. One could hardly find the name “Pathar River” on the map of Gosaba. On the map of Gosaba, the Pathar River is marked as “Dattar Passur Khal” which is a part of the “Sajnekhali Khal.” The aerial view of the Bakultala shows it as an almost rectangular plot of land dotted with settlements parallel to the Pathar River (Figure 3.8).

An earthen embankment, locally called bandh, built along the Pathar River in the south, protects the community from the tidal inundation and flooding. The height of the bandh ranges between 4 feet and 5 feet. A brick paved road runs parallel to the embankment joining Annpur mouza in the west. A branch of this road runs in the north-south direction and joins Bakultala to the community of Schoolpara in the north. The eastern boundary of the Bakultala is demarcated by the Hazrakhali Khal which joins the Pathar River. A brick path also runs parallel to this khal and joins another brick path in the north of Bakultala which leads to a locality named Hentalkhali. Each Monday and Friday, people from distant villages and also from the Bakultala visit Hentalkhali to buy and sell goods in the market. This weekly market at Hentalkhali is called haat in local dialect and is the most important commercial center near Bakultala. The Hentalkhali haat (Figure 3.9) is also known as hatkhola among the local residents of Sadhupur mouza. The residents of Bakultala either walk or use cycles to commute within the village. People also use mechanized boats which are popularly called bhutbhuti to commute from one village to other. Besides boats, there are mechanized vans run on the brick paths of Sadhupur mouza. These mechanized vans have recently replaced non-mechanized vans in major parts of the Indian Sundarban.
Figure 3.8. The map shows the landuse-land cover of Bakultala, Sadhupur mouza. The homesteads of the fishers are protected from tidal inundation and flooding by an earthen embankment or bandh, the height of which ranges between 4 feet to 5 feet. The mangroves are found on the mudflat along the edge of the embankment. Some of these are planted by the fishers who brought saplings or seeds from the forest and planted on the mudflats in order to protect themselves from raging cyclones. People prefer to walk on the crest of the bandh as it provides an overall view of the tidal rivers, creeks, and distant forest which remain out of sight if they walk on the unmetalled road lying along the base of it. Several ponds are scattered on this parcel of land and water from these ponds is used for bathing and cleaning. Sometimes pond water is used in irrigating cultivated lands. (Cartography by Sen and Ghosh)
Every resident of the Bakultala has a small patch of land either in front of their hut or behind the hut in which people grow seasonal vegetables during the dry periods of the year. Each homestead of the community also includes a pond. Local residents bathe in the ponds. Pond water is also used for washing and cleaning. The agricultural land in the Bakultala lies behind the settlements. Local residents of the Bakultala call this agricultural land bilan which means a low agricultural field that is submerged under the water during the rainy season. The bilan is dotted with some natural water bodies and ponds which provide irrigation to the cultivated land.

Residents cultivate aman paddy\textsuperscript{29} once a year. The aman paddy is transplanted during the monsoon season (July-August) and the crop is harvested in the winter (December-January). The cultivation of paddy in the Sundarban is primarily dependent on rain water. However, some well-off farmers use diesel powered- pumps in order to supply water in the paddy fields.

\textsuperscript{29}Aman is a type of paddy grown in the lower Gangetic delta. In other words, it’s type of rice which is mostly consumed in the state of West Bengal.
As I mentioned earlier in this chapter, most of the fishers’ ancestors in Gosaba block did not immediately start going in the forest for the collection of honey, catching fish and crabs or cutting wood after migrating to the Sundarban region. In the initial phase of land reclamation, people who migrated from present day Bangladesh to the Gosaba, South 24 Parganas, first cleared the mangrove forest to make it habitable and built embankments to prevent saline water incursion from numerous rivers and creeks of the Sundarban. The early settlers faced all sorts of adversities including lack of drinking water, low productivity of the land and the fear of wild animals including Bengal tigers and crocodiles. The ancestors of the current fishers built machas\(^{30}\) in the trees and lived there with their families to avoid fearsome tigers and other wild animals. It was extremely hard for the inhabitants to plow the land by employing oxen due to the aerial roots on the ground. The aerial roots, called muro in local dialect, used to hurt the feet of both humans and cattle. Instead of plowing the land, the inhabitants used to spread paddy seeds on the ground to produce meager amounts of rice which was only consumed for subsistence.

Kanai Halder, one of the residents of Bakultala, described how his grandfather Kshetromohan lived on a macha along with his grandmother Sarada. The following vignette is directly quoted from my conversation with Kanai to illustrate the early settlers’ everyday struggles in swamp land of the Sundarban.

\[\text{When my grandfather Kshetromohan settled here during the time of abad}\text{, he used to live on a bamboo platform or macha built on a tree. My grandmother also lived on the macha, a considerable part of her life along with my grandfather. All of their neighbors also lived on several machas built nearby. One day, my grandfather had gone to work in the field with his neighbors Gyan Sardar. They used to leave early in the morning. My grandmother used to cook on the ground, under the tree. After finishing cooking she used to climb on the macha with a ladder. That day, after my grandfather left to work, she could not climb down from the macha as she found a tiger roaming aimlessly under the tree. That day she could not cook food. The whole day she was stuck on the macha until she found my grandfather to return from work in the afternoon. My grandfather and his neighbor Gyan, who was an adivasi, noticed the tiger from a distance. They built a fire and finally drove away the tiger.}\]

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\(^{30}\) A macha is a bamboo platform.

\(^{31}\) The Bengali word abad literally means a process by which a mangrove forest region is transformed to a cultivated and settled area by cutting trees.
Tiger attacks in the villages were very common in the early days of human settlement in the Sundarban and in those days villagers were rewarded in cash or kind for killing tigers. Paresh Mandal, a resident of Bakultala was rewarded 5 bigha (1.65 acre) of land by Daniel Hamilton for killing a ferocious Bengal tiger. Kanai informed that his grandfather Kshetromohan assisted Paresh Mandal to kill the tiger. According to Kanai, Paresh Mandal, his grandfather and other villagers dug a large ditch beside the road. Then they tied a cow near the ditch as bait. Paresh Mandal, Kshetromohan and others waited in the ditch and Paresh Mandal kept his gun ready. The tiger was clever. It came very swiftly and pulled the cow by attacking the animal’s nape before Paresh Mandal could shoot. So, the first attempt to kill the tiger failed. The next day Paresh Mandal and others built a bamboo platform (macha) on top of a tree and tied the cow below the macha, with the tree. This time Paresh Mandal did not miss the chance and shot the tiger (Figure 3.10).

Figure 3.10. Paresh Mandal and other villagers after killing a Bengal tiger on Satjelia Island, Gosaba. Paresh Mandal is standing on the right of Daniel Hamilton. This photograph was collected from a local resident of Bakultala.
Regulations on Fishing, Honey Collection and Other Economic Activities in the STR

Any kind of extractive activities including harvesting of timber and fuel woods are prohibited in the core area since the formation of the STR in 1973. Previously, timber was extracted from the present core area. The local people living in the fringe villages of the STR were allowed to collect Non Timber Forest Produces (NTFP) such as golpata (*Nypa fruticans*), *hental* (*Phoenix paludosa*), honey and bee wax with permits even after the formation of the tiger reserve. The State Forest Department stopped *golpata* collection in 1978. Since 1991 the department also banned the collection of *hental* (STR Management Plan 2000-01-2009-10).

At present, local people can only collect honey and bee wax from the Sundarban forest during the summer (April-May) as NTFP. During this time permits for honey collection are distributed to local residents from the several range offices of the STR (e.g. Sajnekhali Range Office). Legally, honey collection is only allowed in the buffer area, but Sundarban honey collectors (Figure 3.4) explore the entire STR in search of beehives (*chaks* in local dialect) during the time of honey collection. Many honey collectors have an idea that during the honey collection season there is no legal restriction in terms of accessing the Sajnekhali Wildlife Sanctuary and the core. Therefore, the honey collectors do not hesitate to venture into the forest of Tarobanki, Gazikahli, and Choragazikahli; all of which fall under the Sajnekhali Wildlife Sanctuary. Unlike honey and bee wax, fish and crabs are not directly considered forest products though they are important parts of the Sundarban mangrove ecosystem on which avifauna such as herons and common kingfishers survive.

**Honey Collection from the Forest**

The following paragraphs provide a detailed account of honey collection from the Sundarban mangrove forest. It also demonstrates how people interact with nature which in this case is the mangrove forest and wildlife. Furthermore, it demonstrates how the conservation model in the Sundarban Biosphere Reserve (SBR) cannot be understood as a fortress conservation model or simple top-down conservation model in which local people’s rights to
access to forest-based resources have been completely curtailed. Here, biosphere reserve managers provide permits to local people to obtain the honey from the forest. Wild honey collection is important to the Forest Department as it provides revenue to the department. In 2011-12, the Forest Department collected 18,025 kilogram of honey from the Sundarban Tiger Reserve (STR), the value of which was Rs. 10,27,425 ($17,135) (Table 3.5). The honey collectors are aware of the fact that the biosphere resource managers value the wild honey from the Sundarban forest and during my interviews with them the honey collectors of Gosaba emphasized that point. Honey is also produced by the beekeepers in the fringe villages located adjacent to the boundary of the STR. This further complicates the model of fortress conservation because the Forest Department seeks cooperation from the local residents (e.g. members of EDCs) to manage such honey production.

Honey collection is one of the economic activities which falls under the jongol kora that I have explained earlier. At present, honey collection is considered the most risky work in the Sundarban forest. According to the fishers in Gosaba, searching for wild honey in the forest is equivalent to searching for tigers. Each summer when fishing is closed, the STR authority issues permits for wild honey collection from the forest. The permits are issued from the Sajnekhali Range Office and from Bagna Beat office which fall under Basirhat Range (Fieldwork Experience 2012). In general, the department issues permits for 15 days to the honey collectors of the Sundarban (Singh et al. 2010). Sometimes, when there is more honey produced in the forest, the department issues permits for another 15 days to collect the excess honey. The general interval between issuing the first and second permits are 18-20 days. In 2012 summer, about 36 boats were given permits for honey collection from the Sajnekhali Range Office (Ibid.). The collected honey is stored at different warehouses of the STR which is then sent to West Bengal.

32 In local dialect fishers sarcastically say: Madhu khonja mane bagh chesta koral madhu khonja mane bagh khonja
Forest Development Corporation Limited, a company which sells the honey under the brand name called MOUBAN\textsuperscript{33} (STR Annual Report 2011-12).

During my stay at Pakhiralaya, Gosaba, I met Binoy, a 45 year old fisherman and honey collector. Our in-depth conversation at his homestead provided me a clear picture of traditional method of honey collection in the Sundarban mangrove forest. For honey collection, minimum four people are necessary. However, people prefer to form large groups of 9-12 people in order to minimize human-animal conflict in the forest. Prior to the honey collection trip in the forest, a group meeting is held among honey collectors who decide to form a team. Generally the meeting is held at the team leader’s house in the village. The team leader in a honey collection team is called \textit{sajondar}. The entire process of honey collection including the journey from the village and return to it is called \textit{mahal}. During this meeting the \textit{Sajondar} and other members decide a particular forest block in the STR which will be explored for the potential honey collection. The \textit{sajondar} also explains the rules of \textit{mahal} to all members of the team. Honey collectors or \textit{maules} are expected to follow certain rules in the forest. The avoid using certain words such as “bleeding” which is \textit{raktopat} in Bengali. Instead of \textit{raktopat} honey collectors use \textit{aatha sorchhe} which literally means flowing of gum. Bleeding in the forest is considered inauspicious and therefore honey collectors try hard to avoid such situations which might cause bleeding. The honey collectors are not supposed to use abusive language to each other while collecting honey in the forest. Forest is a sacred place for the \textit{maules} where \textit{Ma Banabibi}-the Goddess of the Forest resides. Therefore, honey collectors are not supposed to pollute the forest land by spitting, urinating and defecating\textsuperscript{34} (Jalais 2010; Fieldwork Experience 2012). If one uses abusive language to other, the person is charged a fine by the \textit{baule} or \textit{gunin}, a member of the honey collection team who has power to perform magical rites in the forest to protect the team from any

\textsuperscript{33} WBFDCL was established in 1974 to sell non-timber forest products and other forest produces at reasonable price. Please See: \url{http://www.wbfdc.com/index.html}

\textsuperscript{34} Fishers including crab catchers also consider forest as sacred place and follow these rules. Furthermore, they are supposed to maintain a calm behavior while working in the forest (Jalais 2010).
dangers in the forest. The term baule, bawali or bawliya was originally used to refer to woodcutters (Chakrabarty 2007; Jalais 2010). Today, people of the Sundarban use it to denote a person who has the ability to control tigers by their magic spells (Chakrabarty 2007). Maules and Baules in the Sundarban are occupational groups and therefore should not be identified as castes. Anyone can choose an occupation of a baule and/or maule irrespective of their castes and religions (Ibid.).

During the meeting which is held prior to the honey collection, a Sajondar also explains the rules for women whose husbands participate in a mahal. When men go for honey collection in the forest, wives of these men do not put vermilion along the paring of their hair. During mahal, wives of the maules should bathe and cook food before sunrise (Fieldwork Experience 2012). There are many other taboos such as wives of the maules should not wash their clothes with soaps, should not comb their hair, and should not visit any crematory until their husbands return from the forest (Chakrabarty 2007). The family members of a maule should stay in the village until the maule returns from the mahal. In this meeting the members also talk about renting non-mechanized boats, cost of renting such boats, and the total cost of arranging a trip in the forest. The sajondar is entirely responsible to organize a mahal. However, other members who decide to form the team do help in this arrangement. The rent of a boat varies from Rs. 2,500-3,000 ($42-50) for a 15 days honey collection period. The amount of rent does not change if the honey collectors return to the village early. Binoy informed me that a mahal is very expensive these days; especially when 10-12 persons form a honey collection team. The total expenditure is Rs. 18,000-20,000 ($300-334) for a 14 days period and the entire cost of a mahal is borne by the sajondar. In the summer of 2012, Binoy went for honey collection with other honey collectors of Pakhiralaya. 12 people formed a team and two boats were hired. The cost of rent for the two boats was Rs. 6,000. The cost of grocery (khaoa khorcha) for a 14 days period having 12 members ranges from Rs. 8,000-10,000 ($133-167). In addition, the sajondar must give Rs. 400-500 ($7-8) to each member of the team. This money is provided to sustain the family of the
honey collector in his absence. Even if a honey collector does not need such money, the *sajondar* should give at least Rs. 100 ($1.67) to him to carry out the rites of honey collection. Besides the *khaoa khorcha*, there is some expenditure for worshipping *Ma Banabibi*. Forest goers in the Sundarban region strongly believe that *Ma Banabibi* can protect them from any possible dangers in the forest including the tiger attacks.

On the day of *mahal* the *sajondar* provides a piece of cotton towel, usually called *gamchha* to each member of the team. The Sajondar also provides new clothes such as shirts and pants to the members of the team. During a honey collection trip the honey collectors load their dinghies with rice, pulses, spices, oil, salt, *batasa* (a round shaped sweet cake produced from either sugar or molasses), incense sticks, and plastic garlands. In addition, they carry 20-25 plastic barrels to store honey in their dinghies and 8-10 urn-shaped pots made of aluminum which are called *handi* in local dialect. Each barrel can store 200 liter honey. These aluminum pots (*handis*) are used to collect honey from the beehives. Before leaving the village, the honey collectors worship *Ma Banabibi* by burning incense and offering her *batasa*. Sometimes, instead of worshipping the goddess in the village, the honey collectors worship her at the Sajnekhali Range Office as they are required to collect the permit for honey collection from the department prior to the trip in the forest. Interestingly, the Forest Department does all the arrangement to worship *Ma Banabibi* in the temple built within the premises of the Sajnekhali Range Office. A priest is invited from the nearby village to worship the goddess. The department does not issue permits until they worship the goddess and distribute the food-offering among the honey collectors. It should be noted that each major forest office in the Indian Sundarban has a small temple of *Ma Banabibi* built within its premises. The honey collectors who live in remote islands try to reach the forest offices one-two days prior to the day on which the department issues the permits. The department does not start issuing the permits until all honey collectors reach to the Sajnekhali Range Office or the forest office at Bagna. Although the forest department values local people’s faith on *Ma Banabibi*’s power to protect them from tigers, it distributes rubber
masks to the honey collectors nonetheless. These rubber masks resemble human face and are put on at the back of the head to deceive tigers into thinking that they are watched by humans and therefore would hesitate to attack from the rear. The forest department introduced these rubber masks in the late 1980s (Sanyal 1998) in order to reduce human-tiger conflict in the forest. Interestingly, the department does not provide any protective clothing to protect the honey collectors from the bees.

In the course of conversation with the honey collectors I was informed that in reality honey collectors do not wear the rubber masks while working in the forest. When I asked the reason they said that rubber masks do not save them from the tiger attacks because Sundarban tigers are very cunning and they are not easily deceived. Besides, these masks are not sturdy and are easily torn into pieces when the honey collectors work in the forest, so they usually ignore the Forest Department’s recommendation. Each honey collector should also have Janata Personal Accident Insurance (Figure 3.11) without which permit is not given by the Forest Department. Honey collectors buy this insurance from nationalized insurance companies like National Insurance Company Limited. Anyone who is below 60 years old can buy such insurance. The annual premium is Rs. 100 ($1.67). The agents of the insurance companies help the honey collectors to complete their paperwork and pay their annual premium.
Ma Banabibi (Figure 3.12) is also worshipped on the day of return to the village. Before leaving the forest, the honey collectors build a small hut on the forested island with *hental* leaves and *garan* sticks. Then they prepare her *than*\(^{35}\) and offer her *batasa* (sweet cake), *michhri* (sugar cube), *chhola* (chickpeas), *gur* (jaggery), *aalu* (potato) and *shasa* (cucumber) (Fieldwork Experience 2012). The worshipping will not be completed if the honey collectors do not read the story of *Ma Banabibi* from the book titled *Banabibi Jahuranama* (Chatterjee Sarkar 2010). The *Sajondar* also worship the goddess after returning to the village within one year of the trip. The *sajondar* bears the entire cost of this worshipping. He sells the honey kept in a *sajon-kalsi* (an earthen pitcher) on the dinghy, during the 15 days period of honey collection. Each day, the honey collectors pour some amount of honey in that *kalsi* (pitcher) owned by the *sajondar*. The honey thus collected is used to worship *Ma Banabibi* after returning to the village. The *sajondar* also sells some amount of this honey and thus somewhat compensates his expenditures of arranging a *mahal*.

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\(^{35}\) *Than*: It is a Bengali word. It denotes an earthen mound prepared on the ground for the deity.
Honey collectors start working in the forest in early morning. Usually they start working from 7 a.m. and continue until 1 p.m. Binoy informed me that they do not work in the forest from 1 p.m. to 3 p.m. This time is called *atirikto somoy* which literally means extra time. The honey collectors believe that if they work during the *atirikto somoy* they would face different problems such as honey collectors might get stung by the wild bees or they might hurt their feet on the ground due to the aerial roots of the mangroves. In order to avoid such incidents the honey collectors avoid working between 1 p.m. to 3 p.m. The other important reason is that after noon time, temperature rises and it becomes difficult to work in the forest. From 3 p.m. onwards the honey collectors again start their work in the forest and continue until evening. By the evening they try to collect significant amount of honey.

In the early morning, before landing on the ground from their dinghy the honey collectors prepare *karu* or *bullen*. A bunch of *hental* (*Phoenix paludosa*) leaves are tied together to form *karu* which is burnt to produce smoke during the honey collection. Tapas, another honey collector from Pakhiralaya explained that a specific technique is used while making the *karu*. 

**Figure 3.12. Ma Banabibi** (the Goddess of Forest) is worshipped by all forest goers in the Sundarban.
First dry *hental* leaves are tied together. Then these dry leaves are surrounded by green leaves. When *karus* are burnt in the forest to drive away the bees from the beehives, these green leaves help to produce only smoke and not fire. Thus, driving the bees away by producing smoke, help the honey collectors to protect them from the bees’ attacks. On the days of honey collection, the honey collectors prepare 20-30 *karu* before landing on the forested islands. Tapas explained that they cannot make *karu* in advance as fresh, green leaves are essential to produce smoke. On the day of honey collections the honey collectors have their breakfast early morning, finish making *karus*, take bath and prepare themselves to alight from the dinghy. In a group of four, they carry one aluminum *handi* with them. In a group of 8 and 12 people, they carry two large sized aluminum *handis*. Honey collectors do not go to the forest without a *baule*. It is the *baule* who disembark first from the dinghy. Others follow him. After setting his feet on the ground the *baule* check the forest earth or *mal* to understand if there are any possible dangers around. First, the *baule* will find an open space generally under a *Garjan* (*Rhizophora mucronata*) or *Garan* (*Ceriops decandra*) tree, and then he would crouch on the ground and touch the earth (*mal/matı*) with his fingers. During this time he will recall names of his parents, five *pirs* and five *bibis* (Jalais 2010, Fieldwork Experience 2012). He silently starts chanting mantras to create the magic spell to ward off tigers and spirits. Every member of the honey collection team then touches the earth, recalls Ma Banabibi and enters into the forest (Fieldwork Experience 2012). The *baule* ties a piece of the *mal* with his body and carry it during the entire honey collection period. Before returning from the forest to the dinghy, the *baule* breaks the magic spell (Jalais 2010, Fieldwork Experience 2012). Manoj, a honey collector and *baule* from Bakultala, Satjelia Island, informed me that if the *baule* finds the forest ground is not suitable for honey collection after checking the *mal* or there could be possible dangers then he directs the team to go to a different part of the forest. After alighting from the dinghy, the *baule* again checks the *mal*. Thus each time a honey collection team lands on the forest ground, the *baule* would check the *mal*. Manoj highlighted the importance of checking *mal* by saying that a *baule* search for tigers’ footprints (pugmarks) on the
forest ground while checking the *mal* and if he sees such footprints he warns the entire team and the team leaves that spot immediately (Fieldwork Experience 2012).

During my fieldwork in Gosaba, I noticed a dwindling faith on the *baules* among the honey collectors of Pakhiralaya. Honey collectors from Pakhiralaya do not include a *baule* in their team. Tapas, a honey collector at Pakhiralaya explained that he does not believe in the magical power of a *baule* and therefore never went in the forest with a *baule*. He told that there were many accidents occurred in the forest where a *baule* was first devoured by a tiger. If *baules* have capability to save people from tiger attacks, those *baules* could have saved their own lives. Slowly it was revealed to me that since the death of Shankar *Sadhu*, a very powerful and reputed *baule* from Jharkhali, the honey collectors of Pakhiralaya started losing their faiths on *baules*.

According to Tapas, Shankar *Sadhu* was so courageous that at night he used to sleep on the forest floor spreading *hental* (*Phoenix paludosa*) leaves on it. He stated that when a man like Shankar *Sadhu* who had magical power could be killed by a tiger in the forest, then it raises questions to the practice of including a *baule* in a honey collection team. Here, I should mention that as compared to the honey collectors of Pakhiralaya, honey collectors in Satjelia Island have a very deep faith on the abilities of the *baule* and no one would venture forest without a *baule* during the time of honey collection. Pakhiralaya is better connected to the city of Kolkata as compared to the villages on the Satjelia Island. Each year the people of Pakhiralaya come under the influence of a large number of tourists from the city and its suburbs. Tourists not only come from the city of Kolkata but from various districts of West Bengal as well as outside of West Bengal. Urbanites who visit the Sundarban to enjoy nature and wildlife do not have much faith on the capability of *baules* to protect people from the tiger attacks and other potential dangers in the forest. To the urbanites using mantras to control the venture of tigers in the forest is gibberish and does not make any sense. The honey collectors of Pakhiralaya have come under this urban influence due to increasing contacts with the city people and have started questioning the ability of a *baule* to control tigers in the forest by their mantras. The reality that *baules* are not even
spared by tigers has weakened their faith in baules like the city dwellers. Instead of depending on baules for their protection, each honey collector of Pakhiralaya carry an amulet with him given by a renowned Pir\textsuperscript{36} of Bangladesh. Honey collectors collect these amulets by their own social contacts in Bangladesh. The forest goers of Pakhiralaya have immense faith on these amulets and that is another reason that they do not include any baule in their team.

After landing on the forest ground (Figure 3.13), honey collectors search for beehives. Searching for beehives is called madhu chhanta and people who search for beehives are called chhanta. In a honey collection team each person is assigned a specific job. Among all members one person always stays in the boat and honey collectors call him bhorel. He cooks food for the fellow members and take care of the boat. His job is also to help other members to maintain their direction in the forest. Tapas, one of interviewees at Pakhiralaya informed me that when honey collectors search for beehives they watch on the movement of the bees. Therefore it is very easy to lose direction in the forest when honey collectors are engaged in madhu chhanta. Tapas said that if they enter into the deeper parts of the forest it becomes harder for them to understand the location of their boat anchored in the river. The person who stays at the boat keeps a singhe (horn made of buffalo skin) with him. He blows the singhe time to time so that his team members who are in the forest can hear that sound and can understand the direction of the river. Tapas explained that in a group of nine people, eight people enter the forest for honey collection. After entering the forest in a group of eight, two experienced persons who understand the forest better are given charge of the entire team. These two men walk along the river and maintain the river side direction. These two men are important as they help in navigating others. Honey collectors in the Sundarban generally avoid dense mangrove forest and try to be in that part of the forest where trees are tall and relatively apart from each other. Tapas said: amra unchu ban dekhe choli; jegulo patla ban, baro baro gachh ache segulo dekhe choli. When the honey collectors look for beehives in the forest they don’t walk closely. They walk far apart from each other. The

\textsuperscript{36} Pir or Peer is equivalent to saints in Islamic religion.
person who can find the highest number of beehives gets credit for his work from fellow team members. In 2012 summer, Tapas and his fellow honey collectors located 15 beehives in a single day out of total 15 days period. For other days they located 10-12 beehives. From a single beehive they collected 30 kilogram of honey. The amount of honey varies from one beehive to other. It could be 5 kilogram to 30 kilogram and therefore amount of honey from a beehive cannot be predicted. When a honey collector locates a large sized beehive he becomes very delighted. His hard work is highly appreciated by his fellow team members. In 2012 summer Tapas and his team members collected 30 kilogram honey from a large sized beehive and that was the highest amount of honey received from one chak in a 15 days honey collecting period.

After locating a beehive on a tree, the first job for the honey collectors is to drive away the bees so that they are not stung by those bees. Honey collectors burnt their karus to create smoke which drives away the bees from the chak. One person climbs the tree to cut the chak. This person is called katni-mahale or gachhal. The katni-mahale first ties him with the tree by a rope. Then he uses a sickle to cut the chak. Another person stands below the tree and holds an aluminum handi below the chak. This aluminum handi is called aari and the person who holds the handi is called aariwala in local dialect. When the katni-mahale climbs down the tree, the other members of the team produce more smoke from the karus to make him safe from the bees’ attacks. Bishunapada informed me that after they cut the chak they walk through the forest for some distance and after walking a while they put out all the karus. This prevents bees to follow the honey collectors and save the honey collectors from bees’ attacks. Tapas, a honey collector like Binoy explained me that the work of a katni-mahale is important as not all members in a honey collection team know how to cut a beehive. While cutting the beehives a person should not kill the larvae from which new bees will born. After the aari gets filled, the aariwala takes the aari back to the dinghy. One person from the team also helps the aariwala as the aari becomes very heavy. Both of them cut a garan stick, and hang the aari from the stick. In order to carry the aari easily, both of them put the stick on their shoulder. One of the team members
walk ahead of these two persons with a chopper and chop the forest to make a clear path so that the aariwala and the other person can come out of the forest without any hindrances. Tapas explained that if eight persons enter the forest, first all of these eight persons look for beehives. If they find two chaks, the eight people get divided into two groups. Four people collect honey from one chak and the other four collect from another. In the evening, after coming back in the dinghy the honey collectors extract the honey from the chak and separate wax from the honey. They also clean the raw honey by separating larvae, pupa and dead bees.

![Honey collectors are preparing to embark on the forested island](Source: STR Annual Report 2010-2011)

**Figure 3.13.** Honey collectors are preparing to embark on the forested island (Source: STR Annual Report 2010-2011)

Besides fear of tiger attacks in the forest the honey collectors in the Sundarban are afraid of people from Bangladesh who enter the Sundarban forest illegally and loot the honey collected by the Indian honey collectors. In 2011 summer, a group of honey collectors from Bakultala, Satjelia Island, was attacked by a group of Bangaldeshi pirates who looted 800 kilogram honey and 100 kilogram wax. Besides the honey and wax, the pirates also looted their implements which included new aluminum pan, some barrels, fishing net, and aluminum handi. Mahin, one of the honey collectors from that team described the incident. It was afternoon, around 4 p.m. when the pirates attacked Mahin’s dinghy. Mahin was alone in the dinghy and other team
members were in the forest. According to Mahin’s description all the pirates were armed with pikes and spears. They were about to kill Mahin with their pikes. Mahin pleaded to the pirates for his life and assured them no one from his team would harm them. The pirates then allowed Mahin to call his team members. When other honey collectors came back to the dinghy, one of the honey collectors called one dacoit as dharmo bap which means the person is equal to the honey collector’s father. The honey collector who called dharmo bap to one of the pirates did not know him in person. But in order to save everyone’s lives, the honey collector established a kinship instantly on the spot. This type of kinship establishment is common in the Sundarban region and termed as “elected kinship” (Jalais 2010, 93). Mahin and other honey collectors also explained to the pirates that after Aila in 2009, they have become more dependent on forest products such as honey, fish and crabs. They further explained if the pirates take away their honey, they would have nothing to eat. In reply, the pirates mentioned that honey collectors would sell that honey to the Forest Department at a very low price (Rs. 45-50 per kg) which would incur a huge loss. If the pirates take away the honey into Bangladesh, they would sell it at a rate of Rs. 200-250 per kg. As one of Mahin’s team members established a kinship with one of the pirates, the pirates decided to let them go and returned the looted honey, wax and other implements. After the pirates went, Mahin and his team members immediately left that spot and started rowing back to the village. When they were close to Bakultala, they were attacked by another group who were 14 in total. These men looted all the honey and wax they collected. Mahin informed me that the honey, wax, and implements were worth of Rs. 150,000 ($2502). After returning to the village Mahin and other honey collectors reported to the local Gram Panchayat (village council), Gosaba Police Station, and the Sajnekhali Range Office. Later, the forest department officials caught four people and rescued some implements. When I talked to

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37 On May 25, 2009 a cyclone named as Aila devastated the Southern parts of West Bengal including the Sundarban region. The cyclone hit the region with a wind speed of 110 km per hour.
Mahin in summer of 2011, he and his men were yet to visit the Sajnekhali Range Office to collect their implements.

Honey collectors who collect wild honey from the forest are obligated to sell their honey to the Forest Department at a fixed price which is lower than that of open market. Generally, they sell honey at a rate of Rs. 45-50 ($0.67-0.83) per kilogram to the Forest Department. The same honey could be sold in the open market at a higher price of Rs. 100-180 per kilogram (Fieldwork Experience 2011-2012). Because of the higher price of honey in the open market honey collectors do not sell all their honey to the Forest Department. Honey collectors frankly said that if they sell all their honey to the department that will incur loss. After returning from the forest, honey collectors directly go to the forest offices from where permits were issued and transfer honey from their barrels to the barrels provided by the Forest Department. Then the department officials weigh the honey and store the honey in the godown. They record the return date and the amount of honey sold to the department on the permit issued to the honey collectors. After this the permit becomes invalid and honey collectors are not supposed to enter the forest with that permit.

In 2012 summer, Binoy and other honey collectors collected 1,600 kilogram of honey. They sold 600 kilogram to the Forest Department and remaining 1,000 kilogram kept for them. This 1,000 kilogram of honey is equally divided among team members. Sometimes instead of dividing the honey equally among team members, the honey collectors equally divide the earning after selling the honey to the buyers. At Pakhiralaya, local shop keepers buy honey from the honey collectors in summer. Soon after the honey collectors return to the village the shopkeepers contact them for the honey. The shopkeepers buy honey at a rate of Rs. 100-110 per kilogram. Each shop keeper at least buys 400-500 kilogram of honey which costs him Rs. 40,000- 50,000 ($667-834). In winter they sell that honey to the tourists at a rate of Rs. 150-180 ($2.5-$3) per kilogram.
Beekeeping and Honey Collection Outside the Forest

In the Sundarban honey is also collected from the apiary installed in the villages by the beekeepers (Figure 3.14 and 3.15). Bee keepers from the district of North 24 Parganas and South 24 Parganas visit the Sundarban region during the summer and install apiary in the villages in order to produce honey. These beekeepers organize themselves through several associations such as West Bengal Bee Keepers Association, Baruipur Apiculture Industrial Cooperative Society, and 24 Parganas Bee Keepers Cooperative Society Ltd. (Singh et al. 2010, 195).

During my fieldwork at Bakultala I met several bee keepers or mouchasi who temporarily stayed at local residents’ houses for two-three months. Since the 1990s the beekeepers have been visiting Bakultala to set up apiary (Jalais 2010). These bee keepers arrive at Bakultala by the 15th day of the Bengali month Falgun (March-April). Sometimes bee keepers leave the village after setting up the bee keeping boxes and come back after 10-12 days to collect the honey from the apiary. Beekeepers who visit Bakultala mainly come from Maslandapur, Bangaon, and Basirhat, all located in North 24 Parganas of West Bengal. The local residents provide them space to set up apiary for two-three months. If a local resident provide space to set up 100 bee keeping boxes in his homestead, he can earn Rs. 2,500-3,000 ($42-50) in three months. The boxes are divided into full and half based on the number of hive frames hung in the box. A full box contains 18-19 frames whereas a half box contains 7-8 frames. One full box produces 20-23 kilogram honey.

The residents of Bakultala provide shelter to these bee keepers in their own house and treat them like guest. However, the bee keepers are supposed to cook their food in a separate kitchen. Sometimes they share the same kitchen with the owner of the house who provides them shelter.

From Rahim Mandal, a beekeeper from Maslandapur, I learnt that beekeeping is a seasonal activity and provide earning for six months. He informed that beekeepers visit the Sundarban in summer because flowers generally bloom in the forest which helps bees to collect

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38 In most of the rural households in lower Bengal delta a kitchen means a raised platform, the floor of which is made of mud and the roof is thatched by paddy straw.
many different types of pollen. Rahim explained me how the Forest Department monitors the production of honey regulates the transit of forest produces. Upon arrival at Bakultala, every beekeeper visits the Sajnekhali Range Office in order to complete the paperwork. The beekeepers provide an estimate of number of bee keeping boxes to the department which will be set up at Patharapra. They also provide the name of the resident who provides the land for the installation of the apiary boxes. The Forest Department provides one copy of the paperwork to the beekeeper and another copy to the secretary of the Ecodevelopment Committee (EDC). The EDC committee members keep an estimate of total number of boxes installed in their locality. The bee keepers pay taxes to the Forest Department for installing apiary in the Sundarban. Per box the Forest Department charges Rs. 8 to the beekeepers. The private companies such as Dabur, Baidyanath, and Himalaya send their agents to these beekeepers to buy honey. The sellers also pay a certain fee to the Forest Department as they use rivers and creeks to transport honey out of the Sundarban. This fee is charged as “right of way pass” by the Forest Department. At present, per 100 kilogram of honey the sellers pay Rs. 175 to the department.\(^{39}\) In other words, per kilogram of honey the sellers pay Rs. 1.75 to the department. From Satjelia Island honey is first transported to Godkhali and from Godkhali\(^{40}\) honey is transported to Kolkata by trucks.

\(^{39}\) Current fee for transportation of honey through the Sundarban is collected from the office of the Sundarban Tiger Reserve (STR), Canning, South 24 Parganas.

\(^{40}\) Godkhali is located in Basanti Block.
Rahim informed that bee keepers in the Sundarban are dependent on sellers who act as middle men between the beekeepers and the private companies and the private companies which buy honey from the sellers. These sellers have their own unions and they control the price through their unions. Beekeepers like Rahim informed me that sometimes they sold the honey to the sellers as cheap as Rs. 22 ($0.37) per kilogram. Usually, the beekeepers sell their honey to
the sellers at a rate of Rs. 80-85 ($1.33-1.42) per kilogram. The price of honey sold by private companies varies from Rs. 300-350 ($5-6) per kilogram.41 According to Rahim, if the beekeepers can sell their honey directly to the private companies like Dabur India Limited, their hard work will be paid off. He also thinks if the state government does not provide any assistance at least by buying honey directly from the beekeepers, this business will be shut down in the long run.

According to the beekeepers who visit Bakultala in the summer, the cost of beekeeping is increasing day by day. The cost per box is Rs. 3000 ($50). So, each year they invest huge amount of money in this business. Three laborers are needed per box to take care of the bees and beekeepers at least need to pay them Rs. 1,500 ($25) per month. Therefore, the beekeepers at least need to earn Rs. 5,000 ($83) per box so that they don’t have loss. Sometimes beekeepers take loans at high interest rate (5-10 percent) from the sellers to run their businesses prior to the beekeeping season. These sellers who provide loans are called *dadondars*. If a beekeeper takes loan from a *dadondar*, he needs to sell his honey to the *dadondar* for the entire season to pay off his loan. Thus, beekeepers are dependent on these sellers for their business.

At Bakultala, local people do not usually go for catching fish and crabs during the summer season as summer is the closed season for fishing. Therefore, a portion of their income in the summer depends on these bee keepers. Besides giving land to the beekeepers the residents also earn some money by carrying sealed containers filled with honey to the ferry-ghat42 (Figure 3.16). Beekeepers need laborers to transport the containers to the sellers’ boat who visit Bakultala to buy honey. One labor can earn Rs. 12-15 ($0.2-0.3) per container. Men and women both work as laborers and earn some extra cash. If beekeepers stop coming to the Sundarban due to loss in business, one of the earning sources of the local villagers will cease.

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41 I am not able to provide the price at which the sellers sell their honey to the private companies. I did not have any chance to talk to a seller who works as middleman between the beekeepers and private companies.

42 Ferry is often called ferry-ghat. Ghat is a Bengali word which means staircase.
Fishing and Crab Collection

The following subsections provide an overview of fishing and crab collection in the Sundarban. The following paragraphs also analyze the problems local fishers’ experience in relation to the regulation of fishing by the Forest Department. Precisely, it examines the problems associated with Boat Licensing Certificates (BLCs) — a particular license, necessary for fishing in the STR. In sum, the following paragraphs demonstrate the present resource-access struggles of the local fishers in the Sundarban and demonstrates the complexity of conservation in the Sundarban.

Fishing in the Sundarban is usually a team work. Generally five to six people form a team under the direction of a team leader or sainder. During the course of interaction with Ranjan, a fisherman residing at Sadhupur mouza of Gosaba Block, I learnt that fishing is generally done from July to October. During this time, fishers venture into the forest for 8 to 10
days. Generally there are two fishing trips in a month. Fishers catch fish during the period of bhorani that is the thirteenth day to the seventh day of a lunar calendar (Bhattacharya 2010). On the other hand, during morani or lean period the catch is low and during this time fishers generally relax at their homes and get involved in daily household chores. They mend their nets (Figure 3.17) during this time or prepare the don\textsuperscript{43}.

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{figure3.17.png}
\caption{A fisher preparing fishing net at home during the lean period of fishing or morani Morani is counted from the eighth day to twelfth day of each phase of the lunar calendar (Ibid.). From October, fishing is discontinued and Ranjan goes for crab fishing with two other men from his village. Fishers in the Sundarban generally catch mud crabs (\textit{Scylla serrata}) which are one of the largely consumed and economically valued crabs in the Indo-Pacific region (Nandi and Pramanik 1994). Fishers continue catching crabs throughout the winter until the first half of the Bengali month Falgun (Table 4). Crab fishing is always done with three people in a small sized dinghy and conducted twice a month. A typical dinghy (Figure 3.18) which is used

\textsuperscript{43} Don is a specific fishing gear used for crab collection in the Sundarban. In this fishers take a nylon rope from which baits or thopa are hung at a certain interval with the help of several substrings. The length of the rope can vary in between 400-1000 meter. Actually the length depends on the fishing site and fishers’ choice. Small pieces of bricks are also hung from the rope so that the don can sink in the water.
for catching fish and crabs in the Sundarban has three major parts. The tapering front of the
dinghy is called galui whereas the back is called pachh. The middle portion of the dinghy is
called dora. The usual length of a dinghy used for crab collection ranges between 18-20 feet. In
case of fishing, the length of a dinghy varies between 30-40 feet. Besides men, women also enter
the forest for fishing and crab collection. But women generally go for short fishing trips instead
of a longer one.

Fishers in the Sundarban use variety of fishing gears. The most common are monofil net,
fanš jal\textsuperscript{44}, kyapla jal, kanta-don or kanta-barshi, kakra-don, khal pata and jhhar ghera. In case
of monofil net the mesh size varies from 3 fingers to 8 fingers. According to the rule set by the
Forest Department fishers are not allowed to catch fish weighing less than 500 gram. Therefore
fishers use those monofil net which have a mesh size of at least four fingers in order to catch fish
of more than 500 gram (Fieldwork Experience 2012). Monofil net with very fine mesh size is
called ghuni. In the Sundarban Tiger Reserve (STR) fishers are not allowed to use ghunis to
catch fish. Fishers are also not allowed to use pata jal (set barriers), as the mesh size is very
small (Ibid.).

\textbf{Figure 3.18.} A typical non-mechanized boat or dinghy used for fishing and crab collection in the
Sundarban Tiger Reserve (STR).

\textsuperscript{44} Jal\textsuperscript{\textit{}} is a Bengali word which denotes fishing net.
Monofil net and *fash jal* are almost same. In case of *fansh jal*, the mesh size is usually bigger than the monofil and this type of net is used to catch *jawa, chhele* and *bhetki* (*Lates calcarifer*). Monofil net is mainly used to catch *ilish* (*Hilsa ilisha*), *pyra* and *datne* (Ibid.).

Fishers of Bakultala use *kanta-don* or *kanta-barshi* (hook and line fishing) to catch any size of fish. From Satjelia Island the fishers sail down to the island of Kendokhali which is located at the mouth of Bay of Bengal. Sometimes they go beyond Kendokhali from where the island looks like a dot (Figure 3.19). In order to prepare a *kanta-don* fishers buy at least 500 *barshi* or hooks. There are hooks of different sizes. The fishers generally use 7 and 8 number of hooks that can catch any size of fish. These hooks are tied with a rope and then the hooks are set in the river. From these hooks *chara* or baits are hung which attract large fish near the hooks. In order to catch *chara*, fishers use *khyapla jal* (cast net). Generally, *parse* (*Liza parsia*) and *chapra chingri* or Indian White Prawn (*Penaeus indicus*) are used as *chara*. The length of such *kanta-don* (hook and line gear) will be 2000-3000 *hath*. Besides using *kanta-don* fishers in the eastern part of the Indian Sundarban use *jhhar ghera jal* to catch a shoal of fish. In this type of fishing first a *jhhar* or mangrove bush is found which had fallen in the river due to erosion. Then this mangrove bush is encircled by a net. Fish often comes in these bushes in search for food. Therefore, a large number of fish can be caught by using this method. Among all these fishing gears, using *khalpata jal*, a type of *pata jal* (set barriers) involves the greatest risk for the fishers. *Khalpata jal* is used to catch fish in small and narrow tidal creeks or channels which are dried up during the low tide. In this type of fishing, first fishers set the net during the lowest low tide (*sesh bhata*) when the creeks are dry. Bamboo posts and ropes are used to set the net on the channels’ bed. The ropes of the net are kept in such a way that fishers can pull the net during the highest high tide. During high tide fish enters into the creek. During high tide fishers shut the mouth of

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45 *Hath* (hand) is a unit of measurement for length and it depends on the length of the hand of a person who measures it. For convenience people consider 18 inch = 1 *hath*. Revenue Surveys in 24 Parganas during the British period calculated *hath* as follows: 5 fingers' breadth = 1 palm (*musthi*); 6 *musthi* = 1 *hath*
the net so that fish cannot come out. During the lowest low tide fishers start collecting the fish from the net. Sometimes it happens that fish (e.g., kan fish) take shelter in the holes formed in the upper reaches of the creek. Fishers walk on the dry tidal creek to collect those fish which hide into the holes. Fishing with khalpata jal is very risky as it increases the chance of tiger attacks. During the collection of the fish at lowest low tide, the fishers often work far from each other on the dry bed of the creeks which make them highly vulnerable to tiger attacks.

Besides carrying different types of net in a bi-monthly fishing trip, fishers also carry 8-10 blocks (800-1000 kilogram) of ice. These ice blocks are kept in a wooden cold store. In eight to ten days of fishing trip fish are preserved in the cold store with ice flakes. First ice flakes are spread on the bottom of the cold store, and then fish are put on top of it. Finally, another layer of ice is created to cover the fish. In contrast to fish, crabs are kept in the khol (hold) of a dinghy. Before putting the crabs into the khol, the chelipeds are tied with a nylon string so that crabs cannot hurt fishers or anyone else. Water is sprinkled on the crabs every alternative day so that the crabs can survive up to 8-10 days at a stretch. In the past, garan (Ceriops spp.) twigs were used for the preservation of crabs during the fishing trips in the forest.
**Figure 3.19.** The above map shows the locations of Satjelia and Kendokhali Islands. The original image was collected from the West Bengal Forest Department.

Garan twigs were used to separate one crab from other and to prevent fighting among them. Garan was preferred in comparison to other mangroves as it could resist decay for a longer period of time (Nandi and Pramanik 1994). Besides ice blocks, fishers also carry radio, torch, choppers and utensils. In order to survive in the forest they carry following items to cook food and to worship Ma Banabibi and Kastha Devi (the Goddess of the Boat): Batasa or sweet cake (50 gram), incense (1 packet), rice (6 kg), cumin (25 gram), black pepper (25 gram), onion (300 gram), garlic (100 gram), ginger (50 gram), sugar (500 gram), battery (3 packets), biscuit (1 packet), salt (6 kg), oil (400 gram), turmeric (100 gram), and bidi\(^{46}\) (15 packets).

Fishers from Gosaba sell their fish to the aratdars or warehouse owners of Canning. Canning is an important fish landing center and connected with the city of Kolkata by rail road.

\(^{46}\) A type of cigarette produced from tendu leaves in India.
However, fish is also sold at the local auction market of Gosaba Bazaar located within the Gosaba Block. The Gosaba auction market was established in past five years and therefore fishers prefer the auction market of Canning. Fishers of Bakultala, Satjelia Island, generally send their catch by boat to Canning. The local fishing association helps fishers to send their fish by boat. Fishers need to pay a yearly subscription fee of Rs. 200 to the association in exchange of this benefit. Fish is placed in large sized bamboo basket locally called chakon and preserved with ice flakes. Fishers put these chakons and the boatman takes care of the fish. At Canning ferry, the boatman handover the chakons to the respective coolies sent by the aratdars. The aratdars sell the fishers’ catch and then handover the fishers’ payment to the boatman with a receipt and it is then the boatman’s responsibility to handover the payment to the fishers. Unlike fish, crabs are sold to local khotidars or fish depot owners.

In the summer, fishing is not allowed in the STR as fishes breed during this time. The fishing season remains closed from April 1st to June 30 (Patel and Rajagopalan 2009). Fishing is only allowed within the multiple use zone of the buffer area (comprising of four forest blocks Arbesi, Jhilla, Khatuajhuri and Harinbhanga) under Basirhat Range which is referred to as “khola bada” by the local fishers. Fishermen can only use non-mechanized country boats in this permitted zone of fishing. Fishing in the core and sanctuary of the STR is considered illegal. Besides having a closed season of fishing, there are certain fish which are prohibited for fishing. These fish are: kamot or baby shark, koi bhol, fal, jonkende, kantabol, balshunro, chakul or shankar (Spotted eagle ray). There are three different types of chakul fish which are all prohibited for fishing.

The Conservator of Forest and Field Director is responsible for managing the STR under the Directorate of Forests, Government of West Bengal. The management plan of the STR in 1973 mentions that “fishing is allowed free in tidal waters but permits are issued to registered boats for consumption of dry fire woods for each fishing trip” (Management Plan of Tiger Reserve...
in Sundarbans 1973, 39).” The recent management plan which was valid for a period of 2000-2010 also provides the following guideline for fishing in the STR:

*Fishing was allowed through in tidal water provided that the fishing boats are registered in the Forest Directorate on payment usual registration fees plus royalty for dry fire wood to be consumed in each fishing trip. Since creation of Sundarban Tiger Reserve fishing even with permit is however, not allowed in core area. Buffer zone except Sajnekhali Wildlife Sanctuary is opened for fishing in case of registered permit-holders.*

(Management Plan for Sundarban Tiger Reserve 2000-01 to 2009-10, 30)

**Fishing Permits and Related Problems**

Every fisher who ventures in the STR for fishing should register their boats (non-mechanized country boats) annually with the Forest Department (Table 3.6). The Forest Department regulates the number of boats in the STR through Boat Licensing Certificate or BLC (Figure 3.20). The State Forest Department first introduced BLC in the 1980s for the entire reserve forest area including the STR. According to the discussion with the Director of the SBR in 2009 BLCS were only issued to those people who belonged to traditional fishing castes or who had practiced fishing for a long time, generations after generations. No new BLCS were issued subsequently from the STR after 1980s.

Each BLC includes the name and address of the boat owner and the description of the boat along with its capacity in quintal or maund (Patel and Rajagopalan 2009; Fieldwork Experience 2011). Fishers who catch fish legally within the STR must provide their Janata Personal Accident Insurance Policy Number in order to renew their BLCs and to get a fishing permit from the Forest Range Offices. During the inception of the BLCs in the STR there were altogether 923 BLCs. Later, the number dropped to 914 as nine BLCs couldn’t be traced by the Forest Department (Patel and Rajagopalan 2009). At present there are 706 BLCs in the STR which are actively used for fishing (Office of the Field Director, STR, 2011).
figure 3.20. a blc with the name and address of the owner along with the description of the boat. each blc should also contain a passport size picture of the owner.

during my fieldwork in the satjelia island, gosaba, i came to know that there are some blcs which were used to transport timber and fuel wood in the past by smaller boats of 30-40 quintal capacity during the period of timber felling. these blcs were called khoali blc or fuel pass by local people. until 1994 the forest department allowed timber felling twice a year for two and half months: one during the summer (rough weather timber coupe) and other during the winter (fair weather timber coupe). in between 1994-1998 the forest department only continued the fair weather timber coupe (str management plan 2000-01-2009-10). since 1998 the department has stopped any kind of timber felling in the sundarban (dhar 2007). in the past, people who used to get permits for timber felling in the forest owned large saw mills in kakdwip and namkhana. these permit holders used to come with five-ten large sized dinghies. they used to arrange their own laborers from different parts of the sundarban. during those periods of timber felling the forest department provided some blcs for smaller boats to the poor laborers in order to bring some fuel woods to the villages for selling. some people even used to sell fuel wood in kolkata and its suburbs. these blcs used to be valid for one year. after a year the
department used to provide new BLCs. In due course of time when timber felling gradually decreased and was discontinued by the government some people didn’t surrender their BLCs (valid only for timber felling) to the department. Later, when Forest Department started distributing BLCs for fishing in the 1980s, people who had obtained khoali BLCs in the past started to renew those BLCs for fishing and crab collection. Therefore, people who did not surrender their khoali BLCs, when it became invalid for timber collection, suddenly became powerful. Thus the khoali BLC holders obtained a new tool for income generation by leasing their BLCs to those fishers who did not own any.  

**Problem Related to BLCs**

BLCs can only be transferred to a blood relative and can only be claimed by the legal heir of a fisherman after his death (Fieldwork Experience 2011). Though BLCs can also be transferred to a genuine fisherman there is still no clear guideline for that. As I said, over time BLC has become a “leasable property” among fishers living around the STR for a temporary period of time (Patel and Rajagopalan 2009, 11). People who are comparatively well off and who do not need to catch fish by themselves often rent their BLCs to local khotidars. Poor fishers, who are in dire need of BLCs, then rent those BLCs from the local khotidars prior to each fishing season (Fieldwork Experience 2011). There are other sources of renting a BLC. For example, when a fisherman decides not to catch fish for a particular fishing season and prefers to work in far off places such as Uttarakhand, Kerala, Tamil Nadu, and Andaman as a wage labor, he rents his BLC to another fisherman. The amount of rent varies between Rs. 15,000-20,000 ($250-334). It also varies from one fishing season to another. Fishers who rent a BLC from a khotidar do not need to pay the whole amount of the rent at one time in the beginning of each fishing season. Rather, the rent can be gradually paid through the year. But in this case the fisher is bound to sell his catch to

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47 I do not have any documents in support of the concept of khoali BLC. The present Director of the SBR was also not sure about the existence of khoali BLC. But he supported the fact that not just only in the past, even in the 1990s contractors (permit holders) used to come from Kakdwip and Namkhana for timber felling in the STR. He was not sure though if the contractors owned any saw mills. These contractors used to hire local labors from surrounding villages of the STR.
the respective *khotidar* from whom he rented the BLC for the entire fishing season. However, if a fisher rents a BLC from a well-off BLC holder in the village he needs to pay the rent instantly in cash. In such a case he can sell his catch to any local or distant *khotidars* who pay better price. Fishers who cannot even rent a BLC for a fishing season are forced to catch fish illegally within the STR (ibid.). The following diagram explains the relationship among BLC owners, *khotidars*, and fishers.

**Figure 3.21.** The percentage distribution of BLCs among the fishing communities of Gosaba, South 24 Parganas, West Bengal

During my fieldwork in Gosaba, Sundarban, I learnt that how owning a BLC makes a difference in income among fishers. 23 percent of the total interviewed fishermen possessed a BLC and remaining 77 percent were either went with the fishers who had BLCs or rented BLCs from individual BLC owners and/or *khotidars* (Figure 3.21). Fishers like Ranjan who owns a BLC,
boat and a net can earn up to Rs. 5,500-6,000 ($92-100) per month. Ranjan goes for fishing in the Sundarban Tiger Reserve (STR) accompanied by four other fishers. The total expenditure of a bi-monthly fishing trip is subtracted from the money they earn by selling catch. Then the remaining amount is equally divided among all six members of the team. Fishing net is considered the 6th member and the person who provides the net gets an extra share. Ranjan, as a provider of fishing net gets one extra share. Hence, other fishers who accompany Ranjan earn less than him. However, in case of crab fishing this rule is often not followed. The total cost of crab fishing for a bimonthly fishing trip ranges is between Rs. 2,800-3,000 ($47-50). For crab fishing fishers need at least 70 kg of chara (bait) which costs Rs.700-800 ($12-13). Crab fishers use bogi, puche, and sada buro48 fish as chara which are bought from local khotis. The cost of grocery for 8-10 days is Rs. 1,000 ($17). The rent for boat for a bimonthly fishing trip is Rs. 200 ($3), and the rent of BLC is Rs. 1,000 ($17). After selling their catch fishers deduct the total cost from total earned money. The remaining money is equally divided among all three members. Therefore, no person gets an extra share in crab fishing. Fishers can earn more money by selling crabs than selling fish. At present, per month they can earn Rs. 7,000-8,000 ($117-133).

The regulation of fishing through BLCs in the STR has opened a particular way of marginalizing some within the fishing communities of the Sundarban. Relatively poor fishers, who do not own a BLC, are thus exploited in the hands of khotidars and well-off BLC holders in the village who either have a lot of land or are in government services. In addition, it forces people to be migrant labors and work outside the Sundarban region, and often outside of West Bengal. Well-off BLC owners do not catch fish by themselves by going into the forest. The fishers who rent a BLC from a local khotidar living in their village or nearby villages do not pay them instantly in the beginning of the fishing season. Instead, for the entire fishing season, they sell their catch to the local khotidar in low price which is not profitable. Sometimes, local khotidars may demand advance money before giving the BLC to a fisher. Poor fishers often take

48 These are local fish names.
loans from local *khotidars* for various reasons and therefore, they become obliged to sell their catch to the respective *khotidars* for an entire fishing season. Charan, a fisher from Bakultala shared his experience in relation to BLC:

> I rented a BLC from a khotidar at Lahiripur for two years which cost me Rs. 40,000. I paid off the loan by selling him fish and crabs. Last year (2011), the khotidar said that he could not rent me a BLC if I do not pay him Rs. 18,000 in advance. He told me to find other people who would give me a BLC without taking any advance money. I did not have Rs. 18,000. So, I did not catch fish last year. Instead, I went to work in Nainital.

However, some fishers in Gosaba try their best not to take loans and not to rent a BLC from a local *khotidar*. Jaideep, a fisher from Bakultala, explained that:

> There are some people who take dadon from khotidars. Khotidars want to secure the supply of fish and crabs for a season. So, they provide loans in advance to poor fishers on a condition that the fishers will sell the catch to them. I try to avoid taking loans from khotidars. I do not rent my BLC from a khotidar. Instead, I directly rent it from a BLC owner who lives in Amlamethi.

Renting a BLC directly from a BLC owner provides relative freedom to the fishers because fishers are not bound to sell their catch to a particular *khotidar*. They can check with several *khotidars* and can sell their catch to one who gives them better price. For example, Jaideep not only sells his catch to *khotidars* from Lahiripur, but also he sells his catch to *khotidars* of Annpur and Jamespur if later give him good price. Some BLC owners do not provide a rent without taking full amount which varies from Rs. 15,000-20,000 ($250-$334). However, in some cases if the fisher has a good personal relationship with a BLC owner, he can pay the rent on a monthly basis.

Although the relationship between the *khotidars/aratdars* and fishers is not equal in which the *khotidars/aratdars* are well-off and fishers always face financial difficulties, the *khotidars/aratdars* cannot continue their business without fishers. Therefore, in the Sundarban, *khotidars*, *aratdars*, and fishers are mutually dependent on each other (Pramanik and Nandi 2011). The *khotidars/aratdars* want an unhindered supply of fish from the fishers and fishers also need financial assistance In addition, fishers need an *arat* (storage) where they can keep their fish prior selling to the market (Ibid.).
Other Permits

Other than the BLC, a fisherman needs to have a fishing permit covering a period of 42 days. This permit is known as Dry Fuel Cost (DFC) by the Forest Department (Figure 3.22). This permit allows fishermen to collect dry firewood from the forest during a fishing trip. The fishers cannot bring the residual dry firewood back at home. According to the rule set by the Forest Department they must consume that firewood during the fishing trip. At present, the forest officials are considering issuing an order to the fishermen so that they carry dry firewood from outside the forest on each fishing trip. The present Director of the SBR said that fishers in the Sundarban are habituated to collect firewood from the forest since ages and it is hard to ban that practice right away. During my fieldwork in Gosaba some fishers informed me that nowadays they are told by the forest guards to buy firewood from the haat or weekly market. Poor fishers still collect dry twigs or branches of mangroves from the forest and river banks as they cannot afford buying firewood from villages. There are some fishers like Charan who himself planted mangroves on the mudflat of Dattar Passur Khal along the sarer par or village side thinking of future economic benefits from those trees in terms of access to timber and fuel wood.

Until 2011, the permit for 42 days was issued to a BLC owner at the rate of Rs. 5 ($0.08) per person per week. Therefore, for a period of 42 days (i.e. 6 weeks) a person used to pay Rs. 30 ($0.5). If a group of fishers stayed in the forest beyond 6 weeks they needed to pay a fine of Rs. 6 per person per week and it was applicable for the first four weeks of the overstaying (Patel and Rajagopalan 2009; Fieldwork Experience 2011). The Forest Department has increased the cost of fishing permit in 2012. The current rate is Rs. 10 per person per week. If overstaying occurs the fishers need to pay Rs. 12 per person per week and this is applicable for the first four weeks beyond the period of 42 days. If the duration of overstaying increases the amount of fine per

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49 Interview with the present Director of the Sundarban Biopshere Reserve (SBR) on Tuesday July 31, 2012
50 The current charges of fishing in the STR for a period of 42 days have been collected from the Field Director of the STR.
person also increases. Overstaying in the forest is termed as *meyad gauri* or *med gaure* in the local dialect. Even for the crab fishing a fisher needs to obtain the same permit of 42 days. In addition, Fishermen who catch crabs in the STR are charged Rs. 18 per trip for collecting green mangrove twigs from the forest which is essential for preserving the crabs in the dinghy.

![Image](image.jpg)

**Figure 3.22.** Permit showing the Dry Fuel Cost (DFC) for a fishing period of 6 weeks or 42 days. The total DFC cost has been marked on the photograph by a red circle.

**The Problem of Illegal Fishing in the STR and the Conflicts with the Management**

This subsection demonstrates different forms of present resource-access struggles and the conflicts between the management due to regulation on fishing in the STR. This sub-section also explains how the problem of illegal fishing itself is a product of the STR management policies and how it is linked with the system of BLCs.

Although there is discrepancy in statistics about the total number of people entering the STR for fishing, it can be assumed that at least 2118 (706 *3 = 2118) people venture into the
mangrove forest during the season of crab collection\(^{51}\). However, the total number of people entering the STR for fishing increases between July and October when five to six people venture into the forest for fishing. Legally all fishers are allowed to catch fish in the *khola bada* or multiple use zone of the buffer region of the STR. The mangrove forest in the core and sanctuary is called *bandho bada* by the local fishers. According to the local fishers of Gosaba, if all the fishers only catch fish in the *khola bada* no one will be able to catch sufficient amount of fish and no one will be able to earn sufficient amount of income to run their family. In this context Sachin said that there will be so many people that it will be hard to find a suitable fishing ground or to anchor the boat in a safe place. In addition, rivers in the *khola bada* are not appropriate for fishing with non-mechanized country boats as they are not very deep due to the presence of numerous sand bars and that hinder fishing activity.

In Gosaba, on an average, a fisherman can earn Rs. 2,000-3,000 ($33-50) per month. Fishers who have their own boats, BLCs, and fishing gear often work as team leaders (*sainder*) and they can earn up to Rs. 5,000-6,000 ($83-100) per month. But the income depends on the amount of catch and market price given by the *aratdars* at the fish landing center of Canning. Fishers who depend on forest-based fishing for their subsistence are forced to enter in the non-permitted fishing zone of the STR for better catch. This often creates conflicts between the forest officials and the fishers and intensifies the resource access struggles of the fishers creating a significant impact on their livelihood.

For fishers, there is every chance of getting caught in the non-permitted fishing zones of the STR. Verbal and physical abuses to the fishers are not very uncommon by the patrolling forest guards. A fisher has to pay fine if he gets caught by the forest guards within the core. This fine is called “compensation” (Figure 3.23) in the official records of the STR (Patel and Rajagopalan 2009). The forest guards write the name of the forest block of non-permitted fishing

\(^{51}\) During the winter at least three people are required for catching crabs and in 2011 the active number of BLC in the STR was 706.
zone on the reverse of the BLC in English but the department does not mention the fine amount. Until 2011, if a person was caught for the first time (within the 42 days fishing period) in the non-permitted fishing zone he was charged Rs. 200 ($3). If the same person was caught second time the fine amount was Rs. 400 ($7) (Fieldwork Experience 2011). The fine varies from Rs. 200-1,150 ($3-19) depending on the forest official, number of previous offences, the significance of the offence, and the negotiation between the forest official and the fisherman. From 2012 the fine amount for illegal fishing has been doubled. If a fisher is caught for the first time in the non-permitted fishing zone he or she needs to pay Rs. 400 ($7) as fine. If the same person is caught by the department for the second time, the fine amount will be Rs. 800 ($13). The fine amount increases up to Rs. 1,150 ($19) if the same person is caught for the third time. After this the department has the legal power to cancel the BLC if necessary.
Figure 3.23. A receipt for fine paid to the Forest Department. Please note that the fine amount has been mentioned as “compensation.”

According to the fishers who depend on forest-based fishing in the Sundarban, forest guards sometimes confiscate their boat and other fishing accessories such as fishing net and cold store (Fieldwork Experience 2011). If the foresters confiscate the BLC of the fishers the fine could be as high as Rs. 1,150 ($19). Debrata, a fisherman of Gosaba Block mentioned such an incident when their BLC was seized by the forest guards of Haldibari Beat Office under Bidya

52 This image has been collected from the article “Traditional Fishers in the Sundarban Tiger Reserve: A study on livelihood practice under protected area” by Pradip Chatterjee, Nilambar Bhuinya and Shyamal Mandal.
Range. The guards were about to seize their fishing gears and dinghy too, but Debrata and other members of the fishing team requested the forest guards not to be so harsh with the poor fishers. The guards threatened them and asked them to leave that place immediately. Without arguing with the forest guards the fishers left the place. They came back home without a good catch from that trip. After a week the fishers went to Haldibari Beat Office in order to get back the BLC. They had to pay Rs. 1,150 ($19) as fine. It is not unusual to pay fines 10-11 times in a 9 months fishing season including the season of catching crabs during the winter.

Confiscation of boat occurs in those cases where fishing is carried out without a BLC and without a fishing permit. Poor fishers who cannot rent a BLC and who don’t even have a boat, often rent a dinghy, form a team and enter the STR for fishing. If these fishers are caught by the forest department officials, the officials confiscate their dinghy along with the fishing implements such as rope (kachhi), anchor (graphi), chopper (da), and crab fishing gear (don). In this case the fishers can get their boat back after paying a certain amount of fine to the respective forest range offices (Chatterjee, Bhuniya, and Mondal 2009; Fieldwork Experience 2012). If the forest officials find any raw wood (kancha kath), there is no chance that they would get back their dinghy. Boats are also confiscated if any lasso or fanshi and jaggery are found in the boat. In the past there were incidents of poaching of deer by giving them poisonous jiggery. Lasso is also used by the poachers to kill wild animals. So, if these things are found in the boat that is considered serious offence. At least 200 fishing boats from Bakultala, Sadhupur mouza and nearby Annpur enter the STR without any BLCs and fishing permits (Fieldwork Experience 2012). These fishers frequently catch fish in the narrow creeks (saru khal) where patrolling boats of the Forest Department cannot enter due to its large size. In the narrow creeks the forest departments’ staff uses 1-cylinder mechanized boats. The sound of engines of these patrolling boats also help fishers to figure out from which direction the forest guards are coming. Fishers then hide themselves in the narrow creeks and thus become highly vulnerable to tiger attacks. Fishers from Satjelia commented that they fear foresters more than the Sundarban tigers.
During my fieldwork on Satjelia Island, I met Nitai and Kumud who are one of the illegal fishers without having a boat and a BLC. They rent a boat from one of their neighbors and venture in the forest throughout the year. They only catch crabs which needs less capital investment as compared to catching fish. They go daily in the forest and come back in the evening. This kind of daily fishing is locally called *nodda*. Sometimes, *nodda* is preferred by older fishermen who do not anymore venture into the forest due to increased age and due to decreased physical fitness. In this kind of daily fishing, Nitai and Kumud just find a third member from their neighbors who will be interested to form a team. Nitai and Kumud have been caught many times by the forest guards of the Dattar Beat Office and have been warned many times by them. Many times their fishing implements and catch were confiscated by the forest guards. Whenever they were caught they pleaded to the forest guards and in many cases they were released without charging fines. According to Kumud, Dattar Beat forest guards are familiar with their faces and know that they are the poorest of the poor. So, there were incidents when they were only warned and were not charged fines. The other reason Kumud provided is that she always cordially greeted the forest guards which helped her to avoid fines. If the illegal fishers are killed by the tigers in the forest, their family members are not eligible for compensation or exgratia payment (Rs. 100,000 or $1668) provided by the Forest Department (Patel and Rajagopalan 2009; Fieldwork Experience 2012). Since 1975, this compensation has been given for any deaths by wildlife in the Sundarban Tiger Reserve (Das and Bandyopadhyay 2012). Fishers and honey collectors both are eligible for exgratia payment if they are killed by tigers in the STR. In order to be eligible for the compensation the fishers need to show valid fishing permits (BLCs and receipt of DFCs) and the documents related to Janata Personal Accident Insurance. The same rules apply to honey collectors who enter the STR in the summer with legal permits from the Forest Department. Like illegal fishers, illegal honey collectors are deprived of any compensation from the Forest Department.
Fishers said that nowadays forest guards have become harsher as compared to the past. In the past, fishers could avoid fines by giving them some fish or money. At present, the forest guards do not take fish from the fishers as that will be considered bribery and they will get into trouble. According to the majority fishers who were interviewed, all forest guards charge fines and record the information related to illegal entry on the reverse of the BLC. According to them there are some well-behaved forest guards who do not use filthy words and there are some aggressive ones who always confiscate BLCs and fishing implements. Prior to 2012-2013 fishing season, the confiscation of BLC led to a fine of Rs. 500 ($8). Fishers of Satjelia reported that officers at Haldibari are the harshest among all officers and they always confiscate BLCs without listening to the fishers’ pleads. Often fishers from Deulbari and Kantamari, located in the Kultali block, enter to the STR for catching fish. These fishers have their BLCs registered under the 24 Parganas (South) Division which controls over the Sundarban Reserve Forest (SRF) located outside the STR. Matla Rivers forms the natural boundary between the Sundarban Tiger Reserve (STR) and the reserve forest area of the 24 Parganas (South) Division. The forest guards are very harsh on the fishers coming from the Kultali block as their BLCs are not legally appropriate to enter the STR. Whenever, they are caught by the forest guards their BLCs are confiscated. Forest guards harass these fishers more than the fishers who live in the fringe villages around the STR. Fishers lose important fishing time if confiscation of BLC occurs.

The fishing related offences such as fishing in the non-permitted fishing zone are recorded under Compounded Offence Report or COR by the STR. For CORs, fines are collected from the fishers. In case of COR, offenders are not taken to the court (Patel and Rajagopalan 2009). In 2008-2009 the no. of CORs was 1,490 which increased to 1,684 in 2009-2010. In 2010-2011 and 2011-2012 the number of COR again increased from the previous years to 1,957 and 2,221 respectively (STR Annual Report 2010-2011) (Figure 3.24). Here, we should note that these offences can also include offences related to poaching, illegal wood collecting, tree felling, and illegal honey collection (Chatterjee, Bhuniya, and Mondal 2009) and therefore it can provide
one justification for high number of CORs. During a discussion with a retired officer of the Forest Department, who served the STR as a Field Director between 1980-1986, I was told that the increase in COR indicates better patrolling in the forest. There could be various factors that can play out in the increasing or decreasing number of CORs in the STR. For example, if fishers are able to hide deep in the forest while catching crabs they can avoid fines. The forest officials point out that the increasing number of CORs could also mean that more number of fishers entered the forest in that particular fishing season to catch fish (Patel and Rajagopalan 2009). On the other hand the number of COR was less in the year of Aila$^{53}$ (2009-2010) than the following fishing season of 2010-2011. In the year of Aila many people discontinued fishing and became wage laborers in the cities.

![Bar Chart](image)

**Figure 3.24.** Year wise distribution of number of Compounded Offence Report (COR) in the Sundarban Tiger Reserve (STR)

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$^{53}$ On May 25, 2009 a cyclone named as Aila devastated the Southern parts of West Bengal including the Sundarban region. The cyclone hit the region with a wind speed of 110 km per hour.
Fishers in Gosaba argue that the patrolling forest guards rarely spare a poor fisherman if he is seen within the prohibited areas. On the contrary, the guards who are engaged in patrolling the forest from several territorial and floating camps dare to say a word to the Bangladeshi intruders who frequently enter the STR and smuggle timber across the border. According to Kartik, a fisher from Satjelia Island, pirates from Bangladesh frequently enter during winter when fishers are primarily engaged in crab catching. In winter creeks in the Sundarban remain calm which help the pirates to row their boats across borders. These pirates often carry firearms and loot crabs caught by the Indian fishers. The following quotation explains how the pirates harass fishers in the Sundarban.

*Suppose we are sleeping at night on the dinghy. They suddenly arrive and strike their bamboo sticks on the chhoi and order us not to come out of the chhoi. Then they get on our dinghy and tell us to come out one by one. All of us then come out from the chhoi. They order us to transport our crabs in their dinghy. They won’t grab our crabs by themselves. It is ironical that the crabs we catch after 8-10 days of toil in the forest, we give it to them. They show us guns and we give them our catch to save our lives.*

There are even gangs which are involved in illegal smuggling of cows between India and Bangladesh. Generally Jersey cows are smuggled from Orissa and are sent to Bangladesh through the Sundarban. Fishers said that patrolling forest officials are afraid of Bangladeshi intruders as they enter the forest with firearms in large groups of 10-15 people. In the course of interaction with me they claimed that even after reporting such timber and cow smuggling to the patrolling forest guards, Forest Department officials remained silent without taking any action. Instead they verbally abused the fishers for entering the non-permitted area of the STR and ordered them to leave that particular place immediately. This kind of incident intensifies the grievances of the fishers against the Forest Department. Furthermore, it creates conflicts between the STR authority and local people of the Sundarban in terms of the objective of resource management. Fishers think that the department is quite non-functional in controlling intruders from Bangladesh border while they do not think twice to harass poor and marginalized local fishers who enter the forest quietly without harming the region’s ecology. They even accused the
forest officials of themselves destroying the Sundarban forest by allowing Bangladeshi intruders
to cut trees and poach wild animals. Fishers are also harassed by these Bangladeshi intruders
who often abduct Indian fishermen and force them to live with them and help them smuggle
timber across the border. The abducted fishermen are forced to cut trees in the forest along with
the intruders. There are incidents where fishers are abducted and held as hostages and are asked
for ransoms (Chatterjee, Bhunia and Mandal 2009). Bimalendu, one of the fishers I met at
Bakultala, was held as hostage for 1 month and 21 days by the Bangaldeshi pirates. During that
time he had to work for the pirates. He was moved from one boat to other very often. He had to
guard the khotis of these pirates at night. Fishers in the Sundarban do admit that there are also
some Indians who have connection with the Bangladeshi pirates and who are also engaged in
timber smuggling and looting honey, fish and crabs. Besides the problems of harassment in the
hands of Bangladeshi intruders, Indian fishers are sometimes harassed by the Border Security
Force (BSF) and Bangladesh Police while catching fish close to the international border.

Despite all these harassments fishers in the Sundarban consider themselves an integral
part in the conservation of the Sundarban forest and argue that the Forest Department alone
cannot protect the Sundarban forest. The forest officials need the help of local fishers to check
the illegal activities in the forest as fishers can enter into the deeper parts of the forest where
forest department’s boat cannot enter. One of the forest officers explained that any information in
relation to illegal activities from local people is valuable to them. If the department receives
information on illegal activities including illegal entry into the forest the department increases
patrolling.

Although the department’s officials use speed boat to enter creeks (Figure 3.25), there are
certain creeks where fishers only enter and pirates hide their dinghies in these narrow creeks.
Fishers in Gosaba argue that fishers have provided useful information about illegal cutting of
trees and poaching of deer to the forest officials. Furthermore, when a tiger strays into the
village, it is the fishers who come forward first and help the forest guards to capture the tiger as
they live most closed to the river channels than others. Sometimes fisher encircles an area along
with the forest guards near the river bank where a strayed tiger has taken shelter. Fishers also
wok as night guards with other villagers when a strayed tiger is not easily captured and it
becomes necessary to be alert and vigil the village at night.

Figure 3.25. The patrolling speed boat in the Sundarban Tiger Reserve. On the left, the speed
boats are anchored near the Sajnekhali Range Office. On the right forest officials are using speed
boat to vigil a creek (The photograph on the right is taken from the STR Annual Report 2011-
2012)

Fishers further argue that they understand the value of the Sundarban mangrove forest as
it protects them from the severe tropical cyclones like Aila. According to them the Sundarban
fishers have saved the Sundarban forest by not cutting wood and by stopping illegal hunting of
wild animals. The fishers have cooperated with the Forest Department in forming Eco-
Development Committees (EDCs) in the fringe villages of the STR. After the formation of the
EDC cutting of trees for fuel wood, poaching of animals especially of deer have been completely
stopped. The Forest Department has also banned timber exploitation and collection of non-timber
forest products such as golpata (Nypa fruticans) and hental (Phoenix paludosa) in the Sundarban
forest. In all these instances the fishers cooperated with the government and did not protest.
Hence, government should not restrict fishers to catch fish in the core area.
Discussion

This chapter demonstrates the current resource-access struggles of the local residents living in the Sundarban Biosphere Reserve (SBR). Furthermore, it portrays the range of forest-based economic activities (fishing, catching crabs, honey collection, and ) in the SBR on which local people are dependent for their livelihood. The chapter demonstrates that the current resource management in the SBR in some ways follows a model of fortress conservation. However, it cannot be completely labeled as “fortress” conservation as the real world situation is more complex. On the contrary, the chapter also highlights that the power of fortress conservation cannot be ignored in a time when the conservation movement has itself moved away from a top-down approach. We should remember that in the case of the SBR, the power of fortress conservation was not perpetuated through eviction of local people living within the forest. Historically, there was no incident of eviction of local villagers as in the case of the Sundarban villagers always lived outside the forest. Therefore, the formation of protected forest in 1878 (Richard and Flint 1990) did not lead to eviction of local people. In addition, the settled areas and the forested areas in the Sundarban are clearly separated by rivers and tidal creeks. Nevertheless, we cannot again conclude that the conservation efforts in the Sundarban are completely free of any incidents of forceful eviction of settlers. If we consider the case of Marichjhanpi massacre, which I have discussed in Chapter 2, we can see that in the post-independence period refugees from Bangladesh (East Pakistan) ware brutally evicted by the West Bengal Government due to illegal encroachment in the reserve forest area.

The complexity of conservation and resource management in the Sundarban Biosphere Reserve (SBR) is created by allowing limited economic activities (fishing and honey collection) within the buffer area of the SBR. Therefore, the SBR can be simultaneously termed as “landscape of production” and “landscape of consumption”. Unlike the Eastern Africa, the spatial dualism of “landscape of production” and “landscape of consumption” (Neumann 2003) is not so explicit in the case of the SBR. In case of colonial East Africa, the agricultural activities or
the productive activities and the rural development were confined outside the national parks (Neumann 1995). In East Africa, the national parks were imagined as “landscapes of consumption” whereas the areas outside the park boundaries were considered as “landscape of production” (Neumann 1998; Neumann 2003). In the colonial period, the entire Sundarban mangrove forest was a source of revenue for the colonial rulers and therefore, a “landscape of production” by supplying timber, fuel wood and thatching grass for Kolkata and its adjacent areas. In case of the current SBR, the buffer zone is a zone in which the forest can be imagined as the “landscape of production” as people can legally collect honey and catch fish and crabs from the rivers. The mangrove forest in the Sajnekhali sanctuary on the other hand can be consumed from a distance and therefore, similar to the “landscape of consumption.”

The change in land use in the colonial East Africa created a friction between the local African population and the Europeans. For example, the formation of Serengeti National Park in Tanganyika restricted Masai people’s movement as their land was appropriated for the creation of this particular national park. Masai were blamed for setting fires and defying laws of the national park (Neumann 1995). The aspect of ‘spatial dualism’ in the colonial forest conservation policy and restriction on people’s movement to some extent are found in the post-independence management policies through the creation of the core, buffer and transition areas in the Sundarban Biosphere Reserve. The current conservation strategies followed in the Sundarban Tiger Reserve (STR) in terms of ban of fishing in the core and sanctuary areas, restriction on movement of fishers only within the waterways of the buffer area, and restriction on firewood collection from the forest for household consumption share similar characteristics of the colonial conservation policies of the British. The registration of boats under the STR authority is itself an example of colonial forest management policy to limit rampant destruction of forest. In 1932, for the first time boat registration was introduced in the Sundarban to control timber thefts (Bisht 2001).
Although fishers in Gosaba do not react violently against the state like the Masai by setting fires, they do not always follow the current conservations policies strictly. Forest goers who enter the forest for catching fish and collecting honey without proper documentation are considered as persons who have committed crimes. This criminalization of resource use by the state or the Forest Department is not uncommon in other parts of the world. For example, in Java, landless peasants who controlled forest land during the Indonesian revolutionary period (1945-1949) were labelled as “squatters” (Peluso 1992, 101). Many of these landless peasants were forest laborers under the Dutch and Japanese colonial rules (Peluso 1992). The most common form of resistance of the fishers to the current fishing regulation is to enter the core area for their subsistence. They argue that if they do not enter the non-permitted zone for fishing, their family members would die of starvation as they do not have any other source of income. Sometimes fishers who engage themselves in honey collection during the summer do bring some amount of wild honey to their homes without informing the forest guards. This honey is then sold in outside market throughout the year in higher price. However, the demand of wild honey rises during the tourist season in winter. Fishers and honey collectors can earn more than double when they sell the honey in the outside market instead of selling to the forest department. In these cases the honey collectors never provide actual information regarding the collected honey from the forest. The honey collectors said that the Forest Department is aware of the selling of honey in the open market in higher prices, mostly at Pakhiralaya, which is a popular entry point of tourism in the Sundarban. According to them, if the department stops the honey collectors to bring some extra honey in the village and force them to sell all the honey to the government with a lower price rate, the honey collectors would have no incentive to collect the wild honey from the forest. If the honey collectors are inquired by the forest guards about the total amount of honey they collected, either the honey collectors tell a low amount than the actual or say that they are taking back some honey for their household consumption. The honey which is produced from the apiary and transported along the rivers of the Sundarban is also monitored by the Forest.
Department. The sellers need to pay the fee for using the waterways of the Sundarban and the forest patrolling officials have power to stop and examine the boats at any time that transport honey. The frequent checking of boats carrying any forest products (such as honey and fish) by the forest guards employed at several territorial and floating camps in the forest is another example which resembles the colonial model of control and policing. In his *Bengal Forest Manual*, Deputy Conservator of Forests Mr. F. Trafford (1905) explained the rule regarding transporting any forest produce through the rivers of the Sundarban. The rule stated:

> Any forest produce in transit within, or passing out of, the Sundarbans Protected Forests, and any such produce found in any water-channel skirting or leading from the said forests, when there is reason to believe that anything is payable to the Government in respect of such produce, may be stopped and examined by any forest or police officer.

The conservation model in the Sundarban is further complicated by the establishment of the Eco-development committees (EDCs) which I mentioned earlier in this chapter. On the one hand, the goals of the EDC are to protect the forest and wildlife and on the other to develop people’s livelihood by providing alternative income opportunities. The presence of EDCs in the forest-fringe villages also serve as a form of policing on the local people. Because EDC members are well-connected with the Forest Department and if any local villagers enter the forest illegally for collecting honey or for any other reason, and if EDC comes to know such incident, they immediately inform the local forest office. During my fieldwork it became clear to me how presence of EDCs can be problematic to poor fishers. Ranjan, a fisher explained:

> EDC has created problems for those who earn their livelihood from forest. Take my example. I used to bring some wood from the forest to sell in the village and to earn some money. The other problem is that we, poor people, now need to buy bamboo to build our huts. The price of bamboo poles are increasing day by day. One day poor people would not be able to buy bamboo. See, that house over there built by my brother just one week back. He used thin (chikon) bamboo poles which would fall if there is a storm. Now, if he could use poles (khunti) of passur, then his hut could withstand storm. Look, I have two passur khunti which are supporting my house. Long ago, I brought these khunits from the forest when bringing wood from the forest was not so difficult. Passur khunti can withstand cyclone much better than bamboo. I asked my brother why he used bamboo poles. I asked would you be able to live in such house. But my brother has no money to build a concrete pillar which is a better alternative to bamboo poles. This is the problem we are facing after the formation of EDC. From EDCs, local people
received some benefits such as construction of brick path and excavation of ponds. But beyond these what benefits are there?

The following interview excerpt also provides a clear picture how fishers view EDC in the fringe villages of the STR

ME: Are you a member of the EDC?
BM: Yes
ME: What kind of benefits local people had from the Pakhiralaya EDC?
BM: EDC has excavated canal. They have built some brick-paved roads.
ME: I heard that EDC provided van-rickshaws to local people.
BM: No, I haven’t received anything. I have no land. I am just living between the embankment and the road. But I have never received any benefits from EDC.
ME: Did you ever talk to the EDC convener about a van?
BM: Yes, I talked to them. I talked to the EDC Convener and Panchayat Pradhan. But why would they give a van to me? They would give the van to a person from whom they would get some money.

In another incident, a group of honey collectors from Sadhupur Mouza entered the forest to collect honey during the summer. They entered without permits. They did not go by boats. One of the villagers helped them to cross Pathar River and enter the forest located on the other side of the river. The group had no intention of harming wild animals like deer except earning some ready cash by selling honey. But the EDC members informed the Forest Department that some men had entered the forest to kill deer. After receiving such information the foresters immediately came to the spot to capture the offenders. They started patrolling along the Pathar River, encircled an area starting from Ganral to Kholakhali, and stationed their boats at possible exit points of the forest. The department staff lured the hone collectors to come out of the forest and told them that they would help them returning their village. The honey collectors did not come out understanding this as a trap and waited until almost midnight to return to their village. Their family members were so worried that they sat on the bank of the Pathar River since evening.

These two instances demonstrate the tensions between the EDC members (members who are in the executive committee and therefore have some power) and local people who depend on the forest for their living. Despite such tensions, EDC members who have relative power and
other villagers unite together if a tiger strays into the village. EDC members and other villagers cooperate with the Forest Department Staff to capture the tiger from the village and release it in the forest (mostly in the core area of the STR) far from human habitation (Figure 3.26). As soon as people become aware of the fact that a tiger has strayed into the village, the Joint Convener and other committee members arrange night guards to patrol the village. Local fishers, crab catchers, and honey collectors cooperate with the EDC executive members to patrol the village at night in exchange of minimum remuneration. Therefore, forest-goers such as fishers and honey collectors are not completely against the Forest Department and they cooperate with the Forest Department whenever needed. This clearly shows the complexity of the biodiversity conservation and explains why we cannot simply label it as “fortress” conservation or top-down conservation. During the fieldwork, the fishers of Gosaba collectively gave a message which highlights the tensions between the fishing communities and the Forest Department. In addition, it demonstrates the complexity of conservation in the SBR. I will conclude this chapter with that message:

*We have already saved the forest. No one cut wood now as compared to the past. In the past, we were permitted to cut wood. We also sold fuel wood in the village. We were also given permits to cut gneo (Excoecarnia agallocha) from which matchsticks (deshlai kathi) were produced. The government eventually stopped that. We didn’t say anything. They stopped timber coupe in the forest. We did not protest. They formed the EDC so that they could monitor our activities, especially any illegal activities. Now, cutting trees in the forest has been totally stopped. Yes, we have completely saved the forest. So, when we are not cutting trees, why are they prohibiting us to catch fish and crabs in the core area? Nowadays, we worry a lot. We don’t know how long we will be able to catch fish in the Sundarban to sustain our lives. The way the government is restricting everything in the Sundarban, one day we won’t be able to continue this occupation. We have to find something else. We have to think other ways of making a living!*
Figure 3.26. Release of a strayed tiger in the core area of the STR by the Forest Department Officials. The photograph is collected from the Annual Report of the STR, 2010-2011.
Figure 3.27. Fishing related problems faced by the forest-based fishers in the Sundarban Tiger Reserve (STR), South 24 Parganas, West Bengal, India

- Not each fisher has Boat Licensing Certificate (BLC). Poor fishers need to rent one in each fishing season (8-9 months in a year).
- Attacks from tigers, crocodiles, snakes, and sharks.
- Attacks of Bangladeshi pirates; they often loot fish and crabs; sometimes they abduct fishers and force them to pursue illegal activities such as cutting wood in the forest.
- According to the Forest Department there is no upper limit for collecting dry firewood from the forest. However many fishers pointed out that they are allowed to take only 5 kg of firewood per week during a fishing trip; collection of fire wood from the forest make fishers vulnerable to tiger attacks.
- Fishing in the non-permitted fishing zones (i.e. core and Sajnekhali Wildlife Sanctuary) of the Sundarban Tiger Reserve (STR) lead to frequent fines; however, fishers are forced to enter in the non-permitted fishing zones for their subsistence.
- Flood, storm.
- Not all the fishers have fishing gears and dinghy; Fishers who do not have dinghy generally rent a dinghy for each fishing season; similarly they share fishing gears from others who possess those.
- Amount of fine has increased over the time.
- If fishers meet any team of forest guards in the core and Sajnekhali Sanctuary area of the Sundarban Tiger Reserve (STR) they are often verbally abused. The patrolling forest guards are harshest with those fishers who cannot show a BLC which is mandatory in order to catch fish in the STR.
- Most of the fishers possess very small amount of farming lands, such as 1 bigha (1600 sq. yards); some even don’t possess any farming lands other than the lands on which they have built their homesteads.
Table 3.1: Forest blocks and compartments in the Core Area or Critical Tiger Habitat

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Name of the forest blocks with compartment numbers</th>
<th>Area in Square Kilometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Matla (1-4)</td>
<td>176.30</td>
</tr>
<tr>
<td>2a.</td>
<td>Chamta (1-3)</td>
<td>96.32</td>
</tr>
<tr>
<td>2b.</td>
<td>Chamta (4-8)</td>
<td>124.37</td>
</tr>
<tr>
<td>3.</td>
<td>Chotahardi (1-3)</td>
<td>175.67</td>
</tr>
<tr>
<td>4.</td>
<td>Goasaba (1-4)</td>
<td>171.73</td>
</tr>
<tr>
<td>5.</td>
<td>Gona (1-3)</td>
<td>139.03</td>
</tr>
<tr>
<td>6a.</td>
<td>Bagmara (1)</td>
<td>24.30</td>
</tr>
<tr>
<td>6b.</td>
<td>Bagmara (2-8)</td>
<td>269.63</td>
</tr>
<tr>
<td>7.</td>
<td>Mayadwip (1-5)</td>
<td>273.36</td>
</tr>
<tr>
<td>8.</td>
<td>Netidhopani (1-3)</td>
<td>93.00</td>
</tr>
<tr>
<td>9.</td>
<td>Chandkhali (1-4)</td>
<td>155.91</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>1699.62</strong></td>
</tr>
</tbody>
</table>

Table 3.2: Forest blocks and compartments in the Buffer Area

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Name of the forest blocks with compartment numbers</th>
<th>Area in Square Kilometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Panchamukhiani (1-5)</td>
<td>176.66</td>
</tr>
<tr>
<td>2.</td>
<td>Pirkhali (1-7)</td>
<td>185.76</td>
</tr>
<tr>
<td>3.</td>
<td>Arbesi (1-5)</td>
<td>150.43</td>
</tr>
<tr>
<td>4.</td>
<td>Jhilla (1-6)</td>
<td>123.14</td>
</tr>
<tr>
<td>5.</td>
<td>Khatuajhuri (1-3)</td>
<td>132.41</td>
</tr>
<tr>
<td>6.</td>
<td>Harinbhanga (1-3)</td>
<td>116.87</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>885.27</strong></td>
</tr>
</tbody>
</table>

Source: STR Annual Report: 2009-2010
Table 3.3: Price of Tiger Prawn Seeds (TPS) as bought from the collectors by the prawn seed dealers at Bakultala, Sadhupur Mouza, Gosaba

<table>
<thead>
<tr>
<th>Year</th>
<th>Minimum price per thousand TPS/meen in Rs.</th>
<th>Maximum price per thousand TPS/meen in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Summer</td>
<td>Monsoon</td>
</tr>
<tr>
<td>2010-11</td>
<td>200</td>
<td>40</td>
</tr>
<tr>
<td>2009-10</td>
<td>100</td>
<td>30</td>
</tr>
<tr>
<td>2008-09</td>
<td>120</td>
<td>20</td>
</tr>
<tr>
<td>2007-08</td>
<td>250</td>
<td>100</td>
</tr>
<tr>
<td>2006-07</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>2005-06</td>
<td>700</td>
<td>400</td>
</tr>
<tr>
<td>2004-05</td>
<td>700</td>
<td>300</td>
</tr>
<tr>
<td>2003-04</td>
<td>200</td>
<td>30</td>
</tr>
<tr>
<td>2002-03</td>
<td>150</td>
<td>40</td>
</tr>
</tbody>
</table>
Table 3.4: Seasonal occupation pursued by the local people of the Sundarban

<table>
<thead>
<tr>
<th>Name of the Season</th>
<th>Months according to English Calendar</th>
<th>Occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer</td>
<td>March-April-May-June (Bengali: <em>Falgun</em> to <em>Jaistha</em>)</td>
<td>Summer is the season of honey collection in the Sundarban Reserve Forest. During this time the Forest Department issues permits for honey collection to the local people. A team of 9-12 people usually enter the reserve forest for collection of wild honey and bee wax. During this time local people also engage themselves in beekeeping in apiary boxes. People set up apiary boxes in the small garden plot located either in front of the house or just behind it. In the summer women and children also collect Tiger Prawn Seeds (TPS) from rivers. Summer is the best time for catching TPS or <em>bagda meen</em>.</td>
</tr>
<tr>
<td>Monsoon</td>
<td>July-October (Bengali: <em>Ashar</em> to <em>Kartik</em>)</td>
<td>People start going in the Sundarban Forest for fishing. In the late June or in early July the permits for fishing are issued to the fishers of the Sundarban. Fishermen catch different types of fishes: <em>bhetki</em>, <em>parse</em>, <em>chanda</em>, <em>payra</em>, <em>fyasha</em>, <em>kan</em> etc. Fishing in the Sundarban is a bi-monthly activity. Generally, 5-6 fishers form a team and venture deep in the forest. Fishers use traditional country boats or dinghy in order to catch fish in the rivers and creeks of the Sundarban. The Forest Department does not allow mechanized boats for fishing in the Sundarban Tiger Reserve (STR). Fishers catch fish in the rivers at a stretch of 6-8 days. Fishing is mostly done 4 days before and after the new moon and full moon days. This period is called <em>gon</em> in local dialect when fishers get good catch. During each <em>gon</em> the river water reaches the highest high tide mark. TPS catching also continues in the rainy season. In July-August people also start sowing <em>aman</em> paddy in their agricultural lands. The</td>
</tr>
<tr>
<td>Season</td>
<td>Month(s)</td>
<td>Activity</td>
</tr>
<tr>
<td>--------</td>
<td>----------</td>
<td>----------</td>
</tr>
<tr>
<td>Winter</td>
<td>November-February (Bengali: Agrahayan to Magh)</td>
<td>During the winter fishers start catching crabs. Although crabs are available during the summer months, the number of crabs increases during the winter. Crab-fishers use small country boats in order to enter narrow rivers and creeks. Generally three people go for crab collection. Women too accompany men in crab fishing. In winter TPS collection gets almost stopped as prawn seeds become unavailable. However, the price of TPS rises in the winter because of higher demands. Aman paddy which was sown earlier is harvested during November-December.</td>
</tr>
</tbody>
</table>
Table 3.5: Amount and value of Non-timber Forest Produces (honey and wax) in the STR

<table>
<thead>
<tr>
<th>Year</th>
<th>Nature of Non-timber Forest Produce (NTFP)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Crude Honey</td>
<td>Wax Brick</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quantity Collected (in Kg.)</td>
<td>Value Earned (in Rs.)</td>
<td>Quantity Collected (in Kg.)</td>
<td>Value Earned (in Rs.)</td>
</tr>
<tr>
<td>2004-2005</td>
<td>22,119.500</td>
<td>11,50,215.00</td>
<td>1,100.00</td>
<td>1,43,000.00</td>
</tr>
<tr>
<td>2005-2006</td>
<td>30,552.000</td>
<td>17,26,799.00</td>
<td>1,559.00</td>
<td>2,45,804.00</td>
</tr>
<tr>
<td>2006-2007</td>
<td>25,170.000</td>
<td>13,56,176.00</td>
<td>1,142.175</td>
<td>1000 kg wax sold of value: Rs. 1,34,160.00</td>
</tr>
<tr>
<td>2007-2008</td>
<td>21,368.000</td>
<td>13,03,446.00</td>
<td>1,396.275</td>
<td></td>
</tr>
<tr>
<td>2008-2009</td>
<td>12,550.000</td>
<td>7,16,479.00</td>
<td>596.450</td>
<td></td>
</tr>
<tr>
<td>2009-2010</td>
<td>13,800.000</td>
<td>7.78.734.00</td>
<td>NIL</td>
<td></td>
</tr>
<tr>
<td>2010-2011</td>
<td>14,300.000</td>
<td>8,17,350.00</td>
<td>265.300</td>
<td>1934 kg wax sold– Total Value: Rs. 3,22,615.00</td>
</tr>
<tr>
<td>2011-2012</td>
<td>18,025.000</td>
<td>10,27,425.00</td>
<td>1468.00</td>
<td>3,12,000.00</td>
</tr>
</tbody>
</table>

Source: STR Annual Report 2011-2012
Table 3.6: Annual Registration Fees for non-mechanized boats or dinghies

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Capacity of Boat in Quintal (Qtls)</th>
<th>Annual Registration Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>10 Qtls. capacity or less</td>
<td>Rs. 30</td>
</tr>
<tr>
<td>2.</td>
<td>Over 10 Qtls. But not over 20 Qtls. Capacity</td>
<td>Rs. 60</td>
</tr>
<tr>
<td>3.</td>
<td>Over 20 Qtls. But not over 40 Qtls. Capacity</td>
<td>Rs. 60</td>
</tr>
<tr>
<td>4.</td>
<td>Over 40 Qtls. But not over 120 Qtls. Capacity</td>
<td>Rs. 60</td>
</tr>
<tr>
<td>5.</td>
<td>Over 120 Qtls. But not over 200 Qtls. Capacity</td>
<td>Rs. 125</td>
</tr>
<tr>
<td>6.</td>
<td>Over 200 Qtls. But not over 400 Qtls. Capacity</td>
<td>Rs. 275</td>
</tr>
<tr>
<td>7.</td>
<td>Over 400 Qtls. Capacity</td>
<td>Rs. 325</td>
</tr>
</tbody>
</table>

Source: Field Director’s Office, Sundarban Tiger Reserve (STR), 2012.
CHAPTER IV

Ecotourism as an Alternative Livelihood Opportunity in the Sundarban Biosphere Reserve

Introduction

In this chapter I examine the impacts of ecotourism on local residents of Pakhiralaya mouza—a village located on the edge of the Sundarban Tiger Reserve (STR). Moreover, I examine how the expansion of ecotourism in the fringe villages located outside the STR is not sufficient to bring a substantial improvement in the livelihood of local residents of Pakhiralaya mouza. Considering the lack of clear guidelines on ecotourism from the State Government of West Bengal, in this chapter, I use the words “ecotourism” and “tourism” interchangeably. Here, I argue that the economic benefits of ecotourism or tourism are site specific within Pakhiralaya mouza. This means people who are residents of Pakhiralaya Dakshin Para, a locality adjacent to the Gomor River, have greater chances to be involved in tourism as they live in the vicinity of the hotels and lodges. In this chapter, I highlight that residents of Pakhiralaya Paschim Para, Uttar Para, and Pakhiralaya Jele Para (the locality where traditional fishers live and also a part of Pakhiralaya Dakshin Para) have fewer chances to be associated with ecotourism or tourism activities although they might enjoy the indirect benefits of ecotourism. At Pakhiralaya, not all villagers have equal incentives to involve in tourism activities nor can all villagers gain equal economic benefits out of tourism. In sum, in this chapter, I demonstrate how ecotourism is very limited in its scope involving local people (including local fishermen of Pakhiralaya) and providing livelihood for them. Here, I would like to point out that the practice and expansion of ecotourism in the fringe villages of the STR complicates the current conservation model in the Sundarban and explains why this conservation model cannot be simply labelled as “fortress” conservation. This is because one of the goals of ecotourism is to provide incentives to local people so that local people become interested in conserving biodiversity. Although expansion of ecotourism or tourism in and around the STR prevents us to label the conservation model of the
Sundarban region as “fortress” conservation, it fails to provide an alternative income opportunity for the fishing communities of Pakhiralaya. The local fishing communities receive little or no economic benefits out of ecotourism at Pakhiralaya. Local residents, who are full time engaged in tourism business by building hotels, constructing grocery stalls, and by renting mechanized boats to tourists, earn some economic benefits of tourism. But bulk of the economic benefits is enjoyed by outside private enterprises especially the outside hotel owners who invest in tourism business at Pakhiralaya.

In this chapter, I have also briefly discussed about Pakhiralaya Eco-development Committee (EDC) and its overall impacts on the local residents, especially the impacts on local fishing communities. My point is to demonstrate that despite the presence of the EDC and its development activities, fishing communities of Pakhiralaya are unable to find any alternative to the forest-based fishing and therefore, continue to venture in the forest to catch fish and crabs. As I mentioned in Chapter 2 that establishment of the EDCs in the fringe villages of the STR complicates the fortress conservation model, similarly the establishment of the Pakhiralaya EDC in 1998 (STR Annual Report 2007-2008) prevent us to put any specific label to the overall conservation and resource management of the Sundarban Biosphere Reserve (SBR).

The first section of this chapter introduces the concept of ecotourism and its role in conservation. This section also provides a background of ecotourism in India. The second section provides a detailed account of ecotourism in and around the STR with a focus on tourism regulation, ecotourism spots and description of tours. More specifically, it focuses on the development of tourism at Pakhiralaya. The third section of this chapter demonstrates the impacts of tourism at Pakhiralaya and its limited contributions to the local economic development.

**Section I: Ecotourism and its Link with Biodiversity Conservation**

The concept of ecotourism can be traced as far back as to 1976 when Budowski used the term in an article titled “Tourism and Conservation: conflict, coexistence or symbiosis.” The
concept originated as a reaction against the mass tourism which often negatively impacts the natural areas (Orams 1995). Ecotourism has also been identified as an alternative to mass tourism due to its ability to meet the economic, social and cultural needs of local communities (Khan 1997 quoted in Walpole and Goodwin 2000). The concept also emerged as there was a growing interest in protecting natural environment in the 1970s and 1980s (Blamey 2001). During this time developing countries also began to understand that nature based tourism is less destructive to the earth’s physical environment and provide foreign exchange in return. Therefore, by the late 1980s many developing countries recognized the role of ecotourism in integrating conservation and livelihood of local people living around the protected areas such as national parks and sanctuaries (Ibid.).

There is no consensus on the definition and meaning of ecotourism (Campbell 1999; Stone and Wall 2004; Reimer and Walter 2013). However, most scholars agree that ecotourism involves travel to a natural environment and it allows tourists to enjoy nature (Eagles 1998 quoted in Stone and Wall 2004). In this sense, it reflects one of the popular definitions of ecotourism which is: “[Ecotourism is] environmentally responsible travel and visitation to relatively undisturbed natural areas, in order to enjoy and appreciate nature (and any accompanying cultural feature—both past and present) that promotes conservation, has low visitor impact, and provides for beneficially active socio-economic involvement of local populations” (Ceballos-Lascuráin 1996; Stem et al. 2003b).

In the twentieth century, the discourse of ecotourism and the idea of providing alternative livelihood opportunities have gained significant importance worldwide in the development of communities, especially communities located on the edge of the protected areas (Bookbinder et al. 1998). Despite the lack of consensus on what consists of ecotourism or what not, most scholars agree that considerable amount of economic benefits of tourism should go to the local communities who live near the ecotourism sites (Weaver 2001 quoted in Stronza and Gordillo 2008). According to Stem and others (2003a) ecotourism provides economic benefits such as
employment generations, developing infrastructures, and expansion of business at local scale. Similarly, Langholz (1999) showed that income from ecotourism can reduce dependence on forest products and other extractive resource utilization such as logging. Research has shown how ecotourism can bring a change to household economies by changing people’s use of their natural environment (Stonich 2000 quoted in Stronza 2007).

Ecotourism is considered as a subset of nature-based tourism (Brandon 1996; Orams 2001) and it is differentiated from the nature-based tourism on the basis of scale. In other words, ecotourism should have less environmental and social impacts as compared to nature-based tourism (Brandon 1996). The other difference between the nature-based tourism and ecotourism is that ecotourism should comply with the conservation goals of a protected area whereas nature-based tourism often comply with the development objectives of a country at national level (Ibid.). Ecotourism has been considered a popular tool for biodiversity conservation on the ground that biodiversity conservation must generate some economic benefits for the local communities so that the local communities become motivated to conserve and protect the biodiversity (Salum 2009). It has been seen when local residents have control on the management and operations of ecotourism, ecotourism substantially provides economic benefits to local communities and therefore, local communities support conservation (Lindberg et al. 1996). Brandon (1996, 7) states that in order to create economic benefits for conservation, park and protected area managers must collect tourism related fees. Furthermore, revenue generated from the entry fee in parks and protected areas can be used to compensate local people’s crop and livestock damage (Goodwin 1996). In developing countries revenue earned from ecotourism could be as high as US$ 29 billion which could be available for conservation (Kirkby et. al. 2011). One of the successful case studies of ecotourism providing incentives to conservation is from the Annapurna Conservation Area Project (ACAP) in Nepal. The revenues earned from trekking in ACAP directly go to the project and have helped improving the income of local residents including the lodge owners, porters, and shop keepers (Wells and Brandon 1992;
However, there are negative impacts of ecotourism which can lead to its destruction (Jacobson and Robles 1992). The income from ecotourism can be unstable depending upon the fluctuating number of visiting tourists (Ibid.). Success of ecotourism and its resultant increase in number of visiting tourists can lead to pollution, solid waste generation, and degradation of forest (Jacobson and Robles 1992; Brandon 1996). For example, increasing number of tourists in the Galapagos National Park, Ecuador, has led to trail erosion and disturbance to animals of the park (Brandon 1996). In addition, very little or no revenue earned from ecotourism may reach to local people (Healy 1994; Brandon 1996; Walpole and Goodwin 2000). A research conducted in 23 protected areas has shown that economic benefits for parks and local people were not substantial (Wells and Brandon 1992). Brandon (1996) shows that financially successful parks can also provide little economic benefits to local people. For example, Khao Yai National Park in Thailand annually earned revenue of $5 million; the communities living around the park received very little benefits (Ibid.).

Ecotourism has been identified as an important component of Integrated Conservation and Development Projects or ICDPs. ICDPs are projects that link biodiversity conservation with socio-economic development of local communities (Stem et al. 2003b). The fundamental idea of ICDPs is that local people will take initiatives to conserve natural resources when they will receive proper incentives (Ibid.). On the basis of this idea that ecotourism can provide motivations for protecting biodiversity of a region, many governments and conservation agencies in the developing countries like India have included ecotourism in ICDPs (Yuan, Dai and Wang 2008; Misra et al. 2009). However, ICDPs are not beyond criticisms. There have been debates over ICDPs effectiveness in conserving natural resources in the long run (Crook and Clapp 1998; Stem et al. 2003b). Scholars have shown that often some particular socio-economic groups benefit from the ICDPs over others and thus further deepen the differences among such groups undermining the initiatives of conservation (Wells 1996 quoted in Stem et al. 2003b). Another study conducted by Stone and Wall (2004) at Jianfengling National Forest Park (JNFP) and
Diaoluoshan National Forest Park (DNFP) in Hainan Province of China, shows that although local communities support ecotourism and are highly optimistic about it, socio-economic benefits from ecotourism are very limited and little educational opportunities exist for the tourists. There are even examples in which most of revenues of ecotourism is appropriated by the “central treasury” and park managements receive a fraction of it (Brandon 1996). Recently Ojeda (2012) has showed how ecotourism can evict local communities from the protected area and can significantly transform local people’s livelihood. In this specific case, ecotourism is very much linked with neoliberal conservation, land grabbing, privatization and dispossession (Ibid.).

The topographical variations and varied climatic conditions of India have created diverse natural areas where ecotourism could be promoted. There has been significant increase in the number of tourists in India in the 1990s. India earned $3.04 billion from tourism in 2001, and 26.4% of total foreign tourists who arrived in India in 2001 opted for wildlife, adventure, and beach tourism (Kumar and Chauhan 2007; Boora 2005, 250). The number of domestic tourists in 2003 was 300 million in India and most tourists were interested in nature based tourism due to increased urbanization, industrialization and increase in earning (Boora 2005). In 1998, the Government of India provided guidelines on ecotourism and identified its key players such as government, operators, visitors, host communities, NGOs and research institutions (Seema et al. 2006) in which the role of host communities were only focused on protecting local ecology and providing service to ecotourism. The National Tourism Policy in 2002 put a greater emphasis on ecotourism in order to reduce poverty and unemployment, improve the status of women, preserve cultural heritage, develop local crafts and finally will foster the growth of a more just society (NTP 2002, Ministry of Tourism). Following Government of India’s thrust on ecotourism in the 1990s, several states of India including West Bengal also emphasized ecotourism as one of the tools in conservation and community development. In 2001-2010, West Bengal ranked among top ten tourist attracting states of India (West Bengal Tourism Department Annual Administrative Report, 2007-08-2010-11). The state government of West Bengal recognized the importance of
tourism in state and national economies and developed a tourism policy in 2008. In that policy, the state government had identified ecotourism as one of the specific tourism products and stated that “[t]he key elements of ecotourism projects are the existence of a national park or sanctuary as a prime attraction, the project must be ecologically, socially, culturally and economically sustainable, and that it should have participation of local stake-holders” (West Bengal Tourism Policy, 2008). In this policy the government also encourages participation of private sectors and establishment of private accommodation facilities (hotels and resorts) around protected areas (ibid.). However, there is hardly any clear guideline from the West Bengal Tourism Department regarding practicing ecotourism in the Sundarban, which could boost conservation of the Sundarban ecosystem as well as provide economic benefits to local people. Recently, in 2012 The Ministry of Environment and Forest prepared a detailed guideline for ecotourism in protected areas of India which emphasizes “community driven” ecotourism. According to this new guideline all protected areas should have a site specific ecotourism plan which will be approved by the state government. Furthermore, all tourist facilities located within five km. of the protected area need to pay 10% of their turnover to the state govt. which will be spent on biodiversity conservation and livelihood development. Interestingly when I last visited Pakhiralaya in October 2012; I found that few local stakeholders were aware of this new ecotourism guideline. To date, there was no site specific ecotourism plan for the STR.

Section II: Ecotourism in the STR

This section provides an overview of tourism or ecotourism in and around the Sundarban Tiger Reserve (STR). In addition, it explains how the Forest Department regulates the ecotourism in the STR. The section also provides a background of tourism development at Pakhiralaya along with description of tours, popular ecotourism spots, origin of tours, types of

tours and tourism activities preferred by the tourists. This background information is necessary to understand the impacts of tourism on local people’s livelihood.

The STR is the forested part of the Sundarban Biosphere Reserve (SBR) and is one of the protected areas (PA) in India where endangered Bengal tigers are conserved. When Project Tiger was launched in India in 1973, the STR was one of nine selected reserves. For the better management of the STR, the state Forest Department had divided the STR into core and buffer areas. At present, ecotourism activities are allowed in the buffer area of this tiger reserve. The total area of the STR is 2,584.89 sq. km. which is completely covered by mangrove forest. Of the total area the buffer area of the STR covers 885.27 sq. km. The ecotourism spots are all spread over in this 885.27 sq. km. There are several popular ecotourism spots in the STR such as Sajnekhal, Sudhanyakhal, Dobanki, Netidhopani, Burirdabri and Jhingekhal. Netidhopani falls under the core area, or Critical Tiger Habitat, and until the tourist season of 2011-12, this ecotourism spot was open for visitors. In July 2012, the Supreme Court passed an order to ban ecotourism in the core area of tiger reserves in India. According to that order the Forest Department decided to close Netidhopani for the 2012-13 tourist season. Sajnekhal, Sudhanyakhal and Dobanki fall under the Sajnekhal Wildlife Sanctuary. The Sajnekhal Wildlife Sanctuary covers an area of 362.42 sq. km. and is part of the buffer area (STR Annual Report 2009-10). Burirdabri and Jhingekhal lie in the eastern part of the STR, close to the India-Bangladesh border. All of the ecotourism spots together form an ecotourism complex which is called the STR Ecotourism Complex.

**Nature and Mode of Ecotourism in and around the STR**

Since the establishment of the STR in 1973, tourism has been encouraged in the buffer area of the STR. On average 30,000-40,000 domestic and international tourists (Figure 4.1) visit

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55 Please see BBC News: Indiahttp://www.bbc.co.uk/news/world-asia-india-18967906
the STR each year (STR Management Plan 2000-01-2009-10, 64). As all the ecotourism spots are spread in the buffer area of the STR surrounding the Gosaba Block, this chapter focuses on the nature of tourism only in Gosaba Block which is one of the 19 community development blocks comprising the Sundarban region in West Bengal. More specifically, this chapter focuses on the Pakhiralaya village, one of the 50 villages of the Gosaba Block, and demonstrates the nature and mode of ecotourism. The Pakhiralaya village, located just opposite of Sajnekhali Wildlife Sanctuary and Sajnekhali Range Office is one of the main entry points of ecotourism in the STR.

![Bar graph showing the number of tourists visited the STR between 2003-04-2010-11.](image)

**Figure 4.1.** Bar graph showing the number of tourists visited the STR between 2003-04-2010-11.

**Regulation of Ecotourism in the STR**

The West Bengal Forest Department regulates the tourism in the STR by providing permits to the visitors from the office of the STR Ecotourism Range (Figure 4.2). This permit is actually an entry fee which each visitor needs to pay in order to visit the ecotourism spots. The cost of the permit has increased over the years. In July 2009, the entry fee for an individual was Rs. 15($0.28). In subsequent years the Forest Department increased the entrée fee and when I
last visited the STR in the 2012-13 tourist season, the fee was Rs. 40 ($0.74) per individual. Tourist launches and boats also need to pay the entrée fee and in 2012-13 the Forest Department charged Rs. 500 ($9.21) per launch and Rs. 300 ($5.53) per motor boat (small 2 cylinder and 4 cylinder boats and *bhubhutii*) for a single day. The launches are allowed to carry maximum 64 people (per launch) during the trips in the Sundarban Forest. Visitors also need to pay a separate charge if they carry a video camera within the STR and the fee was Rs. 200 ($3.41) per day, per trip. There is no charge for still cameras. There is no entrée fee for children who are younger than 5 years old. The department provides a reduced fee for students who visit the STR in a team of 20 or more. In 2012-13 the fee for students per day was Rs. 10 ($0.17). The launch and boat owner also needs to renew their Boat Licensing Certificate (BLC) annually. The cost of annual renewal was Rs. 600 ($11.05) for the launch and Rs. 400 ($7.37) for motor boat. It is mandatory for tourists to hire a tour guide in the STR. In the tourist season of 2012-13 the hiring cost of a tour guide was Rs. 300 ($5.53) per day. For foreign tourists the hiring cost of a tour guide was double (Rs. 600 or $11.05). Only registered tour guides of the Forest Department are allowed to hire for a trip. It is not mandatory to hire a tour guide for the visitors who only visit the Sajnekhali ecotourism spot.
Figure 4.2. The Sajnekhali Ecotourism Range: Visitor need to pay the entry fees in order to visit the ecotourism spots in the buffer area of the STR

Tours in the STR

In general a tour in the STR means cruising through the rivers and creeks by a launch or a boat and enjoying the beauty of the Sundarban mangrove forest as well as its wildlife. The cruising through the forest is associated with occasional halts at a few watchtowers. Visiting tourists in the Sundarban are mainly engaged in taking photos, observation of wildlife from the watch towers and bird watching. Other minor activities include taking a tour in a nearby village, watching local folk drama, talking to the tour guides in order to gather more information about the Sundarban region and taking a short ride in a non-mechanized boat or dinghy. In 2011-2012 tourist season, 91% of the total visiting tourists at Pakhiralaya were engaged in capturing photographs, 89% were engaged in observing wildlife from the watchtower, and 41% were engaged in bird watching. 22% of the total visiting tourists took a tour in the Pakhiralaya village to interact with the local people. 17% of the total visiting tourists watched Banabibi Pala\textsuperscript{56} which is a folk play performed by the local people at different hotels and lodges at Pakhiralaya. 11% of

\textsuperscript{56}Banabibi Pala is also called Dukhe Yatra. This is a folk play performed at different hotels of Pakhiralaya by the local actors. Local men and women who have talent in acting and singing form a team to perform such folk play. The story describes how the Goddess of Forest, Ma Banabibi protects a poor boy Dukhe from the wrath of the tiger god Dakshin Ray.
the total visiting tourists talked to the local tour guide to gather more information about the Sundarban region. Only 2% of the total visiting tourists took a short ride in a dinghy in the Gomor River.

**Figure 4.3.** Different types of activities in which tourists engage themselves during a tour in the Sundarban

The tourist launches and boats are not allowed deep in the Sundarban forest and therefore, follow certain routes which are well known to the tour operators who conduct such tours. In order to protect the tourists from dangerous wild animals including tigers, the tour operators only follow the wider water channels where chances of tiger attacks are minimal. For the safety of the tourists, the Forest Department allows the visiting of ecotourism spots only during the day, from sunrise to sunset. Hunting, fishing, damaging the flora and fauna, polluting water ways, and entry to the core and restricted forest areas of the STR are strictly prohibited and such activities are considered serious offences which could lead to a fine of Rs. 25,000 ($ 427)
and/or imprisonment up to seven years (Figure 4.4). The entire Sundarban Reserve Forest (SRF) including the STR is a “no plastic zone” (STR Annual Report 2009-2010) and therefore tour operators who arrange tours in the STR are quite concerned with keeping the rivers clean. The reason that tour operators take effort to keep the river clean is that they want to avoid the fines associated with river pollution. This became more clear to me during my field visit at Pakhiralaya, when I was introduced to Deepak the 35 year old sareng (who helps navigate the launch-driver) of M. V. Monorama (a six cylinder launch). Deepak informed me that tourists are always warned in the beginning of the trip so that they do not pollute water channels by throwing over their leftover food. He also informed me that the tour operator has to pay the fine if any of the tourists in his team pollute the river by throwing over plastic plates, glass, or leftover food. The fine could be as high as Rs. 5,000. He further explained that if a tourist drops any plastics in the river mistakenly and if any of the staffs of the launch notice it, one of them would take a jalti (a round-shaped net with a long wooden handle) to collect the plastic from the river. Although the fear of fine acts as an impetus to keep the river clean, people like Deepak who depend on tourism for their livelihood, are aware of the significance of a clean river in environmental protection.

From Deepak, I became aware of some popular routes which are followed in the STR in order to visit the five popular ecotourism spots: Sajnekhali, Sudhanyakhali, Dobanki, Netidhopani and Burirdabri. The majority of tour operators, who arrange tours through launches and mechanized boats in the STR, start their journeys from Canning, Sonakhlai and Basanti. Canning is a small town in the district of South 24 Parganas located on the South bank of the Matla River and is also one of the important gateways to the eastern part of the Sundarban region. Canning is well connected with the city of Kolkata by the Kolkata Suburban Railway. From Sealdah Rail Station it only takes one and half hours to cover a distance of 46 km to reach Canning. The popular tourism routes (Figure 4.5) which are followed from Canning are below:
Route 1:
Canning → Sajnekali → Banabibi Bharani Creek → Sundarkhali Creek → Gajikhali Creek → Choragajikhali Creek → Deulbharani Creek → Panchamukhani Netidhopani → Dobanki → Pakhiralaya → back to Canning

Route 2:
Canning → Sajnekali → Pichkhali → Sarakkali → Sudhanyakali → back to Canning

Route 3:
Canning → Pakhiralaya (night stay) → Sajnekali → Satjelia → Kumirmari → Jhilla - Raimangal → Burirdabri Khal (creek) → Burirdabri ecotourism spot → Pakhiralaya (night stay) → back to Canning

Figure 4.4. A Signboard showing the rules and regulations for the visitors in the STR

57 The signboard shows the following rules:
“Do not carry any polythene bag”
“Don’t (sic) pollute the pristine habitat by throwing anything out from boat/launch”
“Don’t (sic) play any sound system including loud speakers or shouting as it disturbs wildlife and co-visitors thumb rule is that no sound should go out of water craft”
“Do not enter in tiger reserve without valid permit which can be obtained from sundarban (sic) tiger reserves offices at Canning, Sonakhali, Sajnekhal, Bagna.”
“Staying within tiger reserve is permitted only from sunrise sunset.”
“Hunting, fishing, and damage to flora and habitat, entry in core area and movement in un-permitted forest locations is (sic) viewed as serious offence.”
Figure 4.5. The map shows one of the popular tourists’ routes in the STR including the four important ecotourism spots of Sajnekhali, Sudhanyakali, Dobanki, and Netidhopani. These four spots are easily accessible from Pakhiralaya, which is one of the most important entry points of ecotourism in the STR. (Cartography by Kar and Ghosh)

“Any violation of law including above listed rules may attract relevant sections of Wildlife (PROTECTION) Act 1972, INDIAN FOREST ACT 1927 and orders of pollution control board leading to fine up to Rs. 25,000 and or imprisonment up to seven years.”
**Ecotourism Spots in the STR**

Among the ecotourism spots the most easily accessible from Pakhiralaya is Sajnekhali. Each tourist must visit Sajnekhali in order to obtain the permit for visiting all the ecotourism spots. There are two watch towers at Sajnekhali, each of which can hold 20 viewers at a time. One can enjoy a panoramic view of the Sundarban mangrove forest from these two watch towers (Figure 4.6). Spotted deer and monkeys are easily seen from the watch tower. In order to teach Sundarban’s ecology and provide an idea of local people’s livelihood, the Forest Department built a Mangrove Interpretation Center (Figure 4.7) within the premises of Sajnekhali Ecotourism Range.

![Figure 4.6. The panoramic view of the Sundarban mangrove forest from the watch tower of Sajnekhali Ecotourism Range](image)

Besides the Mangrove Interpretation Center there is a crocodile pond and a turtle rearing center at Sajnekhali which attract tourists. At Sajnekhali, the Forest Department breeds and rear critically endangered river terrapin (*Batagur baska*). In 2012-13 winter the number of adult river terrapin was 11 and the number of newly born river terrapin was 32. Since 1996, the department started rearing and breeding river terrapin at Sajnekhali (Fieldwork Experience 2012). In this particular
conservation project eggs of river terrain are collected from nature and hatched under artificial condition.

Figure 4.7. Mangrove Interpretation Center at Sajnekhali Ecotourism Range

After visiting Sajnekhali most tourists visit Sudhanyakhali. The watch tower can hold 25 people at a time. There is a sweet water pond near the tower which provides drinking water to the wild animals. The spot is also good in terms of sighting a tiger in the wild. Besides the watch tower, the Forest Department created a Mangrove Park conserving various mangrove species.

The next halt in one’s journey in the STR is Dobanki. Dobanki was opened for tourists in 2003 (Dinda 2007). There is no watch tower at Dobanki, instead one can take a long walk along the canopy path which is 12 feet high from the ground. The canopy path is more than half kilometer long and is covered with a strong net which protects tourists from the wild animals.

At Netidhopani there is a watch tower and it can hold 20 people at a time. The Forest Department has also excavated a sweet water pond to provide drinking water to the animals. Most tourists visit Sajnekhali, Sudhanyakhali, Dobanki and Netidhopani in one day.
Burirdabri is located along the India-Bangladesh border. Therefore it takes almost one day to reach the spot from the Pakhiralaya. The watch tower can hold 10 people and offers a glimpse of the Sundarban mangrove forest in Bangladesh located in the district of Khulna. From this spot tourists can also get a view of the Raimangal River, which runs between India and Bangladesh, and forms a natural boundary between the two countries.

Jhingekhali ecotourism spot falls under Jhingekhali Beat Office, Basirhat Range. The watch tower at Jhingekhali can hold 20 people at a time. It also has a sweet water pond within its premises. This is far away from the entry point of Pakhiralaya, therefore tourists who enter Sundarban via Pakhiaralaya hardly visit this place.

In 2011-2012 tourist season, 90% of the total traveling tourists at Pakhiralaya visited Sajnekhali, 72% of the traveling tourists visited Sudhanyakhali, 72% of the traveling tourists visited Dobanki, 54% of the traveling tourists visited Netidhopani, 1% visited Burirdabri and another 1% visited other ecotourism spots (Table 4.1). Among these tourists, 26% visited the Sundarban after recommended by their friends and relatives, 2% of the tourists visited the Sundarban region after gathering information from tourism trade fare, 10% came to know about the region from internet, 3% of the traveling tourists received information from the travel agency or tour operators and 59% visited after gather information from different sources such as from travel guide books, novels\textsuperscript{58} and television programs (Figure 4.8).

\textsuperscript{58}Tourists mentioned about the famous novel “The Hungry Tide” written by Amitav Ghosh
Figure 4.8. Percentage distribution of tourists and their different sources of collecting information about the Sundarban Region prior to the trip

The Tourism Entry Point Pakhiralaya and the Narrative of Naming

Pakhiralaya is one of the 50 mouzas of Gosaba Block. In the case of Pakhiralaya mouza, it is equivalent to a village as there is only one village which forms this mouza. The Bengali word “Pakhiralaya” means the abode of birds. More specifically, the village was famous for its migratory birds that used to visit this place in winter. Many of the residents of Pakhiralaya acknowledged the fact that between the 1960s and 1970s numerous migratory birds used to select the place and the mangrove forest of Sajnekhali (opposite to Pakhiralaya and across the Gomor River) to build nests. In those days people from the city of Kolkata and other towns flocked to Pakhiralaya to see the migratory birds. Local people used to earn some money by acting as tour

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59 A mouza is the smallest administrative unit organized by the British in colonial India. The purpose was to collect revenues. Each mouza has a Jurisdiction List number or J.L.No. by which it can be identified. There could be one or more than one village in a mouza. The Census of India provides village level data and for them a mouza is equivalent to a village.
guides to the visitors. The tour guides used to row their dinghies along the Gomor River in order to show the birds to the enthusiastic visitors. The Forest Department allowed this activity and each tourist had to pay a small fee to the Forest Department. However, not many visitors used to come compared to the present day, as the village was not easily accessible from the city of Kolkata. By the late 1990s, the birds stopped coming to Pakhiralaya. Local residents provided two explanations for this. First, the increasing number of visitors at Pakhiralaya started ruining the solitude of the site, which hampered the nesting and breeding of the birds. Second, the ceaseless counting of the adult and young birds by a non-governmental organization, for the purpose of maintaining a bird census, led to a gradual dwindling of number of birds visiting the place in each winter. According to the residents, the NGO was approved by the state Forest Department. Some of the older residents of Pakhiralaya described how the field staffs of the NGO used to touch and count eggs from the birds’ nests. They described this as torture to the birds and encroachment on the birds’ space; that is why all those migratory birds eventually stopped visiting Pakhiralaya. Interestingly, a third explanation was slowly revealed to me as I became familiar with the local residents and lodge managers of Pakhiralaya. One of the lodge managers and a resident of Pakhiralaya explained that one of the significant reasons behind the dwindling population of migratory birds is local peoples’ greed. I asked him to explain that more and he said local people used to hunt those birds. They used to build an artificial bird in an open field to attract real birds. The artificial bird was made of straw and white colored papers. The villagers used to prepare several traps beforehand and spread those in the field. When real birds used to see the artificial bird and flew down to the field, they were easily trapped by the villagers. The trapped birds were sold in the locality for consumption of meat.

**Development of Tourism at Pakhiralaya**

Since the 1990s, Pakhiralaya became more accessible as a concrete road was built between Pakhiralaya and its adjacent village Rangabela. In 1991, the eighth president of India, R. Venkataraman, intended to visit Rangabela in order to gain an experience of village life in the
In addition, the president was also interested in seeing the activities of a local NGO named Tagore Society for Rural Development (TSRD) which had been working in the Sundarban region since the 1970s. Therefore, in honor of the president, a road from Pakhiralaya to Rangabelia was built instantly in just 15 days so that the president could come by road and visit Rangabelia (Kanjilal 2001). Later, the secretary of the TSRD, Sri Tushar Kanjilal, took extensive effort to extend the road up to Gosaba Bazaar and Jatirampur Ferry (Fieldwork Experience 2011-12). Within a few months local residents started plying vans along this road. It can easily be imagined how this concrete road increased connectivity of Pakhiaralaya, and in general, the connectivity of Gosaba to Kolkata and its suburbs. Since then, the tourism activities gradually increased and new lodges came up to cater to accommodation needs. By 1993 three lodges sprang up at Pakhiralaya. These were: Zilla Parishad Guest House, Madhuban, and Krishnakunja (Fieldwork Experience 2011-12). In 2005, there were 9 hotels including the Zillah Parishad Guest House (Dinda 2010, 40). At present there are 19 hotels at Pakhiralaya among which 18 are private enterprises. Among these 19 hotels only the Zilla Parishad Guest House is owned by the state government (Table 4.2). Most of these hotels are located along the Gomor River which facilitates transportation of tourists from Canning, Sonakhali, Basanti, Godkhali, and Gosaba (Figure 4.9). All the private hotels and lodges of Pakhiralaya are not registered under the West Bengal Tourism Department and therefore, the state tourism department has no direct power to monitor the activities of these hotels. November to February is considered the peak season for ecotourism at Pakhiralaya. In general, the cost of renting a hotel room increases during the peak season and the price is usually twice the price of the off season. Some of the lodges like Banani Resort, which caters to the demand of the upscale tourists of Kolkata, have fixed room rent year

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60 These 19 hotels are: Chital, Zilla Parishad Guest House, Aram, Apanjan, Avinandan Banani, Krishnakunja, Mainak, Madhuban, Barman Villa, Hanshoraj Resort, Mangrove, Sundari, Hemanta Lodge, Swastik, Shri Ma, Pramila, Mouchak and Tiger Land.

61 This information was provided by one of the top-ranked officers of the West Bengal Tourism Department who wanted to remain anonymous.
round. For example, at Banani, the rent of a double bed semi-deluxe room is Rs. 1,200 ($ 20) per night. Similar to the Banani Resort, the lodge Krishnakunja, whose owner is from Kolkata, has a fixed room rate for the whole year. On average, during the peak season the cost of a hotel room varies from Rs. 300-1,200 ($ 5-20) per night for a single bed room depending on the service provided.

**Figure 4.9.** Distribution of Hotels and Shops on the bank of Gomor River, Pakhiralaya, Gosaba.

There is a government tourist lodge at Sajnekhali, located within the premises of Sajnekhali Range Office which is opposite of Pakhiralaya. This lodge was established in 1984 (Gangopadhyay 2007). The tourist lodge is run by the West Bengal Tourism Development Corporation Limited (WBTDC) which also runs a booking office in Kolkata. The room rent is usually higher than most of the lodges at Pakhiralaya and the government tourist lodge largely
caters to the needs of affluent tourists (Dinda 2010). In the 2012-13 tourist season the price of a double bed non air-conditioned room at the Sajnekhali govt. tourist lodge was Rs. 1,400 per night. This amount excludes a five percent service charge. The room rent also included breakfast and dinner for two persons. They also have a dormitory of 15 beds and the cost of one bed in the 2012-13 tourist season was Rs. 500 per night (Fieldwork Experience 2012).

Most of the tours in the Sundarban are package tours arranged from Kolkata and other places such as Canning, Sonakhali, and Basanti. There are number of tour operators who organize package tours in the Sundarban. A package tour usually includes lodging, food, and transportation. First, tourists are brought to Godkhali via road (Figure 4.10) and then they are boarded on a boat or launch and are taken to a lodge at Pakhiralaya. Accommodations are also available at Dayapur, a nearby village of Pakhiralaya, across the Gomor River.

![Figure 4.10](image)

**Figure 4.10.** Tourists buses waiting at Godkhali, Basanti block. From Kolkata and other places tourists are usually brought to Godkhali via road. From Godkhali Ferry tourists are boarded on a boat or a launch and are taken to Pakhiralaya, Dayapur, Jamespur, and Annpur.

Most of the tour operators have their booking offices in Kolkata, Canning, Sonakhali, Basanti, and Gosaba from which they organize tours in the Sundarban. At Pakhiralaya, Ramen
Mandal is the only local tour operator who resides in the village and who has a booking office in Kolkata. He has a good business relationship with the hotel managers of Krishnakunja, Mainak and Madhuban and therefore bulk of his tourists is brought to these hotels. He is the only local entrepreneur who has invested in the development of Pakhiralaya outside the tourism. In 1994, he and his wife Sagarika Mandal established a primary school named Banalata Sikhya Niketan. In future, he would like to build his own lodge. During an informal interview he informed me that he has already bought 3.5 *bigha* of land for that purpose.

The package tours in the STR are generally organized for two or three days. The survey with tourists conducted at Pakhiralaya in 2011-2012 demonstrated that 56% of the total tours originated from the city of Kolkata and remaining 44% originated from different districts of West Bengal such as North and South 24 Parganas, Hooghly, Darjeeling, Bardhaman, Howrah, Nadia, Maldah, Uttar Dinajpur, Dakshin Dinajpur, and Purulia (Figure 4.11). 69% of the total tours at Pakhiralaya were package tours and 31% were self-arranged (Figure 4.12). In 2011-2012, per head cost of a package tour at Pakhiralaya ranged between Rs. 10,000 to Rs. 1,000 ($170-17.07). 48% of the total package tours had per head cost below Rs. 3,000 while 39% had a cost of Rs. 3,000-6,000 ($51-102). Only 13% of the package tours had a cost of above Rs. 6,000 and these tours can be considered as upscale package tours (Figure 4.13).
Figure 4.11. Percentage of Sundarban tours originated from different districts of West Bengal. More than 50 percent of the tours originated from Kolkata, the state capital of West Bengal.\(^{62}\)

\(^{62}\) The map of West Bengal has been originally downloaded from [www.mapsofindia.com](http://www.mapsofindia.com) and then modified to show percentage distribution of origin of Sundarban tours at Pakhiralaya.
Figure 4.12. Types of tours opted by the visiting tourists at Pakhiralaya, Gosaba

As compared to package trips the self-arranged trips are less expensive. In 2011-2012, the maximum per-head cost of a self arranged tour at Pakhiralaya was Rs. 6,000 ($102) while the minimum cost was Rs. 1,250 ($21). 36% of the total self-arranged tours had per head cost below Rs. 2,000 ($34) while 45% had a cost of Rs. 2,000-4,000 ($34-68). 19% of the total self-arranged
tours had a cost of above Rs. 4,000 (Figure 4.14). At Pakhiralaya, the usual length of a tour is three days. In 2011-2012 tourist season, 58% of the traveling tourists stayed for three days, 37% of the tourists stayed for two days, 3% of the traveling tourists stayed for four days and only 2% stayed for more than 4 days (Figure 4.14).

**Figure 4.14.** Per head costs of self-arranged tours at Pakhiralaya, Gosaba

Informal interviews with the tour operators at Canning, Sundarban, also supported this fact that most tourists who visit Pakhiralaya, stays at least three days. The tour operators at Canning further stated that 60% tourists choose a package tour of three days.

Individuals, who visit by their own from Kolkata, or other districts of West Bengal, try to find accommodations just by negotiating with the local lodge owners or managers. Local lodge owners cater to the accommodation needs of these individuals who come without prior booking. During the peak time of tourism at Pakhiralaya, it becomes harder to get a room without prior booking. In that case, local lodge owners and managers send those tourists to a local resident’s
house for a home stay. Giridhari Mandal and Binoy Mandal are two such residents of Pakhiralaya who provide home stays to the tourists during the peak season of tourism.

![Tourists' Duration of Stay at Pakhiralaya, Gosaba](image)

**Figure 4.15.** Bar graph showing the duration of stay of the visiting tourists at Pakhiralaya, Gosaba

The cost of a home stay is generally cheaper than the cost of staying at a lodge. In the 2011-12 tourist season the cost of a single bed room at Giridhari’s house was Rs. 250 ($4.63) per night. Giridhari and Binoy have good social networking with the local lodge owners and managers and whenever a crisis of accommodation emerges they are called by the lodge owners and managers.
Section II: Impacts of Ecotourism on Local Communities including Fishers

This section discusses the impacts of ecotourism on local communities of the Sundarban including the fishers who venture deep in the Sundarban forest for fishing. It also examines the impacts of eco-development activities on local fishing communities to demonstrate that despite the Forest Department’s attempts to develop the fringe villages, local fishers still venture in the forest for their livelihood. This section also presents local fishers’ viewpoint towards tourism in the Sundarban. In this section, I mostly focused on three different impacts of tourism: impacts on van pullers, impacts on local lodge owners and shop keepers, and overall impacts on local residents of Pakhiralaya. Due to time constraint, I was unable to explore the impacts of tourism on boat owners of Pakhiralaya who usually rent their boats to lodge owners and tourists. However, an earlier study conducted in 2005-2006, shows that there were 18 boat owners at Pakhiralaya who rented their boats for tourism and other purposes (Gangopadhyay 2007). In sum, this section demonstrates that economic impacts of tourism in Pakhiralaya are confined in Pakhiralaya Dakshin Para, where most of the lodges and shops are concentrated. Villagers who live away from the Pakhiralaya Dakshin Para, more specifically from the Tiger Mor, are not influenced by tourism.

Impacts of Ecotourism/Tourism at Pakhiralaya

At Pakhiralaya, tourism is a seasonal business for the local people, and can only provide income for four months of a year. People who are not directly involved in tourism at Pakhiralaya such as local shop keepers (including grocery and tea stalls), van pullers, and daily wage laborers who work as cooks or sweepers also enjoy some indirect benefits of tourism. Nikhilesh Biswas, the secretary of Gosaba Thana Rikshaw Van Chalak Samiti informed that the total member of this samiti is 950 who pull their vans in four mouzas: Gosaba, Rangabelia, Pakhiralaya and Sonagar. There are about 300 van pullers alone in Pakhiralaya. During the tourist season a van puller, on average, earns Rs. 100 ($1.85) per day. During the off season per day earning is Rs. 60-80 ($1.11-$1.48). Nikhilesh further informed me that during the peak season of tourism each van
puller of Pakhiralaya makes 5-6 trips per day. During the off season each van rickshaw puller makes 3-4 trips per day. According to the estimate of 2011 census the total population of Pakhiralaya is 3,946. However, only 300 residents, which mean 7.6% percent of the total population, gain indirect economic benefits from tourism by pulling non-motorized vans between Pakhiralaya and Gosaba. Van pullers of Pakhiralaya said that the tourists who arrive at Pakhiralaya by boat do not necessarily need to ride a van. As most of the tourists are brought by travel agencies and tour operators, they arrange a boat from Godkhali and follow the river courses to reach Pakhiralaya. So, van puller incomes depend on those tourists who hire a van from Gosaba van stand in order to reach Pakhiralaya.

During my interaction with Nikhilesh, I was informed about a unique lottery system at each local van stand which provides fair chances to every van puller in terms of making equal number of trips in a day. In the morning at around 5, a lottery is made among the van pullers present at each van stand of Gosaba, Pakhiralaya, Rangabela, and Jatirampur. In order to conduct the lottery there should be at least 20 van pullers present at each van stand. Each van puller is only allowed to take part in such a lottery at a single van stand. The van driver, who gets ticket number one, stands first at the van stand and other van pullers stand behind him according to the number on their ticket. This lottery system or ticket system maintains an order at each local van stand and prevents any disputes among the van pullers, and helps maintain their social relations with each other. Without four passengers a van driver will not start his van from Gosaba Bazaar or from other local van stands. So, the minimum passenger requirement to start a journey is four. Nevertheless, the van pullers carry sometimes five or six passengers if there is space left on their van (Figure 4.16).
During my fieldwork at Pakhiralaya in 2011-12, local residents argued that although people of Gosaba might have jobs during the peak season of tourism, the direct benefits of tourism business is limited only to Pakhiralaya itself. Even at Pakhiralaya, while hotel managers are mostly local, some of the hotel owners are not residents of the village. Among 18 private hotels, 9 have local ownerships (Table 2; Figure 4.17). Remaining 7 hotels are completely owned by the outsiders and only 2 have joint ownerships with a local resident of Pakhiralaya.

The idea of local ownership could be relative. An owner who lives in the Gosaba Block can be considered a local, and in contrast, an owner who lives outside the Gosaba Block can be regarded as an outsider. For this chapter, local lodge owners represent lodge owners who live within the Sundarban region, in the 19 community development blocks of South and North 24 Parganas. For example, one of the lodge owners of Pakhiralaya is from Canning and I consider him a local owner as Canning is one of the important towns of the Sundarban region. Two of the hotels have a joint ownership with a resident of Kolkata.
Figure 4.17. Percentage distribution of hotel ownership at Pakhiralaya

During the tourist season at least 60 local people are employed full time at 18 different private hotels of Pakhiralaya (Table 4.3). In other words, during the tourist season only 1.5% of the total population of Pakhiralaya is directly earning its income from tourism.\(^3\) The owner of the Apanjan Hotel employs the highest number (i.e. 9) of local residents where as the owners of Shri Ma employs no local resident. This is because hotel Shri Ma and Swastik are owned by the same person and employees of Swastik also work at Shri Ma.

\(^3\) According to 2011 census, Pakhiralaya’s total population is 3946.
Figure 4.18. A grocery store at the Tiger Mor, Pakhiralaya, Gosaba

Until September 2012, there were 30 shops (including grocery, tea stalls, handicrafts, and a saloon) along the concrete road of Pakhiralaya joining Tiger Mor and Bakultala Mor (Figure 4.18). Girin, one of the local tea stall owners at Pakhiralaya, informed me that at least half of the shops will be closed during the off season as there will be no more tourists to buy any products. During the peak season of tourism the contribution of visiting tourists in the local economy is not insignificant. 66% of the total surveyed tourists bought honey, crabs, local artifacts and other products (Figure 4.19 and 4.20). Among all the local products, honey has a great demand among tourists. Madhu, a 41 year old resident of Pakhiralaya, owns a small shop at Tiger Mor. He only opens his stall during the tourist season and sells small clay models of wild animals which are found in the Sundarban forest such as Bengal tigers, spotted deer, and monkeys. He also sells honey in discarded alcohol bottles and has been selling honey since he first opened his shop in 2002. Madhu does see some positive impacts of tourism at Pakhiralaya. He thinks because of the tourism or ecotourism local people can sell their vegetables which they grow in their small patch

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64 In Bengali language the word mor means intersection or crossing of two or more roads.
of lands. Madhu informed me that before the Aila\textsuperscript{65} in 2009, there was a demand for the meat of castrated goats (\textit{dishi khasi}) among tourists and local people could earn some money by selling goat meat to the local lodges. After Aila there was little grass available and people were not able to feed the animals with grass as saline water made the soil unproductive. So, after Aila people lost this earning opportunity and won’t be able to resume this again until the soil becomes productive. Although residents of Pakhiralaya gain some economic benefits from the hotel business, from shops, from pulling vans, from selling vegetables, fish and meat at local market, the bulk of the profit from tourism goes to the owners who live outside the Sundarban region.

\begin{figure}
\centering
\includegraphics[width=0.6\textwidth]{figure4.19}
\caption{Percentage of Visiting Tourists Spent on Buying Local Products at Pakhiralaya, Gosaba}
\end{figure}

\textbf{Figure 4.19}. Percentage distribution of tourists who bought local products from Pakhiralaya, Gosaba

\textsuperscript{65} Aila: A tropical cyclone with a wind speed of 110 km per hour which devastated the southern parts of West Bengal in 2009
Figure 4.20. Percentage of tourists buying different local products at Pakhiralaya, Gosaba

Figure 4.21. The Bar Graph shows the amount of profits earned by different private hotels at Pakhiralaya, Gosaba.
In 2011-2012 tourist season, the total amount of profit earned by nine local hotels was Rs. 14,462,000 ($246,722). Although, 47% of the hotels of Pakhiralaya are owned by the people of the Sundarban, the total amount of profit (i.e. Rs. 15,125,000 or $258,033) earned by seven outside hotels is greater than the profit owned by nine local hotels. If the profits of other two private hotels are included which are owned jointly by a local resident and a resident of Kolkata, then the total profit will increase to Rs. 16,625,000 ($283,623). Among the local hotels, the highest amount of profit is made by Apanjan. Among the outside private hotels, the highest amount of profit is made by Krishnakunja, following Banani Resort and Tiger Land (Figure 4.21). The reason that hotels owned by the outsiders earn better profit is that these hotels mostly prefer package tours and upmarket tourists who visit Pakhiralaya with advanced booking.

Local residents of Pakhiralaya stated that people of Pakhiralaya are not able to build a lodge by themselves or invest directly in the tourism business due to lack of finances. They also pointed out that recently there has been an increasing trend of selling agricultural lands (paddy fields or dhan jomi) to rich people living outside the region, mainly from Kolkata and its suburbs, who are capable of investing large amounts of money in the tourism business. For example, Gulshan Group of Hotels, a private company is currently building a four-star hotel at Pakhiaralaya, Tiger Mor (Figure 4.22). They have already acquired five acres of land at Pakhiralaya. The total cost of the project is Rs. 150 crore ($27.5 million) and the estimated completion time is August 2013. Informal interview with the project manager portrayed an ambitious picture of the project where three separate building will be built. According to him

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66 The profits of these private hotels are approximately calculated based on the profits earned from both package tours and self-arranged tours. Per head cost of package and self-arranged trips are collected from the hotels. These data have been cross-checked with the data collected from questionnaire survey with tourists. From per head cost of trip, per head room rent and average salary spent on hotel employees are deducted to gain an idea of profit of each hotel. During the fieldwork at Pakhiralaya, the hotel managers provided a rough estimate of no. of visiting tourists during the peak season of tourism. This data on number of tourists have been used to calculate the approximate profit of each hotel.
four families sold their land to Gulshan Group of Hotels. This information does not match with the data provided by the local residents. According to the information provided by the local residents eight families sold their land to the Gulshan Group. In the first phase of the project, 80-90 rooms will be built\(^{67}\). They have a plan to install water treatment plant in which Gomor River water will be purified and used as drinking water. The Project Manager of Gulshan claimed that the installation of the water treatment plant will provide jobs to the local people. He also informed that once completed the hotel will provide jobs to 200 people. 80% of the total employed people will be skilled and 20% will be unskilled. The hotel will cater to the need of both domestic and international tourists who can afford the high price of the hotel and its facilities.\(^{68}\)

Due to the building of new lodges such as Gulshan, local people of Pakhiralaya temporarily earn some money as construction workers and wage labors, but cannot rely on such income for year round subsistence. In addition, an upscale hotel like this will prefer employing people from outside for providing hospitality to the up market domestic and international tourists. It could easily be assumed that at Pakhiralaya where 32% of the total population is still illiterate (Census 2011), local people will only cater to the needs of unskilled and semi-skilled laborers.

\(^{67}\) Please see: Gulshan Group to set up four-star property in Sunderbans at an investment of Rs 150 crore [http://www.foodandhospitalityworld.com/20120115/market02.shtml](http://www.foodandhospitalityworld.com/20120115/market02.shtml)

Over the years the price of land has increased at Pakhiralaya and as I became more familiar with the local lodge managers I gradually learned about the change in land price (Table 4.4). In 2002 the price of per bigha\(^9\) of land at Pakhiralaya Dakshin Para was Rs. 60,000-80,000 ($1,111-1,481) which increased to Rs. 600,000-700,000 ($11,114-12,966) in 2012. It should be noted that Pakhiralaya Dakshin Para is close to the Gomor River which helps in transportation of tourists by boats and launches from Godkhali and Gosaba. Therefore, residents who have land close to the river can charge higher prices than the people who own land in the interior parts of the village.

There are 332 households at Pakhiralaya Dakshin Para, among which 40 household (12%) sold their land for tourism. In Pakhiralaya Paschim Para the number of household is 325 among which only 10 household sold their land for the development of tourism. Altogether 50 households sold their land for tourism at Pakhiralaya. According to the 2011 census, the total number of households at Pakhiralaya was 910. So, only 5.5% of total households sold their land for tourism development. After selling their riverside plots some of the local residents of Pakhiralaya bought land at Gosaba, near the bazaar. Some even moved further upward towards Canning, Champahati, Piyali, and Sonarpur.

\(^9\) **Bigha:** It is a unit generally used to measure land area in South Asia. In West Bengal, 1bigha is equivalent to one-third of an acre or 0.3306 acre
The present Rangabelia Gram Panchayat Pradhan indicated that economic benefits of
tourism are largely limited to only Pakhiralaya, and people of Rangabelia (located within just two
kilometers) are less involved in the business of tourism. During my fieldwork I found that
insignificant numbers of people of Rangabelia earn some money by performing Banabibi Pala at
different lodges of Pakhiralaya during the tourist season (Figure 4.23). There is no such
performing team where all the residents live at Pakhiralaya. Even within Pakhiralaya, people
who live near the Gomor River are more benefitted by tourism than people who live in the
interior parts of the mouza. This fact gradually became clear to me as I started talking to local
people who live in the interior of Pakhiralaya and who do not have immediate access to the
Gomor River. Madhuri Mandal, who lives at Pakhiralay Pachim Para, said that people who
could build a grocery store or a tea stall, received some benefits from tourism activities, but
people who couldn’t invest any money to buy a store or build one, didn’t care about tourism.
Madhuri is not associated with tourism in any way and had experience working in Kolkata as a
domestic helper. Like Madhuri, Nilkanta is also not associated with tourism and mostly depends
on cultivating his 10 katha of land and works as a wage labor in Tamil Nadu and Andaman. By
working in other states of India, Nilkanta could earn Rs. 300 ($5) per day. He also pointed out
that tourism has increased the level of pollution at Pakhiralaya, compared to the past ten to twenty
years, which has resulted in an increased presence of mosquitoes in the locality.
Renu, one of the local residents and owner of the Aaram lodge of Pakhiralaya, admitted that local people who could invest in tourism business receive direct economic benefits out of tourism development at Pakhiralaya. Renu and her husband Biswajit started their hotel business in 2000. The hotel mostly provides accommodation to the tourists who visit Pakhiralaya without any prior reservation. For their marketing strategy, they depend on their personal contacts with several tour operators and distribution of visiting cards among tourists. Most of the local hotels of Pakhiralaya do not have any booking office in Kolkata and therefore depend on their personal contacts with the tour operators for their business. Many of the local villagers mentioned an increasing trend of alcohol consumption among younger generations as alcohol is readily available at every grocery and tea stall. Renu, explained me that poor women are mostly affected by this alcohol consumption. Local women are experiencing domestic violence by their addicted husbands. I also came to know that most of the shopkeepers do not have a license to sell alcohol, therefore they sell it in secret. While the tourists prefer relatively high-priced alcohol, local villagers buy cheap liquor.

Figure 4.23. Banabibi Pala— a local folk tale of the Sundarban performed by the residents of Rangabelia, a nearby village of Pakhiralaya, during the tourist season of 2011-2012
Among the 25 local respondents\textsuperscript{70} whom I interviewed at Pakhiralaya, 16 were not at all involved with the tourism business and earned their livelihood mainly from agriculture and working as wage labors. This means 64 percent of the total respondents were not dependent on tourism and only 36 percent were somewhat dependent on tourism (Figure 4.24). This significantly varies with the idea of the visiting tourists who think tourism has a positive impact on Pakhiralaya. 86\% of the visiting tourists believed that tourism provides alternative income opportunities to local people of Pakhiralaya (Figure 4.25). The remaining nine respondents were engaged in tourism and among this nine, five respondents were engaged in tourism activities both in peak and lean seasons. Among these five, two were lodge owners and therefore tourism was their only source of income year round. During the lean season, the other three respondents occasionally earned some money out of tourism business at Pakhiralaya but it was during the peak season that tourism was their sole source of income. The remaining four respondents always worked part time during the peak and lean season of tourism and had to seek other employment opportunities in order to sustain themselves and their families. None of these 25 respondents were involved in fishing and crab collection in the forest.

\textsuperscript{70} These interviewees were selected through random sampling and every 10\textsuperscript{th} house was selected for interviewing.
Figure 4.24. Tourism and non-tourism activities at Pakhiralaya

Figure 4.25. Tourism as an alternative source of income

Impacts of Pakhiralaya EDC on Local Fishers

Here, I focus on the Pakhiralaya Eco-development Committee (EDC) and examine its influence on local fishing communities. During my fieldwork at Pakhiralaya, I interviewed the
Joint Convener of Pakhiralaya EDC. According to him, Pakhiralaya EDC was established in 1998 and the total number of members is about 900 covering three *gram sansad* or three booths of Pakhiralaya village. From each family the head of the family becomes the member. In 2012, there were 11 members in the executive committee of Pakhiralaya EDC. The Joint Convener or the secretary explained that Pakhiralaya EDC was formed to protect the Sundarban forest from rampant destruction and stray tigers from revenge killing. It was also formed to reduce local people’s dependence on forest resources. According to the EDC convener people are more conscious than the past and they understand the value of forest. The illegal cutting of trees and hunting of wild animals have decreased after the formation of the EDC.

In order to stop people from going to the forest, Pakhiralaya EDC distributed vans, husking machines, irrigation pump sets, and smokeless chullahs. Pakhiralaya EDC also claimed to re-excavate three old canals Topor, Kali and Chakrabarti in the village and building brick paths. Besides digging canals, the EDC encouraged to form self-help groups at Pakhiralaya and provided loans to start new businesses such as rearing goats, ducks and poultry. According to the Annual Report of the STR (2009-2010), nine Self-Help Groups were listed under the Sajnekhali Wildlife Sanctuary Range. Pakhiralaya EDC also sends three-four people to work with the forest department. These people mostly work in different territorial and floating camps spread within the STR. This type of work is available for one month and payment is made on a daily basis. Each day, a worker earns Rs. 130. The secretary of the Pakhiralaya EDC said that these workers mostly live in boats, cook food for the forest department’s officials and perform any duties assigned by the department. People who are interested to work part time with the Forest Department contact the EDC and enlist their names. EDC then calls them as per the requirement.

Despite such development activities attempted by the EDC, local fishers have mixed reactions about the EDC and its committee members. According to local fishers, Pakhiralaya EDC worked well for two years after its establishment. Local fishers and other residents accused

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*Gram Sansad*: A body of number of electors of a constituency of a *Gram Panchayat*. 

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the EDC committee members of appropriating government’s funds in the name of reforming old canals. For fishers, existence of the EDC has increased surveillance on them. If poor fishers enter the forest in order to bring some fuel wood for household consumption and if the news reaches to the EDC, EDC would inform the forest department. Fishers of Pakhiralaya also accused that the non-mechanized vans EDC distributed were received by those people who were not in dire need. There were instances of bribery in which people who were given those vans need to give some money to the EDC committee members prior to receiving the vans. One of my interviewees mentioned that if you don’t do anything for the local political parties, there is least chance of getting a van. At Pakhiralaya, 70-75 vans were distributed and only four of those were distributed at Pakhiralaya Jele Para, a community of fisherfolk where 20-25 families live.

Furthermore, fishers accused that after the cyclone Aila in 2009, the relief which was sent by many NGOs from Kolkata was not properly distributed among local people. The reality is that local people who have developed personal contacts with the EDC committee members receives some benefits such as temporary employment opportunity with the Forest Department.

**Impacts of Tourism on Local Fishers**

In this sub-section I examine the impacts of tourism on fishing communities of Gosaba Block. Although I have discussed about fishing in Chapter 3 in great detail, a brief introduction on fishing in the STR is necessary. Fishing is one of the major occupations in the Sundarban. According to the West Bengal Fishery Department Sundarban fishers are marine fishers as they catch fish in the estuaries as well as in the Bay of Bengal. The district of South 24 Parganas has a marine fisher folk population of 197,781 who are spread over in 68 Gram Panchayats (CMFRI 2010). The 13 community development blocks of the Sundarban region fall under the district of South 24 Parganas and therefore it can be said that a bulk of the Sundarban fishermen coincides with the total marine fishing population of the district of South 24 Paragans. Sundarban Tiger Reserve (STR) fall within the uninhabited part of the Gosaba Block, which is one of the 13 community development blocks of the district of South 24 Parganas. The fishers of Gosaba catch
Fish in the inland water of the STR with their non-mechanized boats (Chatterjee, Bhunia and Mondal 2009). The total number of marine fishermen in Gosaba block is 9,427 (Discussion with the Fishery Extension Officer, Gosaba 2011). The number of fishermen in Gosaba may vary year to year because in some years some fishers might opt for daily wage labor in cities instead of catching fish in the STR.

Fishing in the STR is only allowed in the Jhilla, Arbesi, Harinbhanga, and Khatuajhuri forest blocks of the buffer area which is often called as *khola bada* by the local fishers. The core of the STR and the Sajnekhal Wildlife Sanctuary are closed for fishing and called *bandho bada* by the local fisherfolk. However, the Forest Department allows a large number of tourists in the Sajnekhal sanctuary which is often seen as repressive by the local fishers of the Sundarban.

Fisherfolk entry to the buffer area of the STR is also regulated by the West Bengal Forest Department by the Boat Licensing Certificate (BLC) and fishing in the STR is only allowed in small country boats or dinghies. Therefore, in order to catch fish in the STR, a fisher should have a BLC. A fisher also needs to renew his BLC annually. Each BLC reflects the name and address of the boat owner and provide a description of the boat along with its capacity (Patel and Rajagopalan 2009; Fieldwork Experience 2011). The STR authority first issued 923 BLCS. Later, the number decreased to 914 as nine BLCS couldn’t be identified by the STR authority (Patel and Rajagopalan 2009). At present there are 706 active BLCS which are used for fishing in the inland water of the STR (Office of the Field Director, STR, 2011). So, it is clear that the number of fishers who actually catch fish and crabs in the STR is greater than the number of available BLCS. As the number of BLCS is less than the number of fishers in the Sundarban, the fishers are often forced to catch fish without BLCS. Even with a BLC, fish and crab collection are completely prohibited in the core and sanctuary areas of the STR, and if fishers are seen rowing their boats in these areas they are required to provide an explanation to the forest guards. However, if they are seen catching fish or crabs they are verbally abused and asked to pay the fines. The local residents of Pakhiralaya admitted that the increased restrictions on fishing in the
STR, fear of paying fines, along with fear of life risks in the forest, are the main causes which now prevent people from choosing fishing as an occupation. Upon my request the local residents of Pakhiralaya, including the fishers, explained the link between fear of fines and fear of life risks. I understood that the fishers who enter the STR without the BLC and the fishing permit are more vulnerable to tiger attacks than the fishers who catch fish legally with proper documentation. The fishers, who catch fish and crabs illegally in the STR, always try to avoid the patrolling forest guards and in doing so, always try to hide themselves in small and narrow river channels. This makes them highly vulnerable to tiger attacks.

During a conversation with fishers in Gosaba, the fishers argued that the government is only concerned about earning huge revenues (Figure 4.26) by allowing tourists in the forest and that is why their economic activities, such as fishing, are controlled. When I argued that the government wants to protect the endangered tigers and wants to reduce human-animal conflicts in the forest, one of my interviewees commented that those are just mere words (*o sob baje katha*). According to the fishers, the real motive of the government is to increase the chances of tiger sighting by allowing tourists to cruise through the mangrove wetland without any hindrance. During my conversation with the director of the SBR in July 2012, I was told that if fishers are allowed to catch fish in the core and sanctuary areas, no spotted deer would come out on the mudflats or *chars* when tidal water retreats. He emphasized that tigers are also seen during the low tide and the presence of fishers in the core and sanctuary areas cause disturbance to wild animals. I pointed out that in the sanctuary area large numbers of tourists are allowed with mechanized boats, which have roaring engines that breaks the pin-drop silence of the forest. The director said that tourists are not allowed to embark on the river bank except at those ecotourism spots where watch towers had been built. He concluded that tourists are only allowed to pass through the rivers and creeks and that their presence does not disturb the wildlife of the STR.

Among 35 fishers I interviewed in Gosaba, only one was involved in tourism business. This fisher was a resident of Pakhiralaya and worked as a cook during the tourist season when he
was hired by some lodge managers or some visiting tourists. He took pride in his ability to cook for 20-25 people. According to Madhu, a resident of Pakhiralaya, only 30% of the total population of the village (i.e. 3,946 according to 2011 census) is engaged in fishing and honey collection. Giridhari Mandal, a 37 year old resident of Pakhiralaya used to catch fish in the STR, but now operates a non-motorized van between Gosaba and Pakhiralaya. He stated that he knows only 15 people at Pakhiralaya who have stopped fishing in order to avoid tiger attacks in the forest. 52% of the residents said that people who have stopped going inside the forest have done so because of increased regulations on fishing by the state, and not because of the expansion of tourism at Pakhiralaya or not because of Eco-development activities. The fear of death due to tigers’ attacks within the forest is another reason that prevents people from venturing deep in the forest.

### Figure 4.26

The bar graph shows the annual revenue earned from ecotourism from the STR. The data has been collected from the STR Annual Report 2011-2012.

One of the fishers from the Sadhupur *mouza* of Gosaba block explained that he does not want to be involved in ecotourism because he thinks he won’t be able to sustain his family with
the earning made from tourism activities. Most of the fishers whom I interviewed were interested in being involved in ecotourism activities around the STR because involvement in such activities would prevent them going into the forest and would save their lives from tigers. However, they were concerned about the amount of income they would earn from the fixed monthly salary of Rs. 2,000-3,000 ($37-55) as a cook, caretaker, or a helper for the boat man. In addition, lodges or hotels cannot provide income to all the villagers. Some of the fishers expressed the idea that they can earn more money if they catch fish in the forest rather than working in a tourist boat or lodge.

Fishers who live at Patharapara, Sadhupur village, are concerned about negative cultural and social impacts of tourism in their area if number of lodges increases how it has increased at Pakhiralaya over the years. Jaideep, a fisher from Bakultala opined that he does not like the influx of foreign tourists in the region. According to him foreign tourists and the western culture negatively influence younger people who like to follow them. He never wants to involve with tourism activities. According to him, expansion of tourism increases the prices of local products such as eggs and vegetables as tourists, both foreign and domestic, have the capacity to pay more as compared to the local people. Poor fishers need to pay more for the local products which could have been cheaper if there was no tourism. Residents of Bakultala are also concerned about potential land, water and noise pollution which are inevitable with the expansion of tourism activities in an area.

During my fieldwork, I gradually realized that not only the scope of earning ready cash but also a chance of earning a greater amount of money in a short period of time as compared to wage labor attracts people to catch fish and crabs in the forest. Jagannath explained this well:

_Earning from fishing is much better than working as wage labor in the village. If you work as a wage labor (jon mojur) for three days you might earn Rs. 150 per day. But if you work 5-7 days in the forest, you can earn Rs. 2,000-2,500 depending on the amount of catch._

The caste-based fishers (jat-jele) of Gosaba have acquired the skill of fishing from their ancestors and they would prefer to continue this activity rather than shifting into other non-caste
based occupations. It should be noted that all of these fishers entered the core area of the STR to catch fish and crabs either with a BLC or without a BLC. When I asked why they enter the core area, they informed me that in the core area the availability of fish is much better than the buffer area or khola bada. In addition, the number of fishing boats is greater in the buffer area and finding a suitable fishing ground or space to anchor a boat in a safe place in the buffer area is very competitive. Furthermore, rivers in the khola bada are not appropriate for fishing with non-mechanized country boats as the rivers are not very deep due to the presence of numerous sand bars that hinder fishing activity.

Discussion

Ideally ecotourism should provide economic benefits to the local communities living around parks and protected areas by generating employments (Stem et al. 2003a; Jacobson and Robles 1992). Reviewing the ecotourism literature Wunder (2000, 466) identified three criteria of ecotourism: “Minimal physical and social impacts on the visited area, Ecological Education of the tourist at the natural site, and Notable economic participation by local residents.” Advocates of ecotourism also consider ecotourism as an important tool for integrating conservation and development around the protected areas due its low-consumptive resource use (Jacobson and Robles 1992; Gossling 1999). Ecotourism is also preferred as it can lead to small scale community development in which local people’s participation can be maximized (Gossling 1999). According to Goodwin (1996), if ecotourism can provide income to local people living around the protected areas, then local people will not exploit the natural resources in an unsustainable way. Instead, they will protect the natural resources to draw long terms benefits (Ibid.). It has been also argued that local communities should receive sufficient amount of incentives to protect biodiversity (Bovarnick and Gupta 2003 quoted in Stronza and Gordillo 2008). In many developing countries of the tropics ecotourism also provides a link to markets (Rodriguez 1999; Johnston 2000). Ecotourism can boost household income of the people who
live in remote places and therefore, have little access to markets (Wunder 2000 quoted in Stronza 2007).

There are plenty of examples in tourism literature where ecotourism produced limited community benefits (Brandon 1996; Kinnaird and O’Brien 1996; Stone and Wall 2004). In a study conducted in 996 households located adjacent to the Royal Chitwan National Park, Nepal, scholars found that the household income from ecotourism was very insignificant (Bookbinder et al. 1998). The study demonstrated that only 6% of the total surveyed households received direct or indirect economic benefits of ecotourism (Ibid.). Profits from ecotourism can also go to outside stakeholders rather than locals (Lindberg 1994; Honey 1999; Stronza and Gordillo 2008). Kiss (2004) points out that ecotourism can produce short term benefits for local communities with little change in existing pattern of land use or resource use. The ecotourism literature also points out to the negative impacts of increased income on local population such as conflicts within the community due to unequal earnings. For example Belsky (1999) highlights that only few households benefitted from ecotourism in Gales Point Manatee, Belize. On the other hand, ecotourism aggravated differences within the community (Ibid.). People who personally benefitted from ecotourism were more interested to maintain the rules and regulations related to hunting and boating (Ibid.). As one of the goals of ecotourism is to protect the biodiversity, participation of local people in conservation is important. It has been seen that conservation works better when local people participate in decision making (Kruger 2005). Belsky (1999) also mentions that local people only participate in conservation when they gain true economic benefits from ecotourism.

At present, Pakhiralaya cannot be called a remote site because it is connected to the city of Kolkata. However, when tourism started to develop in the early 1990s, tourism or ecotourism definitely linked local communities of Pakhiralaya to the outside market. In case of Pakhiralaya, only 36% of the total population gains some direct and indirect benefits from tourism. Development of tourism did not stop people’s migration in search of jobs to Kolkata or other
cities of India. Furthermore, the change of land use pattern due to tourism is only limited to Pakhiralaya Dakshin Para, the locality located on the bank of Gomor River. The direct positive impacts of tourism are primarily felt along the two sides of the concrete road which joins Bakultala Mor and Tiger Mor of Pakhiralaya, where most of the lodges and shops are located. Villagers who live away from the Tiger Mor do not necessarily enjoy the benefits of ecotourism. Villagers who live in the interior parts of the Pakhiralaya village mainly depend on paddy cultivation and wage labor in other districts such as North 24 Parganas, Nadia, and Howrah, and sometimes other states of India. Local residents who are no way involved with tourism think that lodge owners are the only people who are getting economic benefits from tourism and most of the lodge owners are not residents of the Sundarban. Therefore, economic benefits of ecotourism/tourism are being accumulated in the hands of selected groups of people (Ceballos-Lascuráin 1996; Belsky 1999). In general, people of Pakhiralaya are conscious to keep the Gomor River clean. They also understand the value of mangrove forests in reducing the damages from cyclones. Therefore, it cannot be said that people who receive economic benefits from tourism, only those people take initiatives to minimize river pollution, and hence participate in natural resource conservation. So, in case of Pakhiralaya, people’s consciousness towards environment came from their experiences of frequent perils caused by tropical cyclones.

The presence of ecotourism or tourism at Pakhiralaya as an alternative to forest-based economy definitely counters the fortress conservation model in which local people’s participation in conservation is expected. However, Tourism or ecotourism at Pakhiralaya has failed to provide any alternative income opportunity to the local fishers especially to those who do not possess any skills other than catching fish and crabs in the Sundarban. Jele or traditional caste-based fishers are also not interested to work in a lodge as a mere caretaker, gardener, cleaner, or as a cook. They feel that the mere monthly income of Rs. 2,000-3,000 ($37-55) will not be sufficient to sustain a family and they will not be able to provide education to their children. In other words profits from ecotourism are not accumulating within the region, rather the bulk of the
profits go to Kolkata and its suburbs. 48% of the local residents think tourism is the viable alternative to the forest-based fishing economy. However, the majority of this 48% do not think that because of the expansion of tourism, local people have stopped venturing deep in the forest. Rather, the increasing restrictions on the fishing and crab collection, limited number of BLCs, and the fear of tiger attacks prevent people from entering the forest. The positive impacts of tourism or ecotourism have been enjoyed by those people who are able to invest substantial amount of money in it in terms of building lodges, buying boats, and buying grocery and tea stalls. Local people who could sell land to the entrepreneurs and stakeholders, for the purpose of building lodges, also earn a good amount of money and could improve their lives by starting new business or by buying land elsewhere. The benefits of tourism have not trickled down to local fishing communities and therefore, the fishers are least bothered about the increasing expansion of tourism in and around the STR.
Table 4.1: Percentage Distribution of Tourists Visiting Ecotourism Spots in the Sundarban

<table>
<thead>
<tr>
<th>Name of the ecotourism spot</th>
<th>% of tourists visited the ecotourism spot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sajnekhali</td>
<td>90</td>
</tr>
<tr>
<td>Sudhanyakhali</td>
<td>72</td>
</tr>
<tr>
<td>Dobanki</td>
<td>72</td>
</tr>
<tr>
<td>Netidhopani</td>
<td>54</td>
</tr>
<tr>
<td>Burirdabri</td>
<td>1</td>
</tr>
<tr>
<td>Other Spots</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4.2: List of lodges at Pakhiralaya

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Name of the lodge</th>
<th>Year of Establishment</th>
<th>Status of ownership: Govt./Private</th>
<th>People Ownership: Local/Outsider</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mangrove</td>
<td>2000</td>
<td>Private</td>
<td>Outsider (Kolkata)</td>
</tr>
<tr>
<td>2.</td>
<td>Zilla Parishad Guest House</td>
<td>1989-90</td>
<td>Govt.</td>
<td>N/A</td>
</tr>
<tr>
<td>3.</td>
<td>Lodge Chital</td>
<td>2005-2006</td>
<td>Private</td>
<td>Local (Canning)</td>
</tr>
<tr>
<td>4.</td>
<td>Hotel Mainak</td>
<td>2010</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
<tr>
<td>5.</td>
<td>Barman Villa</td>
<td>2008</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
<tr>
<td>6.</td>
<td>Avinandan</td>
<td>2010</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
<tr>
<td>7.</td>
<td>Hemanta Lodge</td>
<td>2007</td>
<td>Private</td>
<td>Outsider (Kolkata)</td>
</tr>
<tr>
<td>8.</td>
<td>Pramila</td>
<td>2004</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
<tr>
<td>9.</td>
<td>Swastik</td>
<td>2004</td>
<td>Private</td>
<td>Local (Pakhiralaya) + Outsider (Kolkata)</td>
</tr>
<tr>
<td></td>
<td>Hotel Name</td>
<td>Year</td>
<td>Ownership</td>
<td>Location</td>
</tr>
<tr>
<td>---</td>
<td>-----------------</td>
<td>-------</td>
<td>------------</td>
<td>------------------------------------</td>
</tr>
<tr>
<td>10.</td>
<td>Shri Ma</td>
<td>2007</td>
<td>Private</td>
<td>Local (Pakhiralaya) + Outsider (Kolkata)</td>
</tr>
<tr>
<td>11.</td>
<td>Mouchak</td>
<td>2008</td>
<td>Private</td>
<td>Outsider (Bardhaman)</td>
</tr>
<tr>
<td>12.</td>
<td>Apanjan</td>
<td>2007</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
<tr>
<td>13.</td>
<td>Banani Resort</td>
<td>2008</td>
<td>Private</td>
<td>Outsider (Kolkata)</td>
</tr>
<tr>
<td>15.</td>
<td>Madhuban</td>
<td>1992</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
<tr>
<td>16.</td>
<td>Tiger Land</td>
<td>2007-08</td>
<td>Private</td>
<td>Outsider (Kolkata)</td>
</tr>
<tr>
<td>17.</td>
<td>Aaram</td>
<td>2000</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
<tr>
<td>18.</td>
<td>Hanshoraj/Anjana Bhavan</td>
<td>2005</td>
<td>Private</td>
<td>Local (Pakhiralaya)</td>
</tr>
</tbody>
</table>
Table 4.3: The table shows the number of local employees at different private hotels of Pakhiralaya during the tourist season of 2011-2012

<table>
<thead>
<tr>
<th>Name of the hotels at Pakhiralaya</th>
<th>No. of Local Employees during the tourists season</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mangrove</td>
<td>3</td>
</tr>
<tr>
<td>Chital</td>
<td>2</td>
</tr>
<tr>
<td>Mainak</td>
<td>3</td>
</tr>
<tr>
<td>Barman Villa</td>
<td>1</td>
</tr>
<tr>
<td>Avinandan</td>
<td>4</td>
</tr>
<tr>
<td>Hemanta Lodge</td>
<td>1</td>
</tr>
<tr>
<td>Pramila</td>
<td>3</td>
</tr>
<tr>
<td>Swastik</td>
<td>4</td>
</tr>
<tr>
<td>Shri Ma</td>
<td>0</td>
</tr>
<tr>
<td>Mouchak</td>
<td>2</td>
</tr>
<tr>
<td>Apanjan</td>
<td>9</td>
</tr>
<tr>
<td>Banani Resort</td>
<td>5</td>
</tr>
<tr>
<td>Sundari</td>
<td>2</td>
</tr>
<tr>
<td>Madhuban</td>
<td>5</td>
</tr>
<tr>
<td>Tiger Land</td>
<td>6</td>
</tr>
<tr>
<td>Aaram</td>
<td>4</td>
</tr>
<tr>
<td>Hanshoraj</td>
<td>2</td>
</tr>
<tr>
<td>Krishnakunja</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>
Table 4.4: Change in land price per *bigha* at Pakhiralaya *Dakshin Para* in 2002-2012

<table>
<thead>
<tr>
<th>Years</th>
<th>Price of land per <em>bigha</em> (In Rs.) near the Gomor River</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>60,000-80,000</td>
</tr>
<tr>
<td>2003</td>
<td>60,000-80,000</td>
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<td>2004</td>
<td>60,000-80,000</td>
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<tr>
<td>2005</td>
<td>150,000-350,000</td>
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<td>2010</td>
<td>160,000-400,000</td>
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<tr>
<td>2011</td>
<td>500,000-700,000</td>
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<tr>
<td>2012</td>
<td>600,000-700,000</td>
</tr>
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</table>
CHAPTER V
Conservation, Conflicts and the Marine Fisherfolk of the Sundarban Biosphere Reserve

Introduction

In this chapter I focus on the conservation of mangrove forest cover in the Sundarban Biosphere Reserve (SBR) and its resultant impacts on the marine fisherfolk living within the reserve. Here, I demonstrate the complexity of biodiversity conservation in the Sundarban Biosphere Reserve (SBR) with a specific case study of eviction of transient fishers from the island of the Jambu. In this chapter, I argue that the eviction of fishers from the Jambu Island in some ways follows a fortress conservation model, in which a conserved space such as a protected area should be free from human presence. The forceful eviction of thousands of fishers from the Jambu Island demonstrates that the power of fortress conservation model cannot be completely ignored in a time when there has already been a shift towards community based conservation in conservation practices.

Conservation related conflicts are not uncommon in the park and protected area literature and there are numerous examples where a fortress conservation model with its exclusionary conservation policies has led to conflicts and eviction of local communities from the protected areas. The basic premise of fortress conservation model is that continuous use of natural resources by people leads to environmental degradation over time (McCracken 1987 quoted in Kabra 2009). Conservationists establish a simple assumption that there is a negative relation between biodiversity and human resource use and biodiversity can only be protected by creating ‘inviolate’ areas such as protected areas in which people’s access to the natural resources completely or partially curbed (Rangarajan and Shahabuddin 2006, 365). In other words, in this type of conservation program humans and wild animals cannot coexist (Kabra 2009). Scholars have pointed out that in most conservation related displacements, displacement of local communities occurred without adequate empirical data on how local communities’ resource uses were threats to a protected area (Ibid.). The fortress conservation model or top-down conservation
of biodiversity in protected areas create limited or no access to resources, livelihood loss and
displacement of local population (Vaccaro, et al. 2013; Bosak 2008; Buscher and Whande 2007;
Brockington and Igoe 2006; West et al. 2006; Neumann 1992). For example, the establishment
of Royal Chitwan National Park (RCNP) in Nepal had a significant impact on local Tharu people
(McLean 2003). The creation of RCNP in 1973 reduced the grazing land for domestic animals
kept by the Tharus. Furthermore, since 1994 Tharus have been relocated from the RCNP to a
place called Saguntole. The relocation has negative impacts on the livelihood of the Tharus.
People who were resettled in Sagunole or New Padampur (renamed after the original settlement
Padampur) lost their original livelihood and became dependent on wage labor (McLean 2003). In
another example, Sahariya, an Adivasi community was displaced from Kuno Wildlife Sanctuary
of Madhya Pradesh, India. The displacement and its subsequent resettlement of the Sahariyas
resulted in loss of forest-based livelihood and increased their poverty (Kabra 2009).

In this chapter, I demonstrate how conservation related forceful eviction from the Jambu
Island leads to loss of income of a transient fishing community of the Sundarban Biosphere
Reserve. Here, I demonstrate that conservation related eviction does not lead to eviction of a
particular settlement or eviction of some households settled in a protected area. In other words,
conservation related displacement can happen to a community who indirectly depend on the
forest-land and whose resource use could be seasonal. This specific case study adds to the
complexity of the conservation model of the Sundarban Biosphere Reserve (SBR) in which
biosphere resource managers have taken initiatives (e.g. eco-development activities in the fringe
villages) to reach out to the local people to include them in the conservation process. In sum, this
case study of eviction undermines the efforts taken by the biosphere resource managers to seek
people’s participation in conservation and reinforces the power of fortress conservation.

In the first section, I provide an overview of fishing which are carried out both in small
and large scales by the fishers living in the Southwestern part of the SBR. This overview of
fishing is important as it illustrates how the fishing activities are different in the southwestern part
of the Indian Sundarban than the eastern and southeastern parts (e.g. Gosaba Block) that have been discussed in Chapter 3. In addition, I explore how the dry fish business in the Sundarban region was initiated and gradually developed with the arrival of thousands of Bengali Hindus from East Pakistan (also known as East Bengal) or present day Bangladesh. In this chapter, I use the words “East Pakistan” and “East Bengal” interchangeably. This historical background of dry fish business demonstrates the customary fishing rights of the transient fishing communities of the Sundarban who have used the Jambu Island as a fish drying center for a long period of time.

In the second section, I mainly examine the present condition of the dry fish business in the Sundarban with a case study of Jambu Island from where thousands of fishers were forcefully evicted by the Government of India in 2002-2003. This section also explores the present scenario of the dry fish business in Kalisthan and Frasergunj which became the important centers for dry fish production after the ban on fish drying in Jambu Island. Broadly speaking, the chapter demonstrates the complexity of conservation in the Sundarban Biosphere Reserve (SBR) and reminds us that current conservation in the SBR retains characteristics of a fortress conservation model. The fortress conservation model in the Sundarban does not lead to the classic examples of eviction of households from the protected areas, but it shows that eviction can occur to a transient community which indirectly depends on forest-land for their livelihood. Overall, this chapter demonstrates the impacts of biodiversity as well as forest conservation on coastal fisherfolk in the district of South 24 Parganas, West Bengal.
Section I: Overview of Fishing in the Southwestern Sundarban

In this section, I provide an overview of fishing in the southwestern part of the Sundarban Biosphere Reserve (SBR). This section also demonstrates the differences of fishing in the eastern and western parts of the SBR. Moreover, this section provides a detailed account of dry fish business or shabar business in the southwestern part of the SBR which is important to understand.

Figure 5.1. The Sundarban Biosphere Reserve (SBR) with core, buffer and transition areas. The transition area of the SBR is densely populated and has 19 Community Development blocks. Among these 19 community development blocks, 13 blocks are in South 24 Parganas including Namkhana, Kakdwip, and Patharpratima. Marine fishers of these blocks are involved in catching fish from the open sea. Jambu is located within the Namkhana Block and falls under the buffer region of the SBR.
the livelihood of the transient fishers of the Sundarban and the impacts of eviction on overall dry fish business.

The marine fisherfolk of the SBR live in several villages in the transition area of the SBR. The transition area is a densely settled area which borders the Sundarban Reserve Forest (SRF). The entire SRF is located within the SBR and it overlaps with the buffer and core areas of the SBR. The SBR (Figure 5.1) is located in the state of West Bengal and it is spread over two districts: North and South 24 Parganas. However, the marine fishers are concentrated only in the district of South 24 Parganas, as it lies close to the Bay of Bengal and has access to the estuaries of the Sundarban and to the open sea. The total marine fishers in South 24 Parganas are 197,781 and they are spread in 68 Gram Panchayats (GPs) of the district (CMFRI 2010). The marine fishers in the district of South 24 Parganas include all fishers who catch fish in the Bay of Bengal and in the tidal rivers and estuaries of the SBR. These fishers are spread in 13 Community Development (CD) blocks of the district including Namkhana, Sagar, Kakdwip, Patharpratima, Gosaba, Basanti, Canning I, Canning II, Jaynagar I, Jaynagar II, Kultali, Mathurapur I, and Mathurapur II. Among these blocks Namkhana, Kakdwip, and Sagar are closer to the Bay of Bengal than others. Marine fishers of the SBR or the Sundarban region\textsuperscript{72} are engaged in two types of business: Fresh fish and dry fish\textsuperscript{73}. For this chapter, I mainly focus on the dry fish business or \textit{shabar} business in the Sundarban. In the light of the historical background of India’s partition in 1947, the paper explores the past and present of the dry fish business in the coastal areas of West Bengal.

\textsuperscript{72} The area of the SBR overlaps with the area of the Sundarban region and both indicate the same geographical region.

\textsuperscript{73} ‘Dry fish’ or ‘dried fish’ is generally used to refer a variety of fish, crabs and prawns. The variety of fish which are caught and dried under the sun includes both bony and boneless fish (Pramanik and Nandi 2004). Among different variety of fish certain species are more popular than others as “dried fish” or \textit{sutki machh}. The local names of these popular dry fish are: \textit{bomla} or \textit{luttey} (Bombay duck), \textit{chhuri} or \textit{rupa pati}, \textit{sada pata}, \textit{lal pata}, and \textit{bhola}. 

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Unlike the fishers of Gosaba, who are mainly involved in inland and estuarine fishing, fishers in the southwestern part of the Sundarban Biosphere Reserve (SBR) are involved in fishing from the open sea. Fishers in Namkhana, Kakdwip, Sagar Island, Pathar pratima catch fish in the Bay of Bengal. In order to understand the differences in nature and mode of fishing and the impact of conservation on local livelihood within the SBR, I conducted fieldwork both in the eastern and western part of the Sundarban region. In the western part of the SBR, I worked in Frasergunj located in the Namkhana Block. Besides conducting fieldwork in Frasergunj, I visited Kalisthan, an important fish drying center of Frasergunj Gram Panchayat (GP) in order to better understand the present shabar business in the Sundarban. Frasergunj was selected because this place is ideal to understand fresh and dry fish business, as both are practiced in small and large scales in the nearby mouzas of Lakshmipur Abad and Amrabati (Figure 5.2). The island of Jambu can be better accessed from Frasergunj than any other places of the Southwestern Sundarban. In addition, I was interested to understand to what degree the fishing communities of Frasergunj were involved in the Jambu movement when the West Bengal Government ordered the eviction of fishermen from the island.

The fishers I interviewed at Lakshmipur Abad and Amrabati mouza belonged to different castes such as kaora, bagdi, mahishya, and jalia-kaibartya (Figure 5.3). Among these castes, bagdi, kaora, and jalia-kaibartya fall under the scheduled castes (S.C). In the Bengal District Gazetteers 24 Parganas, O’ Malley ([1914] 1998, 109) reported that Kaoras are “extremely low caste” and they are predominant in 24 Parganas. Fishing is not a traditional occupation of the fishers who belong to the mahishya caste which is considered as higher caste. They were originally cultivators. For example, Biren Patra, a 57 years old fisherman and a resident of

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74 A mouza is the smallest administrative unit organized by the British in colonial India. The purpose was to collect revenues. Each mouza has a Jurisdiction List number or J.L.No. by which it can be identified. There could be one or more than one village in a mouza. The Census of India provides village level data and for them a mouza is equivalent to a village.
Mousuni\textsuperscript{75}, used to depend on agriculture prior to being involved in the dry fish business. His ancestors also lived in Mousuni and earned their livelihood from cultivating land. But according to him, agriculture alone cannot provide subsistence for his family; therefore he sought for other income opportunities and started dry fish business or \textit{shabar} business at Amrabati \textit{mouza} in the 1990s. Similarly, Bikash Maji, a small scale \textit{shabar} owner at the Lakshmipur Abad, who belongs to \textit{mahishya} caste, stated that originally they were farmers and used to live in the Howrah district. At the age of six, Bikash migrated to Frasergunj with his family and at the age of twelve he started working as a labor in fishing boats.

The majority of the fishers (40 \%) involved in dry fish business at the study site were \textit{Jalia-Kaibartya}. \textit{Jalia-Kaibartyas} are traditional fishing castes found in eastern and north-eastern India (Barman 2008). The term \textit{Kaibartya}\textsuperscript{76} denotes to the people who earn their livelihood from water i.e. fishing (Ibid.). Although, \textit{Jalia Kaibartyas} still dominate the dry fish business in the Sundarban, higher caste people including Brahmins have adopted fishing as an occupation due to lack of education and other income opportunities.

Like my primary research site Gosaba, the level of education among fishing communities at Lakshmipur Abad and Amrabati \textit{mouza} was low. 30\% of the total interviewed fishers were literate and 10\% were illiterate. 35\% of the interviewed fishers studied up to primary (I to IV grade) level and 15\% studied up to secondary level (V to X grade). Only 10\% of the total interviewed fishers studied beyond secondary level (Figure 5.4). The average family size of the fishers at my secondary study site is five. 75\% of the total interviewed fishermen had 4-8 members in their families (Figure 5.5). As compared to the fishers in Gosaba, fishers who are involved in dry fish business have greater amount of land and they are comparatively better off as the scale of their business is large. Most of the interviewed fishers at the secondary research site had land less than 5 \textit{bigha} or 100 \textit{katha} (Figure 5.6).

\textsuperscript{75} Mousuni, sometimes called Mousani is a \textit{mouza} within Namkhana Block.

\textsuperscript{76} \textit{Ka} means water and \textit{brata} means livelihood (Barman 2008)
Figure 5.2. At present Kalisthan Char, Lakshmipur Abad and Amrabati are the important places of the shabar business in the Sundarban. Here, Lakshmipur Abad and Amrabati mouzas are shown in light purple color. These two mouzas were selected as the secondary research site for data collection on the dry fish business. The green color shows the Sundarban mangrove forest. The Jambu Island is a forested island and falls under the buffer area of the Sundarban Biosphere Reserve (SBR).
Figure 5.3. Caste-wise distribution of fishermen at Lakshmipur Abad and Amrabati mouzas, Namkhana Block, South 24 Parganas

Figure 5.4. Level of education among fishermen of Lakshmipur Abad and Amrabati mouzas, Namkhana Block, South 24 Parganas
Figure 5.5. Family size of fishermen living at Lakshmipur Abad and Amrabati mouzas

Figure 5.6. The percentage distribution of land holdings of fishermen living at Lakshmipur Abad and Amrabati mouzas. Here, the land holdings include both homestead and agricultural land (if they have any such agricultural land). Land holdings are measured in bigha. 1 bigha is equivalent to 20 katha and 1 katha is equivalent to 720 sq. feet.
Structure and Function of Shabars

The following sub-section provides a detailed account of dry fish business or shabar business in the Sundarban. This subsection shows how fishing communities of the Sundarban organize their seasonal shabar business in the Sundarban. The understanding of dry fish business or shabar business is necessary to understand the scale of shabar business on the Jambu Island which provided a direct livelihood to ten thousand fishermen.

The word shabar means a fishing unit which is operated both on land and water. In other words, it is a type of fishing where fishers catch fish from the open sea and then dry the catch on the coast or sand bar which is locally called char. The fishers build makeshift shacks, made of bamboo and reed, on the char during the winter for a four month fishing period starting from mid-October to mid-February. These shacks are called khunti, and are where fishers and other workers keep themselves engaged in sorting and drying the catch (Figure 5.7). They also live in these khuntis during the four months fishing season.

The owner of a fishing unit or shabar is called a bahardar, but nowadays people prefer to use shabar malik (shabar owner) instead of the word bahardar. The bahardar or shabar malik recruits fishermen and dry fish workers on the basis of salary and wage labor, depending on the specific work. During the four month season, fishers set behundi nets (bag nets) in several places called khari in the sea bed (Figure 5.8). These are relatively depressed areas in the sea bed covered with sticky mud or “aithal mati” (Raychaudhuri 2003, 61). These depressed areas are perfect sites for catching fish as decomposed mangrove wood is deposited here which attracts the shoal of benthic fish and other fish which prey on them (Mathew 2003; Raychaudhuri 2003). The bag nets or behundi jals are funnel shaped nets and made of many different parts such as chokh, hata, kosa, chal, bara barus, chhota barus, melan and chhola (Raychaudhuri 2003).

Fishers catch fish following the lunar calendar. In general, each month is divided into two periods—Sukla Paksha and Krishna Paksha. Now each of these fifteen days periods is divided into two parts by the fishers. One is called jo and other is called dala (Raychaudhuri...
Jo is considered from the 10th lunar day (dashami) to fifth lunar day (panchami). Dala is considered from the sixth lunar day to the 9th lunar day (Ibid.). During jo, both high tide and low tide are stronger as compared to the dala. The catch is generally good during the jo. The fish is collected twice a day. The fish is collected when the high tide reaches its extreme point and the water becomes static. This moment is called purani. Fish is also collected when the low tide reaches its lowest point which is called sarbhata (Pramanik 2004).

Mechanized boats are used to catch fish from the open sea and fishers use one cylinder, two cylinders, four cylinders and six cylinders boats. The length, breadth and depth of a two cylinder boat are 11.27 meter, 2.90 meter, and 1.80 meter respectively. The capacity of a two cylinder boat is 3 ton. The six cylinder boats are called trawlers (Figure 5.9). The length, breadth, and depth of a six cylinder boat are 15.76 meter, 4.60 meter, and 2.70 meter. The capacity of a six cylinder boat is usually 6-7 ton. The Horse Power (HP) of a two cylinder boat varies from 7 to 8 whereas the HP of a trawler can vary from 100 to 160. Fishers need to register their boats with the Fishery Department of Government of West Bengal. The one time registration fee for mechanized boats below 30 HP is Rs. 30 while the registration fee for mechanized boats above 30 HP is Rs. 50. There is no fee for registering the non-mechanized boats. Besides registering the boats, fishers also need to renew their boat licenses annually. The annual renewal fee for mechanized boats below 30 HP is Rs 30 and the annual fee for mechanized boats above 30 HP is Rs. 50. There is no renewal fee for non-mechanized boats.77 Every fisher needs to renew their boat license by the end of March from the office of the Assistant Director of Fisheries, Marine, Diamond Harbour, South 24 Parganas, West Bengal. Most of the shabar maliks in the Sundarban renew their license through their fishing associations in which they have taken membership.

During my fieldwork at Amrabati, I was introduced to Bidhan Das, one of the members of Kakdwip Matsyajibi Unnayon Samiti (Kakdwip Fishing Development Association) who explained that fishing associations help shabar maliks to renew their license annually as fishers

77 Data collected from the Office of the Assistant Director of Fisheries, South 24 Parganas, West Bengal.
do not have time to go to the office at Diamond Harbour leaving the valuable fishing time.

Besides shabar maliks’ associations, there are different associations for crew-members and boatmen. From Bidhan Das, I became aware of that these days fishers are using GPS unit in order to navigate in the open sea. Shabar maliks at Amrabati admitted that use of GPS has saved many trawler accidents and reduced the chances of being lost in the sea, especially during the inclement weather.

There are two types of people work in a shabar. People who catch and transport fish to the shore are called “naukar lok” and people who work and stay in the khunti are called “kuler lok” (Pramanick 2004, 48). The shabar malik pays to the fishers and other dry fish workers on the basis of a seasonal contract. In general, people who work in the water, tend to have a higher salary than the people who work on the land. Every fisher who works in the water has insurance which provides accidental benefits. Shabar maliks are responsible for providing the insurance to each fisher. Currently, the annual premium is Rs. 60 ($1.02) for each fisher and shabar maliks pay this to the fishing associations in which he has taken membership. The fishing associations help the shabar maliks to do the paperwork for the insurance because it is not possible for the shabar maliks to complete the paperwork for so many fishers who work at their shabars. If any fisher dies due to accident or get lost in the sea, his family receives Rs. 100,000 ($1709) from the insurance company.78

Fishing related all activities at the khunti are managed by an experienced fisher who is known as khuntir majhi (Raychaudhuri 2003). However, at present people prefer to use the word “manager” instead of khuntir majhi. The manager always stays at the khunti and all the workers on the shore work under his supervision. The shabar maliks always recruit a known and trustworthy person as a manager as he is the one who takes major decisions in the absence of the shabar maliks. The dry fish workers at the khunti are divided into two categories. One who are

78 The shabar-maliks mostly did the insurance from the United India Insurance Company Limited which is one of the well-known public insurance companies of India.
wage labors and other who are office staff such as manager (Pramanik 2004). The wage labors are divided into two groups. One group, generally comprised of men, women and children, is engaged in sorting and drying of fish. The other group, comprised of old and retired fishers, is engaged in making and repairing nets. This latter group is called bununilsarani (Figure 5.10). They always repair damaged behundi nets for the entire season (Ibid.).

Every shabar malik needs at least two fishing boats in order to conduct the shabar business. One boat (generally bigger in size) constantly catches fish in the open sea and other boat carries the catch to the khunti. Usually, every large and medium scale shabar malik has one-two carrier boats for transporting catch from the actual fishing ground to the khunti. Every carrier boat is supervised by an experienced fisher who is called majhi. The salary of the majhi is usually higher than his crewmen who assist him in carrying the catch from the fishing ground to the shore. The carrier boats also supply food and drinking water to the fishers working in the open sea.

The boat which constantly catches fish is supervised by an experienced fisher who is called baro majhi. The role of the baro majhi is very important for the success of a shabar. He decides where to set the behundi net in the sea. In general, he supervises three to five smaller fishing groups depending on the size of the shabar. Each of this smaller group obeys their own leader who is called majhi (Pramanik 2004). The remuneration of baro majhi is highest among all fishers who work in the water. In 2012-2013 fishing season, the remuneration of baro majhi was Rs. 90,000-120,000 ($1538- 2051). The seasonal remuneration of other fishers who work in the water varies from Rs. 20,000-30,000 ($342-513) depending on the responsibilities and risk involved in their work during fishing. The remuneration also depends on experience and skills of the fishers. The remuneration of driver or sareng who drives the mechanized boat was Rs. 30,000-40,000 ($513-684). The remuneration of khuntir majhi or the manager was in a range of Rs. 20,000-35,000 ($342-598). Other workers who are hired for four months are paid Rs. 18,000-20,000 ($308-342).
In order to recruit the boatmen (majhi), crewmen, and dry fish workers for a fishing season shabar maliks need to pay some amount of money to them in advance. This system of paying advanced money to the fishers in order to ensure their service for the entire season is called bayna. The remaining amount is paid in the end of the fishing season. In order to pay the advanced money and to run the business, the shabar maliks need constant source of money. Shabar maliks take advanced money from fish-depot owners or aratdars/mahajans. In return, they are bound to sell their fish to these aratdars at a lower price than the market price. However, at present shabar maliks are taking loans from nationalized banks for their business. For example, Sushanto Das, a shabar malik from Kakdwip, who visits Amrabati mouza each winter, took Rs. 800,000 ($13,670) from a nationalized bank by mortgaging his property. He also took Rs. 300,000 ($5126) from four to five mahajans. These mahajans are known to him for a long time and are residents of Kakdwip, Contai, and Junput. Similarly, Rajeshwar Das, a shabar malik took a loan of Rs. 800,000 ($13,670) for his shabar business both from nationalized bank such as State Bank of India and aratdars/mahajans. Aratdars visit the shabars in order to buy the fish from the shabar maliks. If shabar maliks cannot repay the loan in one fishing season, the amount of loan accumulates for the next season.

During these four months fishing season fishers catch many different types of fish such as Bomla/Nehare/Luttey (Harpadon nehereus), Chhuri/Rupapati (Lepturacanthus gangeticus), Lalpatalphansa (Setipinna phasa), and Bhuri chingri (Acetes indicus) are caught and then the catch is brought to the khunti. Prior to bringing the catch on the shore, the catch is washed in seawater. In the khunti, the catch is first unloaded in the open courtyard and then sorted. Sorting is done according to the type and size of fish. The ground is covered with discarded fishing net in order to avoid sand and dirt. Generally women, men, and children from nearby villages come to the khuntis for sorting and drying of the fish (Figure 5.7 and 5.12). Different types of fish take different time span to dry. Usually the time span depends on the size, thickness and oil content of

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79 Contai and Junput are located in Purba Medinipur District, West Bengal
the fish (Pramanik and Nandi 2004). For example, *bomla* takes at least three days to dry. *Chhuri* takes 5-6 days to dry and *Lalpata* takes 6-7 days. In every *khunti* there are some fish drying racks on which fish are dried. These fish drying racks are called *daur* in local dialect (Figure 5.11). Besides fish drying racks, fishers prepare a wooden platform in every *khuti* on which fish are dried.

![Figure 5.7](image1)

**Figure 5.7.** On the left, fresh fish are sorted and dried in a *khunti* at the Paschim Amrabati Baliara Char, Amrabati Mouza. On the right, women dry fish workers are busy in sorting and drying of fish at the Paschim Amrabati Baliara Char.

![Figure 5.8](image2)

**Figure 5.8.** On the left, *Behundi jal* or bag net kept at Paschim Amrabati Baliara Char, Amrabati mouza. On the right, a funnel shaped *behundi jal* with its different parts (Diagram taken from *The Moon and the Net: Study of a Transient Community of Fishermen at Jambudwip*, p. 87.)
Figure 5.9. On the left, a trawler is anchored at Frasergunj fishing harbor. On the right, a two cylinder mechanized boat has returned to the shore with catch at Kalisthan.

Figure 5.10. An old fisherman (bununi) is busy in repairing behundi net at a shabar at Paschim Amrabati Baliara Char

Figure 5.11. On the left, fish is dried on a khang, on the right, fish is dried on a daur at Lakshmipur Abad mouza
Figure 5.12. Minors work at the *shabars* of Lakshmipur Abad Dakshin Samudra Saikat and Paschim Amrabati Balliara Char.

These wooden platforms are about 4-5 feet high from the ground and are called *khang* (Figure 5.11). *Bomla* and *Chhuri* are hung on the *daur* while *Lalpata* is dried on the *khang*.

The price of dried fish in the market depends on its color. If the fish become reddish in color the fish are considered rejected. These fish are not sold as food for human consumption. Those are mainly used for making fish meal. In 2011-12 fishing season, the price of fish used for fish meal was Rs. 25-26 ($0.42-0.44) per kilogram. The rejected fish which are mainly used for fish meal or poultry food are called *mayja* in local dialect. In other words, *mayja* is actually a mixture of several types of rejected dried fish. As compared to *mayja*, in 2011-2012, the price of one kilogram of dried *bomla* was Rs. 160 ($2.73). In 2012-2013 fishing season the minimum price of one kilogram dried *bomla* was Rs. 100 ($1.71) (Table 5.1).

**Initiation of the Dry Fish Business in West Bengal**

This sub-section provides the political-economic history of dry fish business in the Sundarban Biosphere Reserve (SBR). The eviction of the transient fishers from the Jambu Island also led to the erasure of such longstanding history and ecological base of people’s livelihood. The ban of *shabar* business and the eviction of fishermen show how the current conservation in the Sundarban retains some characteristics of fortress conservation model and thus counters the fundamental idea of a biosphere reserve which acknowledges the sustainable economic
development of people living in the biosphere reserve. The forceful eviction of the fishermen from the Jambu also undermines one of the objectives of a biosphere reserve which states that conservation of natural resources should not compromise the very economic benefits we receive from those resources (Batisse 1982). Furthermore, as per the UNESCO’s Man and the Biosphere Reserve (MAB) program, a biosphere reserve should allow traditional land use in buffer area (Ibid.). In other words, a biosphere reserve should integrate conservation and economic development (Mandal 2007). The eviction of fishers from the Jambu, which is part of the buffer area of the SBR, also undermines this basic element of a biosphere reserve which focuses on the integration of conservation and local economic development.

Since the partition of India in 1947, large numbers of Bengali Hindus migrated to West Bengal from East Pakistan or present day Bangladesh. The migration of East Pakistani Bengali Hindus occurred in different phases. The rich upper caste Hindus migrated to West Bengal following the partition in the 1950s. They were able to find shelters in the city of Kolkata, and its suburbs, through their strong social networking and kinship ties. The subsequent migration waves in the 1960s and 1970s were formed mostly by lower caste poor Hindus (namasudras, pods and Jalia Kaibartas) who crossed the present India-Bangladesh border, fearing the communal riots and oppression towards them (Jalais 2005). According to the Annual Report of the Department of Rehabilitation of the Central Government, 5,144,000 persons from East Pakistan took shelter in India in 1946-1971, and in this period, West Bengal alone received 3,84,1000 persons (Barman 2008, 56). Many of the poor, low caste Hindu refugees were sent by the state government of West Bengal to different inhospitable places of Bihar, Jharkhand, Orissa, Madhya Pradesh, Chhattisgarh, and Andhra Pradesh (Jalais 2005). These poor low caste Hindus first took shelter in refugee camps and later received 4 acres of land from the government of India

80 Please see the link below to check the official website of the Sundarban Biosphere Reserve (SBR) in which one of the objectives of the SBR is as follows: “Development of sustainable economic, social activities of the population living in the Biosphere Reserve.” http://www.sundarbanbiosphere.org/html_files/management_indian_sunderban.htm
under the refugee rehabilitation scheme (Jaladas 2011). These refugees were mainly peasants and
fishers who couldn’t adapt themselves to the dry and harsh environment of Central and Eastern
India, and thus started looking for an opportunity to come back to the deltaic plain of West
Bengal. The reasons for looking out for opportunities to come back to a much more familiar
environment were both ecological and socio-economic. Most of these lower castes Hindu people
were originally from Chittagong, Noakhali, Khulna, Barisal, Faridpur, and Jessore districts of
present day Bangladesh (Jaladas 2013). The ecological conditions of these places are largely
similar to the deltaic plain of lower Bengal and/or to the Sundarban region, which is situated
mostly in the lower Gangetic plain of West Bengal. Therefore, people kept coming back to
several coastal districts of West Bengal and tried to settle in similar physical environment (Ibid.).
Among these East Pakistani Bengali Hindus, those who were originally from the Chittagong and
Noakhali districts developed special skills and techniques of marine fishing. So, after the
partition of India, when East Pakistani Bengali Hindus migrated to West Bengal in the 1960s and
1970s, they carried those skills and techniques along with them. Although initially they were sent
to different semi-arid and rocky districts of Eastern and Central India by the West Bengal
government, they could not sustain themselves there and eventually settled in different places of
the district of South 24 Parganas such as Kakdwip, Namkhana, Bakkhal, Frasergunj, and Sagar
Island. These places share similar environmental conditions to the coastal districts of Chittagong
and Noakhali, and thus these places were ideal to developing marine fishing, and especially the
dry fish business or shabar.

During my fieldwork at the Amrabati mouza, conversation with the shabar owners
corroborated the fact of migration of East Pakistani Bengali Hindus during the 1950s and 1960s.
Sushanto Das, a 40 years old shabar owner from Kakdwip stated that his grandfather and father
migrated to West Bengal in the 1950s, following the partition of India. His grandfather and father
first took shelter in Tollygunge, Kolkata. The West Bengal Government provided them
resettlement in Dantan, Paschim Medinipur district. Later, they moved to Kakdwip, South 24
Parganas. Sushanto said that his grandfather and father did not like Tollygunge as they always loved to be near the coast and they felt comfortable when they moved to Dantan. Similarly, Sunil Kumar Das, an influential *shabar malik* of Kakdwip stated that his father Late Umesh Chandra Das migrated to Kolkata in 1956. Later he was provided 4 acres of land in Motihari, Bihar, under the Government of India’s Refugee Resettlement Scheme. However, Umesh Chandra Das and his contemporaries could not be comfortable at Motihari and started to look for a place where they could continue their traditional occupation which was fishing. During the formation of Bangladesh as an independent country many low caste Bengali Hindus migrated to India. At Amrabati, I met Ganesh Das who migrated to Kakdwip, West Bengal, India in 1974-1975. He stated that his forefathers were engaged in fishing in Bangladesh and he himself accompanied his father in fishing trips at the age of eight. He is the fourth generation in his family to continue fishing occupation. At the study site, 35% of the current fishers stated that their ancestors were primarily engaged in agriculture, 50% of the current fishers said that their ancestors was engaged in *behundi* net fishing, and only 15% stated that their ancestors earned money from wage labor and by priestly activities (Figure 5.13).
Figure 5.13. Ancestral occupations of present day fishers at Lakshmipur Abad Dakshin Samudra Saikat and Paschim Amrabati Baliara Char located in Lakshmipur Abad mouza and Amrabati mouza respectively.

It must be mentioned that some East Bengali fishers used to visit the coastal districts of South 24 Parganas periodically, even before the partition of India. For example, Prakash Das, a marine fisher, originally from Chhitagong, used to frequently visit the southern parts of South 24 Parganas or the southern parts of the Sundarban, before the partition. When the partition ultimately took place, he migrated to India and settled in Frasergunj as early as 1953 (Raychaudhuri 2003, 7). In the same year, he organized a small scale shabar (a fishing unit) or mini shabar on the coast of Frasergunj (Ibid.). Thus it can be easily inferred that some East Bengali fishers were already familiar with the ecological conditions suitable for marine fishing in the Southern Sundarban, which helped them in settling in different places of Kakdwip, Namkhana, Bakkhali, Frasergunj, and Sagar Island right after the partition. Fishers who were sent to Eastern and Central India for rehabilitation by the West Bengal government gradually came to know about the suitable fishing conditions of the southern Sundarban, and thus relocated.
themselves in several coastal districts of West Bengal in subsequent time. Fishers who were mostly from Chittagong, Noakhali, and Barisal, and who were rehabilitated in Purba Champaran and Darbhanga districts of Bihar could not continue their farming activities because farming was not their traditional caste-based occupation (Jaladas 2011). They belonged to the *Jalia Kaibrta* caste, whose primary occupation was fishing and who were adept in it because of their inherent skill and knowledge of fishing in the estuaries and sea of undivided Bengal. 85% of Kakdwip’s present fisherfolk have their ancestral roots in East Pakistan, and 80% of them had migrated from Chittagong, Barisal, and Noakhali (Jaladas 2011). However, the East Bengali fisherfolk who initiated the *shabar* business in the coastal areas of Kakdwip, Namkhana, Bakkhali, Frasergunj, and at last in Jambu in the 1950s and 1960s, did not settle in Kakdwip immediately. It was much later between 1970-1980 that many of the pioneer *shabar* owners or *bahardars* started settling in several villages of Kakdwip block such as Akshaynagar, Ganeshpur, Kalinagar, and Shibnagar (Ibid.). Today, the *bahardars* who own large scale *shabar* businesses in the south-western Sundarban are mostly residents of the Kakdwip block.

Since the initiation of the dry fish or *shabar* business in the southwestern Sundarban, the dry fish that was produced was first sent to major dry fish collection and trading centers in Uluberia, Phuleswar, and Kolkata and from these places it was sent to different states of India such as Orissa, Tamil Nadu (Madras or Chennai), Maharashtra (Bombay or Mumbai), Assam and even to neighboring countries of Nepal and Bhutan (Raychaudhuri 2003). Similarly, today, dry fish from the Sundarban are exported to Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, Singapore, Myanmar and also to different states of India (Pramanik and Nandi 2004).

**The Early Dry-Fish Centers in the Sundarban**

This sub-section explains how the Jambu Island was discovered and established as a dry fish center in the southwestern Sundarban. It also explains why the migrant fisherfolk from East Pakistan or East Bengal selected the island of Jambu as a place to dry their catch. It should be
understood that the migrant fisherfolk of East Bengal gradually built a fairly large scale dry fish business which was then heavily impacted by the state government’s decision to evacuate Jambu.

There is no doubt that the dry fish business in the Sundarban region was developed by the East Pakistani Hindu migrants who contributed a great deal of their skill, knowledge and energy in developing marine fishing in the Sundarban. The art and techniques of marine fishing did not flourish much in West Bengal prior to the 1950s except in few places such as Digha, Contai, Ramnagar, and Khejuri in the Medinipur district (Jaladas 2013). The following excerpt from “The Moon and The Net: Study of a Transient Community of Fishermen at Jambudwip” (2003) clearly explains the state of marine fishing prior to the arrival of East Pakistani migrant fisherfolk in West Bengal:

*The dry fish trade received a new impetus in west Bengal after the partition when a large number of refugee fisherfolk came from Chittagong and Noakhali to settle down in India. Prior to the coming in of the East Bengal fishermen, the local fisherfolks, like the Rajbanshi, the Dhibar and the Bagdi, used to do marine fishing on a small scale. ...All these fishing units were very small in size (about 10 individuals per unit) and they used to return to their natal villages, located not far from the coast, once a fortnight. So, their requirement of cash was limited.*

(Raychaudhuri 2003, 137)

Frasergunj (locally also known as Narayantala) was one of the places in the district of South 24 Parganas where *shabar* was organized by the East Bengali fisherfolk as early as in 1953 (Raychaudhuri 2003, 7). In the same year some fishers, who were originally from West Bengal, also started a *shabar* at Frasergunj (Ibid.). At present, the dry fish business in the Sundarban is mainly concentrated in Frasergunj (Lakshmipur Abad and Amrabati *mouzas*81), Kalisthan (a sand bar or *char*), Sagar Island, Mousuni and Lalgunj in Namkhana block, South 24 Parganas. Prior to 2003 Jambudwip or Jambu Island was the largest centers of *shabar* business in the Sundarban. It is a small island of 20 sq. km. (2000 hectare) located about 10 km off shore from the

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81 *Mouza*: A *mouza* is the smallest administrative unit organized by the British in colonial India. The purpose was to collect revenues. Each *mouza* has a Jurisdiction List number or J.L.No. by which it can be identified. There could be one or more than one village in a *mouza*. The Census of India provides village level data and for them a *mouza* is equivalent to a village.
southwestern Sundarban and it falls under the jurisdiction of Namkhana community development block. According to the Forest Department’s administrative divisions Jambudwip falls under the Patibunia Beat, Bakkhali Range. The island is easily accessible from Frasergunj by a bhutbhuti (motorized dinghy) and it takes nearly 45 minutes to reach Jambu from the harbor of Frasergunj (Mathew 2003; Fieldwork Experience 2012). Since 1954, shabar business started in Jambu when a conflict occurred in Frasergunj, between East Bengali fishers and fishers of West Bengal proper, on the issue of selection of site for setting behundi nets in the sea. It should be mentioned that by 1954 there were five shabars at Frasergunj owned by both East Bengali fisherfolk and fisherfolk from West Bengal (Raychaudhuri 2003, 8). When the conflict broke out in 1954 between fishers of East Bengal and West Bengal an “adhoc panchayat” was formed and the dispute was settled. However, from the next year (1955) the fishers from West Bengal ventured deep in the open sea and built temporary fishing camps on the south-eastern part of Jambudwip. The south-eastern part of Jambudwip was already known to these fishers from Frasergunj because they often visited the island to collect fire wood. They preferred this corner of the island because there were already five shabars formed by the fishers of West Bengal proper who came from Uluberia, district of Howrah. Fisherfolk of West Bengal who owned shabars in the south-eastern corner of the Jambudwip used to set their net in between Mausuni Island and Jambudwip and did not dare venture into the open sea. Until 1960 there were no shabars formed by East Bengali fisherfolk on that island. It was in the winter (December-January) of 1964 when a shabar malik or bahardar visited the island to collect fire wood and discovered the south-western part of the island by chance (Ibid.). He found the site suitable for building khuntis and anchoring boats, as there was a natural creek running from north-east to south-west direction (Raychaudhuri 2003). Soon after this discovery three shabars were established on this south-western part of the island and all of the owners were originally from East Bengal. By 1967-1968 the number of shabars, all formed by East Bengali fisherfolk increased to 17 (Raychaudhuri 2003, 20). Since then the number of shabars gradually increased and in 1994-1995 the total number of shabars reached 30
(Jaladas 2013). In 2001-2002 the number of shabars in Jambu further increased to 42 (Dubey and Lahiri 2003).

There were certain environmental factors which turned out to be favorable for building temporary fishing camps in Jambu. The first was the vast open sea surrounding the island of Jambu in which fishers could set their net and get a good amount of catch. The second was the presence of a natural creek in the island in which fishers could easily anchor their boats. The third was availability of fire wood for cooking food and boiling preservatives which was generally applied to the behundi net in order to increase its durability, and the fourth was the availability of drinking water from shallow wells (Raychaudhuri 2003). However, since 2003 the transient fishers of Jambu were stopped from catching fish from the nearby sea and drying the catch on the island. Eventually they were evicted by the state government on the ground of conserving the forest cover of the island.

Section II: The Current Shabar Business in the Sundarban

In this section I explore the fisherfolk’s eviction from the island of Jambu and its impacts on livelihood of the fishing community involved in dry fish business. In addition, I demonstrate the current status of the shabar business in other places of the southwestern Sundarban, mainly in Kalisthan and Frasergunj. However, before exploring the specific case study of the Jambu, I would like to briefly highlight that the Sundarban Reserve Forest (SRF) covers the core and buffer areas of the Sundarban Biosphere Reserve (SBR). The British government first took initiative to conserve the Sundarban mangrove forest and declared parts of it as reserved forest in 1878 to halt its rapid destruction (Richard and Flint 1991). By 1943, the entire Sundarban mangrove forest came under the status of reserved forest. In India, any kind of activities are prohibited in a reserved forest, such as hunting, grazing, clearing of forest cover, and removal of forest products, unless permitted by the State Government. Currently, the Forest Department has complete control on the Sundarban Reserve Forest. Only limited access is given to the permit holders to collect honey and bee wax from the buffer area of the SBR. Fishermen can catch fish
only in the buffer area with proper documentations. Until the eviction, the transient fishermen of Jambu were also given permits by the Forest Department to use the reserve forest land for a four months fishing season. In the following sub-section I trace the trajectory of evacuation of fishers from the Jambudwip which shows how the conservation program in the Sundarban still retains the characteristic of fortress conservation.

**The Ban on Fish Drying in Jambu**

The island of Jambu (Figure 5.14) is the southernmost island which falls under the buffer area of the SBR and it should be noted that fishing in the buffer area is allowed by the state Forest Department. Since May 29, 1943 it had been declared a reserved forest area falling under the protected forest areas in Namkhana Division (Mathew 2003; Dubey 2005). At present, the island falls under the Bakkhali Range of the 24 Parganas (South) Division of the state Forest Department. The 24 Paraganas (South) Division of the state Forest Department manages the forest cover lying outside the jurisdiction of the Sundarban Tiger Project or the STR (24 Parganas (South) Division Annual Report 2005-2006). The Forest Department has established a territorial camp on Jambu to increase their vigil on the island. Every day, two forest guards patrol the entire island by feet and report to the forester at the camp (Figure 5.15). Since 1968 fishers were issued permits from the state Forest Department in order to use the island for drying fish and for the collection of firewood (Mathew 2003). This means they were allowed to anchor their boats in the main creek and to build temporary shacks on the island during the four month season of fish drying (Figure 5.16). During those early time boats were not mechanized and fishers did not use trawlers. Trawlers were first introduced in the Sundarban in 1972 after the devastating cyclone in the month of December in which many fishing camps and non-mechanized boats got completely destroyed (Jaladas 2011, 94).
Since 1955 transient fisherfolk of West Bengal had used Jambu Island as an important center for catching and drying fish (Mathew 2003). The bahardars who used to visit Jambu were usually from Kakdwip and they were well off compared to shabar maliks of Frasergunj and Bakkhali (Fieldwork Experience 2012). Until 1996 the transient marine fisherfolk of West Bengal could visit Jambudwip with permits provided by the Forest Department. The problem began in 1996 when the Supreme Court issued an order which clearly stated that use of forestland for non-forest activity was strictly prohibited unless such activity was approved by the Ministry of Environment and Forests (MoEF) (Shashikumar 2004a). Following this the state Forest Department of West Bengal conducted an aerial survey in 1999 and issued an order to evacuate the Jambudwip, arguing that transient fishers of Jambu were damaging the forest cover of the island (Jaladas 2013). On May 3, 2002 the MoEF directed all states and union territories to remove all encroachments on the forest lands that took place after 1980 (Shashikumar 2004a). It was decided that all encroachments which occurred after 1980 would be removed by September 2002. By this time the Supreme Court constituted the Central Empowered Committee (CEC) to provide relief to those who might be affected by any action taken by the Central or State Governments regarding encroachment on forest lands (Mathew 2003).
Figure 5.15. On the left, the patrolling forest guards on Jambu Island. On the right, the Jambu Camp, under Patibunia Beat

Figure 5.16. The open space in front of the light house once used to build *khunit* (temporary shacks) on the Jambu Island

In the meantime, fishers were not silent in protesting against the government’s decision of eviction. They argued that they had been fishing and drying the catch on Jambudwip for more than 50 years and the seasonal use of the island for drying fish cannot be called a post 1980 encroachment (Shashikumar 2004a; Jaladas 2013). Further they argued that they had been doing this seasonal *shabar* business with the Forest Department’s approval as the department issued seasonal permits to the fishers since 1968 (Mathew 2003; Jaladas 2013). According to the anthropologist Bikash Raychaudhuri, in 1967-1968, each fisher needed to pay Rs. one per month
to the Forest Department to visit Jambu Island\textsuperscript{82}. The West Bengal Fishery Department also supported the fact that transient fishers of Jambu had been visiting the island for more than 50 years and therefore eviction of these people was illegal. In 2001, a newspaper report alleged that more than 1,000 Bangladeshi had been engaged in illegal timber and fish smuggling on the island of Jambu (The Statesman December 11, 2001). The state administration labeled these illegal Bangladeshi immigrants as ‘infiltrators.’ According to the administration the infiltrators were supported by some Indian fishermen who also had encroached upon land on the island along with the Bangladeshis (Ibid.). The transient fisherfolk who visited the islands for four months took this allegation as offensive. They protested against the government by saying that the fishers who originally migrated from Bangladesh soon after the partition could never be infiltrators as they had been living in India for a long period of time (Jaladas 2013). It is true that by 2000 there were 15 fisher families who lived on the island, near the sea coast, in order to reduce the cost of building temporary shacks for each fishing season but they never destroyed the mangrove forest cover of the island (Ibid.). Furthermore, these people were not infiltrators as they were all Indian nationals with valid ration cards and their names were recorded on the voter list (Ibid.). The local administration also provided tube wells to these 15 families in order to supply drinking water (Ibid.). Finally the transient fishers of Jambu claimed that the fish drying activities were permitted under the Coastal regulation Zone Notification of 1991 issued under the Environmental (Protection) Act, 1986 which recognizes the customary fishing rights of traditional fishers of India (Shashikumar 2004a; Jaladas 2013).

In late August 2002, the Forest Department ordered that the transient fishers were not allowed to use Jambudwip and burnt their boats, makeshift shacks, and fishing implements. This incident was kind of unbelievable as a meeting was held between the officials of Forest and Fishery Departments on August 9, 2002. In that meeting it was decided that the seasonal use of

\textsuperscript{82} Discussion with Dr. Bikash Raychaudhuri, who visited Jambu in 1967-1968 to conduct research on transient fisherfolk of Jambu, at his residence in August 2012.
the island by fishermen, holding identity cards provided by the Fishery Department, will be
regularized. The MoEF also softened their position by October 2002, and made provision for
organizing district level commissions to settle the dispute on use of forest land for drying fish.
However, the West Bengal state Forest Department became more stringent in their stand and
blocked the mouth of the creek by erecting concrete pillars, thus violating the customary fishing
rights of the transient fisherfolk of Jambu (Mathew 2003; Shashikumar 2004a). On November
12, 2002, 10 fishers drowned in the sea caught in the midst of a cyclone, as they were denied
entry into the creek by the armed forest guards and police (Mathew 2003; Shashikumar 2004a;
Jaladas 2013). Shishu Ranjan Das, an eye- witness narrated the incident in a poignant tone:

_It was a normal day right in the middle of the fishing season. November 12, 2002. There
was no warning. ...weather reports had predicted a clear day. Suddenly, the weather
turned rough. We knew that we had been caught unawares by a cyclone. Some boats
headed to Jambudwip to escape the cyclone. When we neared the creek, we were turned
away by armed policemen and forest guards. They just pointed their guns at us. The
government had erected pillars on the creek and iron chains were drawn from one pillar
to another._

(Shashikumar 2004a Tehelka – The People’s Paper, 23 October 2004)

Immediately after this incident the National Fishworkers’ Forum (NFF) launched a
campaign against the government’s decision to block entry to the Jambu. On November 25,
fishers were able to remove some of the concrete pillars erected by the Forest Department and
enter the creek. They anchored their boats in the creek and peacefully protested against the
government’s decision to deny access to Jambu Island. The CEC visited Jambudwip on
December 3, 2002 in order to seek proper relief measures against the accusation of encroaching
forest land and destruction of mangroves by the transient fisherfolk of Jambu. CEC’s visit to the
island was a response to an application made by the Executive Director, Wildlife Protection of
India (Mathew 2003). It was also a response to a letter sent by the Chief Secretary of West
Bengal requesting the CEC “to agree to the State Government’s proposal to allow the fishermen
to resume fish-drying activities up to February 2003 as an interim measure and to await a formal
proposal on the issue from the State Government” (Mathew 2003, 31-32). After examining the situation on Jambu the CEC prepared a report in which the committee concluded that fish-drying activities on the island of Jambu were a seasonal “occupation” and these activities could not be permitted under the Forest (Conservation) Act, 1980 (Mathew 2003, 30; Shashikumar 2004a; Jaladas 2013). In this report the CEC directed the West Bengal Government “to remove all traces of encroachment on Jambudwip by 31 March 2003” (Mathew 2003, 31). There is no doubt that the CEC’s decision was influenced by the satellite images of Jambudwip which showed the chronological change in forest cover from 1981-2001. These satellite images from the National Remote Sensing Agency (NRSA) were provided to the CEC by the state Forest Department as irrefutable proof of mangrove destruction by the transient fishers of Jambu. Following this CEC’s report, around 10,000 fishers were evicted by the state Forest Department and Jambu was declared as a restricted zone (Jaladas 2013).

The Issue of Relocation of Marine Fisherfolk from the Jambu

After Jambu was restricted for fish drying many shabar maliks who used to organize large scale fishing camps moved to Kalistan, Frasergunj, Sagar, Bakkhali, and Lalgunj (Jaladas 2013; Fieldwork experience 2012). The Forest Department recommended an alternative site for shabar business in the Haribhanga Dwp or Lower Long Sand which was also suggested by the CEC. But shabar maliks and dry fish workers were not ready to move to this 500 hectare sandy island, devoid of a single patch of forest cover. According to them the island is highly exposed to cyclonic storms and there is no creek to take shelter if such storms occur. The presence of a creek is also essential in order to land the catch on the shore. Lakhikanta Das, one of the transient fishers of Jambu compared moving to Haribhanga similar to death. In his own words:

We want the government to line us up and order a firing squad to execute us. But please don’t ask us to give up our lives to cyclones. We can’t risk taking it to Haribhanga to dry it. We will all die.

(Shashikumar 2004b Tehelka – The People’s Paper, 23 October 2004)
In April 2003, the NFF filed “an interlocutory application” to the Supreme Court challenging the CEC’s report and decision of removing all encroachment. The Supreme Court asked the central and state governments to respond to the NFF’s application. The West Bengal Forest and Fishery Departments both filed their responses which were contradictory to each other. While the Forest Department supported CEC’s order of evacuating all fishers from Jambu, the Fishery Department supported the traditional fishing rights of the transient fisherfolk. The Fishery Department under Minister Kiranmoy Nanda clearly stated “it is the constitutional obligation of the State to protect the traditional transient fish drying rights of these fishermen” (Shashikumar 2004a Tehelka – The People’s Paper, 23 October 2004). In August 2003, the Supreme Court issued a directive that “no trawler or mechanized boat shall enter the water adjoining Jambudwip Island until further orders” (Shashikumar 2004a Tehelka – The People’s Paper, 23 October 2004). After this directive fishers had no option but to use the loophole. The directive did not ban fishing by country boats around Jambu. By October 15, 2003 some fishers went to Jambu by country boats to arrange their dry fish camps. But on October 15, 2003 the West Bengal Government banned all fishing activities in the adjoining sea of Jambudwip. From this day onward, the entire fish drying activities came to a complete halt in Jambu (Shashikumar 2004). The complete halt on fishing and fish drying in Jambudwip resulted in a halt of dry fish production worth Rs. 4 million (US $80,000) per fishing unit (Mathew 2003, 33). Considering all the fishing units, the fishers of Jambu used to produce about 16,000 tons of fish which was worth approximately Rs. 168 million or US $3.4 million, in the four month fishing season (Ibid.).

The Impacts of Eviction

The following paragraph analyzes the overall impacts of eviction on the fishermen involved in dry fish business in the Sundarban. Here, I would like to emphasize that a detailed study on displacement and its impacts on coastal fishermen, especially impacts on fishing communities of Kakdwip is necessary. This is because most fishermen who visited Jambu were residents of Kakdwip Community Development Block.
The eviction of coastal fisherfolk from Jambu led many bahardars or shabar maliks to shift to the fresh fish business using trawlers. Some shabar maliks were forced to leave their traditional occupation and start new businesses such as cement business and building godowns to keep vegetables (Jaladas 2013). Sunil Das, one of the earlier shabar maliks of Jambu and a resident of Kakdwip supported this fact and stated that shabar maliks could not just sit idle after Jambu got closed (Jibon thakte keu bose thakbe na). So, it was obvious for them to carry on their sustenance in one way or other (Fieldwork Experience 2012). Some shabar maliks such as Paban Das and Shishu Ranjan Das faced severe economic crisis and they sold their trawlers and fishing gear. Sushanto Das, who used to go to Jambu, was forced to reduce his shabar size after dry fish business was banned on the island. His present shabar business at Amrabati mouza covers an area of 2-2.5 bigha. At Jambu, he had a shabar of 10-12 bigha. I was fortunate enough to meet Shishu Ranjan Das, in 2012 when I was doing fieldwork at Paschim Amrabati Char, Frasergunj. During our brief conversation, he did not want to talk about the loss and crisis he faced after losing his every asset in Jambu movement and didn’t want to go through the same pain. I will just provide one example to indicate the scale of the dry fish business he used to pursue prior to the eviction of fishers from the Jambu Island. The size of his land-based khunti in Jambu was 100 bigha, the number of mechanized boats (including 2 cylinders, 4 cylinders and 6 cylinders) involved in catching and carrying fish was 62, and the number of bag nets used in the sea was 250. In 2012, the land area covered by his khunti at Paschim Amrabati Char was only 5.5 bigha, number of six cylinder trawlers reduced to 3 and the number of bag nets was 30 (Table 5.3 and 5.5). Shabar maliks of Amrabati mouza explained that after the close of Jambu, there is acute labor problem in the shabar business and each year they face huge amount of financial loss.

Upon my request, some of the bahardars from Kakdwip, who used to visit Jambu, explained the nature of the labor problem they face after closing of Jambu. Each shabar malik needs to pay

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83 Bigha: It is a unit generally used to measure land area in South Asia. In West Bengal, 1bigha is equivalent to one-third of an acre or 0.3306 acre.
84 Table 5.3 and 5.5 help us to understand the impacts of eviction
some amount of money in advance, in the beginning of each fishing season, to his crew members such as boatmen or majhis. This money is paid to the crew members so that they work for the entire season with the respective shabar malik from whom he has taken the advanced money. Often it has been seen that a fisher has taken advanced money from more than one shabar maliks. Here, I would quote Rajesh Das to better explain the impacts of Jambu on shabar maliks:

We are suffering. Each year we lose Rs. 200,000-400,000. Laborers take advanced money from us, and then they do not work for us. They leave with the money. Jambu was separated from the mainland. So, it was hard to leave the island without any notice. Once the labors leave without any notice, it is hard to trace them. These days it is becoming harder and harder to find skilled laborers. Landing of trawlers was easy on Jambu due to the presence of a natural creek. But, at Paschim Amrabad Baliara Char, it is very hard to anchor our trawlers as there is no creek. After closing of Jambu I came to Amrabad. I have too much loans which I need to pay off.

The labor problem was reiterated again and again by the shabar maliks of Amrabati mouza. When I was visiting the Amrabati mouza in the 2012-2013 fishing season, Biren Patra mentioned that he lost Rs. 25,000 ($427) due to the same labor problem. He explained that he trusted a person from Rakhhashkali, Patharpata, who promised him to bring skilled workers (e.g. baro majhi) for his shabar. Biren gave him Rs. 25,000 ($427) in advance and lost his money. Sometimes after taking advanced money from the shabar maliks, the fish workers leave their natal villages and migrate to Tamil Nadu, Kerala, and Andaman for that particular fishing season. This creates a conflict of interest among the shabar maliks. This is also considered a breach of trust, as this entire shabar business is based on mutual trust and dependence among all the fishers of the fishing community. The fishing associations (matsyajibi samiti) try to mediate between the labors and the shabar maliks if any conflict occurs. They also try to identify the labors who leave with the advance money without completing their contracts with the shabar maliks. However, if a labor migrates to a different state, outside of West Bengal, it is less likely that shabar malik will get his money back.
Figure 5.17. A career boat has anchored on Paschim Amrabati Baliara Char. Unlike the Jambu, the lack of natural creeks makes it harder for fishermen to anchor their boats easily. Lack of natural creeks also makes them vulnerable to cyclones.

After the close of Jambu, lack of adequate space to continue the shabar business has become a serious problem for the fishers. For example, in 1994-1995, the average size of shabar in Jambu was 135 persons per sq. km. (Table 3). In 2012-2013, the average size of shabar at Paschim Amrabati was 82 per sq. km. (Table 5). Besides the labor and space problems, the shabar maliks also mentioned about problem of anchoring their boats safely at Paschim Amrabati Baliara Char due to lack of natural creeks (Figure 5.17). Crew members were the worst sufferers of this eviction. Many of them were forced to engage themselves in non-caste occupation such as rickshaw pulling and wage labor (Jaladas 2013). Many were forced to migrate to other states of India in search of jobs.

The Shabar Business at Kalisthan Char

In this sub-section I focus on Kalisthan, an important dry fish production centers of the Indian Sundarban. After the close of Jambu, it is one of the current places where fishers still dry their catch on the shore. Kalisthan (Figure 5.18) is located at the southern tip of Haripur mouza of Namkhana block. However it falls under Frasergunj Gram Panchayat (GP) and not the Haripur GP. It is a large sand bar or char located on the right bank of Saptamukhi River. The end point
of Lothian Island can be seen from Kalisthan as this forested island is located exactly opposite of the char. The length of the char is about 3 km and the width is about 0.5 km (Pramanik 2008). Therefore the total area is about 1.5 sq. km.

Since the 1980s Kalisthan developed as an important fish drying center. In fact, it was the second largest center of shabar business after Jambu (Pramanick and Nandi 2004, 28). Kalisthan developed due to the decaying of Bakkhali beach as a center of fish drying business (ibid). In 1996, when the problem of drying fish on the forest land emerged for the first time, some of the bahardars from Kakdwip such as Sunil Das shifted his business to the Kalisthan Char.

Figure 5.18. The location of Kalisthan in the Sundarban Biosphere Reserve

It should be noted that the Forest Department also wanted to close Kalisthan like Jambu, but they could not do it because the fisherfolk, including women dry fish workers of the Sundarban, vehemently protested government’s decision. In 1996 the MLA $^{85}$ of Kakdwip, Hrishikesh Maity, District Magistrate (DM) of South 24 Parganas, Zakir Hussain, Divisional Forest Officer (DFO) of South 24 Parganas, and local fishing associations of Kakdwip, discussed the issue of encroaching forest land for dry fish business. In that meeting it was decided that fishers should

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$^{85}$ MLA: Member of Legislative Assembly
limit their *khuntis* only on the sandy *char* and should not encroach on reserve forest (Figure 5.19) land of Kalisthan for drying fish during the four month fishing season (October 15 to February 20). Thus the *shabar maliks* received only 20 hecatre or 0.2 sq. km. in Kalisthan for fish drying and building temporary *khuntis*.

**Locational Advantages of Kalisthan**

Some physiographical factors became important in developing the *shabar* business in Kalisthan. During my visit to Kalisthan in January 2012, I asked one of the *bahardars* to explain those enabling factors. Sunil Das, the *bahadar* from Kakdwip, stated that the first requirement for drying fish is open space. An open space near the river or sea is required because the drying fish should be close to the actual fishing ground where *behundi* nets are set in the water. According to Sunil Das, Kalisthan *Char* served that purpose well. As the Kalisthan *Char* is located in the lower reach of Saptamukhi River, it is easy to venture into the open sea. The availability of the North Wind, sandy soils, and adequate sunlight are other important factors for building *khuntis* on the *char*. After explaining these factors Sunil Das mentioned that Jambu had one additional environmental advantage over Kalisthan, which was the presence of the natural creek in which fishers could anchor their boats during the storms. Kalisthan has no such creek and during storms fishers need to go to Haripur to take shelter near the concrete embankment. Haripur is well guarded by the Lothian Island located just opposite of it. Therefore, during cyclones, anchoring near Haripur provides some protection to the fishers and their *bhutbhuti* and trawlers.
The Naming of Kalisthan—the Narrative

Here, I narrate a story which explains how the dry fish production center “Kalisthan” derived its current name. During my field visit to Kalisthan I was introduced to Ramkrishna Mandal, one of the local activists of the NGO, GOAL India. Ramkrishna shared the story behind the naming of Kalisthan, the story which he had heard from his grandfather and father. He said that during the British period, the surrounding places near the present Kalisthan were covered under dense mangrove forests. During the tenure of Sir Andrew Fraser (1903-1908), Lieutenant Governor of Bengal, these mangrove forest lands were reclaimed in order to build settlements (O’Malley 1998). Andrew Fraser brought Santal labors from the Chhotonagpur plateau to reclaim the mangrove forest lands. The reclaimed areas were subsequently settled by people coming from different parts of West Bengal. Some forest lands were preserved by the British Government. In those early days of settlement, these forests were infested with tigers. It was not uncommon for tigers to stray into villages. Ramkrishna said that during those early days...

86 GOAL is an international organization working in almost 50 countries all over the world. It was established in Dublin, Ireland in 1977. GOAL India works in urban and rural areas of West Bengal. In rural West Bengal it works in the Sundarban region, Murshidabad, and North Bengal. (http://www.goalusa.org/atwork/india.shtml)
there was a man called Dhiren Majhi. By his caste, Dhiren was a *karga lok* which means he used to castrate goats and bulls. One day Dhiren Majhi was going to Maharajganj Bazar. On his way, he met an ascetic with whom he talked for a while. The ascetic instructed Dhiren to cut forest at a certain place. The ascetic also told Dhiren that he would find a holy rock of *Sannyasi Kali*\(^{87}\) after clearing the jungle of that particular place, which he should worship. The ascetic claimed that the holy rock is the representation of *Sannyasi Kali* who does not prefer animal sacrifice, and hence, should be revered by offering only rice-porridge. Complying with the ascetic’s instruction, Dhiren Majhi cleared the jungle and found the holy rock. He created a shrine for the deity at that place. As Dhiren cleared a part of the protected forest of the Sundarban and committed a punishable offence, the Divisional Forest Officer (DFO) of 24 Parganas arrested him. The DFO wanted to send him to the court of Diamond Harbour. Dhiren defended himself by saying that he had cut the forest for worshipping the goddess *Sannyasi Kali*. DFO wondered how a man could worship a deity in the midst of dense mangrove forest, which is always infested with fierce tigers. He himself wanted to see how Dhiren worships a deity regularly in the evening when the forest would be most dangerous, especially because of the infamous Bengal tigers. The DFO reached the spot with his boat and anchored it in a creek near the shrine. He waited for Dhiren until he started his *puja* (worship). The DFO was awestruck as he found two tigers lying quietly near the shrine of the deity. As soon as Dhiren started chanting mantras the place became full of auspicious sound of *kansor* and *ghonta*\(^{88}\). At that time a strong wind was blowing within the forest but the flame of the oil-lamp did not extinguish. The DFO was extremely surprised after seeing such an unnatural incident. He then bestowed 10 *bigha* of land to the shrine of *Sannyasi Kali*. Since then the deity was worshipped by local villagers and people from distant places. In the past, people of Bangladesh used to visit that place by boats for giving offerings to

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\(^{87}\) *Sannyasi Kali* is a deity of Hindus and is one of many forms of Goddess Kali. Goddess Kali is one of the Shiva’s consorts and considered as one of the most powerful deities of the Hindu pantheon.

\(^{88}\) *Kansor* and *ghonta*: *Kansor* is the bell metal and *ghonta* means bell. In Bengal, these are played during worshipping a deity.
the goddess. Some devotees wanted to build a temple for the goddess but they were discouraged by the goddess herself. It is said that the goddess appeared in those people’s dreams, and instructed them not to build any temples as she prefers living in the open ground. Nowadays local people, whose wishes are fulfilled by the goddess, visit the shrine with offerings (Figure 5.20). The local Gram Panchayat also takes care of the shrine and they have dug a pond in front of the shrine for devotees. There is also a cremation ground near this place, located just on the right hand side of the pond. Since the establishment of the shrine of the Hindu goddess Kali this place and its adjacent sand bars were known as Kalisthan.

Figure 5.20. On the left, the shrine of Sannyasi Kali at Kalisthan under a bain tree. On the right, the pond excavated by the local Gram Panchayat for the devotees.

The Current Trend of the Shabar Business in the Sundarban

In this sub-section I examine the current shabar business in the Sundarban Biosphere Reserve (SBR). During my fieldwork in Namkhana Block, I mostly focused on Frasergunj to understand the current trend of shabar business in the SBR. However, I received an unexpected opportunity to visit Kalisthan with a local resident of Namkhana and therefore took the opportunity to explore Kalisthan. In 1996, there were 22 shabars in Kalisthan and all of the bahardars were from Kakdwip. All of these 22 bahardars were members of Kakdwip-Akshyanagar Sundarban Matshyajibi Samiti. In total there are 32 shabar maliks under this

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89 Bain is a mangrove tree. Different types of bain are found in the Sundarban. These trees belong to Avicenniaceae family, the second dominant mangrove family in the Indian Sundarban region (Das 2006).

90 A Matshyajibi Samiti is a fishing union organized by the fishers of a locality in the Sundarban.
Kakdwip-Akshyanagar Sundarban *Matshyajibi Samiti* who conduct dry fish business in different places of the Sundarban including Kalisthan, Frasergunj, and Sagar Island. After Jambu was closed, Kalisthan became the largest center of dry fish production in the Sundarban in terms of average size of each *shabar* (Table 5.2). During that time the total worth of dry fish business from Kalisthan was Rs. 25 million or about US $469,528 (Pramanik 2008).

In the 2011-12 fishing season, there were seven *shabars* at Kalisthan. Among these seven, only six *shabars* were from Kakdwip. There were 5,000 fish workers on the Kalisthan *Char* who found employment during the 2011-12 fishing season. At Kalisthan, the women dry fish workers who are engaged in sorting and drying of fish, come from the nearby village of Bijoybati. The women workers are paid on a daily basis. Women who sort dry fish are paid Rs. 100-120 per day. Therefore they can earn up to Rs. 12,000 to 14,400 ($205-246) in four months. The women who sort raw fish do not get cash in their hands. Instead they are given 10 kilos of unsorted raw fish daily. Dry fishes are sent from Kalisthan to the local dry fish markets of Uluberia, Sheorafuli, and Kakdwip within West Bengal as well as to other states such as Assam, Tripura and even to neighboring countries such as Bangladesh. The number of *shabars* in Kalisthan has gradually decreased over the time due to scarcity of space along the coast to build *khunits*. According to the secretary of Kakdwip-Akshyanagar Sundarban *Matshyajibi Samiti* there are other reasons, which have led to the decrease in *shabar* business such as a decreasing amount of fish in the sea, labor problems, and lack of dry fish auction markets in the Sundarban.

Besides Kalisthan, Frasergunj is another important center of the *shabar* business. Near Frasergunj, *shabar* businesses take place in two *chars*: *Dakshin Samudra Saikat* in Laksh mipur Abad *mouza* (Figure 5.21) and Paschim Amrabati Baliara *char* in Amrabati *mouza* (Figure 5.23). In Lakshmipur Abad *mouza* there are five *shabar maliks* who reside in Lakshmipur Abad and organize mini *shabars* on the *char* of Frasergunj *Dakshin Samudra Saikat*. In 2012-2013 fishing season, the number of *shabars* in this *char* was 50 (Figure 5.22). 25 *bigha* of land was occupied by these 50 shabars (Table 5.4). The total number of mechanized boats used at Lakshmipur Abad
was 49 and the total number of nets (behundi and other types) was 235. Including the fishers and
dry fish workers, there are 400 people who depend on the seasonal shabar business at the
Lakshmir Abad. Besides, another 300-400 people are indirectly dependent on the shabar
business of Lakshmipur. For example, local women, men and minors sort and dry fish and earn
some money during the four months of shabar business. In 2012-2013, the daily labor charge was
Rs. 180. Women and children also earn money by hanging fish on the fish drying rack or daur.
If they hang 50-60 kg of fish (bomla and chhuri), they earn Rs. 50.

Figure 5.21. Location of mini-Shabar Camps or Khunts at Lakshmipur Abad Dakshin Samudra Saikat, Namkhana Block, South 24 Parganas, West Bengal

Figure 5.22. Mini Shabars at Dakshin Samudra Saikat, Lakshmipur Abad Mouza. On the left, family members of a fisher is busy in sorting and drying fish. On the right, women dry fish workers are engaged in wage labor at a mini shabar at Lakshmipur Abad mouza
Figure 5.23. Location of Shabar Camps or Khuntis at Paschim Amrabati Baliara Char. Namkhana Block, South 24 Parganas, West Bengal

The shabars at Lakshmipur Abad are smaller in size if compared to the shabars of Jambu and Kalisthan and therefore are called mini shabars (Figure 5.17). The minimum seasonal cost of a mini shabar is at least Rs. 140,000 ($2,392). Besides local residents of Lakshmipur Abad and Amrabati, people from Kakdwip also arrive on these two chars during the dry fish production season. Niranjan Patra, the secretary of the Dakshin Samudra Saikat Matsyajibi Khunti Samiti informed that 90% of the shabar maliks who build their khuntis at the Dakshin Samudra Saikat are residents of Frasergunj whereas 10% of the shabar maliks come from Haripur and Shibrampur. Each year, all the shabar maliks need to pay Rs. 50 ($0.85) to the local Panchayat in order to use the coastal land of the Lakshmipur Abad.

In comparison to Dakshin Samudra Saikat of Lakshmipur Abad, the number of shabars in Amrabati is greater, and the char that is known as Paschim Amrabati Baliara Char, is also larger in size. The total area used for shabar business is approximately 100-120 bigha. In the 2012-2013 fishing season the total number of shabars was 61 (Figure 5.18). Among these 61 shabars, 20 shabars were not directly involved in catching fish from the open sea, instead the owners of these 20 shabars bought fresh fish from fishers of Rakhkhalkali, Patharpratima, and then dried
them in the *khuntis*. The fishers from Patharpratima block, South 24 Parganas, who are involved in *behundi jal* fishing, directly visit Amrabati Paschim Baliara Char in order to sell their catch. In 2012-2013 fishing season, the number of large scale (*baro shabar*), medium scale (*majhari shabar*) and small scale or mini *shabars* was 14, 11 and 16 respectively. The secretary of the *Paschim Amrabati Baliara Char Matsbyajibi Khunti Samiti* Vyasdev Bagani informed that the total number of mechanized boats was 141 and number of *behundi* nets used was 100. On average, 5,000 people are directly or indirectly dependent on the seasonal *shabar* business at the Paschim Amrabati Baliara char. In case of large *shabar*, 60-70 people work in the water and 20-30 people work on the land. The number of wage labors (*bachhuni*) who are hired on a daily basis is 10 on average. In case of medium scale *shabar*, the number of people who work in the water is 10-12 and the number of people who work on the land is 5-6. On average, 7-10 people are hired for sorting and drying fish when the catch is good. In case of mini-*shabars*, 5-6 people constantly work in the water, while 3-4 people work on the land. The mini-*shabar* owners occasionally hire daily labor for sorting and drying of fish and mostly depend on their family members. In 2012-2013 fishing season, the daily wage labor for dry fish workers (*bachhuni*) at the Paschim Amrabati Baliara Char was Rs. 145.

During the fieldwork at Lakshmipur Abad and Amrabati *mouzas*, I was informed that that 85% fishers have their own boat, whereas the remaining 15% work as crewmen in others’ boat (Figure 5.24). Among those fishers, who own a boat, 82% have a mechanized boat, while 18% own a non-mechanized boat or dinghy (Figure 5.25). Fishers, who own 1 cylinder and 2 cylinders mechanized boats, stay within 15-20 km off the coast.
Since the eviction of fishermen from Jambu, the marine fisherfolk of the Sundarban always live in fear of eviction. My field visit to Lakshmipur Abad (near Frasergunj) revealed that fear. Bikash Maji, a trawler driver and son of a mini shabar owner in Lakshmipur Abad, clearly stated that after the incident on Jambu fishers have always feared that the shabar business would be completely closed by the government. A fear prevails among the local fishers that the Indian Navy and Coast Guard can acquire a part of the Frasergunj Dakshin Samudra Saikat any day.
which would lead to the displacement of thousands of fishers and dry fish workers. In 2012-2013 fishing season, when fishermen started building their *khuntis* on the eastern part of the *Dakshin Samudra Saikat*, Indian Coast Guard ordered them to evacuate their *khuntis* from the eastern part of the *char*. The secretary of the *Dakshin Samudra Saikat Matsyajibi Khunti Samiti* said that fishermen were not notified that they would not be able to use the eastern part of the Lakshmipur Abad coast for their dry fish business. Because of this sudden order from the government, the fishermen were forced to limit their *shabars* only on the western part of the Dakshin Samudra Saikat. This created a problem of space for the mini *shabar* owners as compared to the previous fishing seasons. Many of the *shabar maliks* were forced to reduce the size of their *shabars* in order to provide space to those *shabar maliks* who were evacuated from the Eastern part of the coast. This is definitely related to the tightening of security and surveillance in the coastal areas of India after the 2008 terrorist attack in Mumbai. In that incident, the terrorists used the porous coastal waterways to enter the city. Bikash stated that at present no one thinks of expanding the *shabar* business or developing the infrastructure of this business. Since the displacement of transient fisherfolk of Jambu, the most important problem which is looming large on today’s dry fish business in the Sundarban is the problem of space or suitable sandy *chars*. Fishers from Kalistahn also informed me that Kalisthan Char has shrunk as compared to the past due to wave action. During my fieldwork in the Sundarban I noticed one interesting fact related to Jambu movement: all the fishers engaged in the dry fish business did not feel the same passion regarding protecting their fishing rights. In the initial phases of the Jambu movement, the leaders were mainly the fish workers and crew members. But later the leadership went in the hands of the well off *shabar maliks* or *bahardars*, who intentionally avoided the leaders of the initial phase (Jaladas 2013). In addition, I was told that the Jambu movement was a movement of *bahardars* of Kakdwip, as most of them used to visit Jambu since the island’s discovery as an important fishing site. The small scale *shabar maliks* of Lakshmipur Abad and Amrabati did not feel any connection to the relatively large scale *shabar* owners of Kakdwip, and therefore did not make
any effort to protest when the fisherfolk of Jambu were evicted by the central and state
governments. However, many of the residents of Lakshmipur Abad and Amrabati admitted that
the closing of the dry fish business on Jambu Island has definitely impacted their subsistence.
During the fish drying season, men and women from Lakshmipur Abad and Amrabati used to
work on Jambu as daily wage labors.

The fisherfolk of Jambudwip could not take advantage of the Scheduled Tribes and other
Traditional Forest Dwellers (Recognition of Forest Rights) Act 200691 which was passed much
later by the Indian Parliament and which clearly recognizes any traditional rights of the forest
dwelling communities enjoyed for a long period of time. Although transient fisherfolk of the
Jambu were not forest dwellers in that sense, and lived on the forested island only four months of
the year; the leaders of the Jambu movement could have taken advantage of the Forest Right Act
considering the broad definition of “other Traditional Forest Dwellers” to continue the
movement, and to halt the eviction of the fishers which occurred without proper arrangement of
rehabilitation of coastal fisherfolk of the Sundarban. Recently in 2013, the fishing communities
again demanded fishing rights on the island of Jambu to continue their traditional dry fish
business. Thomas Kocherry, a renowned social and environmental activist of India and active
member of the World Forum of Fisher Peoples (WFFP), demanded reestablishment of fishing
rights on the Jambudwip. In his letter to the Honorable Minister of Fisheries, Government of
West Bengal, all he wanted is the justice for the evicted fishermen of Jambudwip and a 200
hectare of land out of 2,000 hectare on the island.92 This depicts that the fisherfolk of the
Sundarban, who are involved in shabar business, has not completely lost their hopes and is not

91 Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006
recognizes the rights of forest dwelling communities (including the Scheduled Tribes and other traditional
forest dwellers ) who have been using the forest land for generations but whose rights were not recorded.
Under this act a forest dweller can have access to the minor forest products. It also includes the rights of
grazing, fishing, and seasonal resource access of nomadic communities (The Gazette of India 2007).
92 Refer to Appendix A
reluctant to form another social movement in order to get back their customary fishing rights on
the island of Jambu.

Discussion

The case study of Jambu clearly demonstrates the characteristics of a fortress
conservation model in the current conservation strategies of the Sundarban Biosphere Reserve
(SBR). It also shows how, in the name of conservation, the subsistence of rural folk is often
jeopardized. It narrates how conservation without a concern for society produces several binaries
where state vs. fishers and conservation vs. subsistence stand in opposition. Although this
specific instance of conservation induced displacement does not lead to a classic model of
evacuation of villages from the protected areas, it does reinstate the basic premise of fortress
conservation model in which conservation can only be successful if people are removed from the
conserved space. There are numerous examples in political ecology and conservation literature
demonstrating how local people are blamed for environmental degradation and biodiversity loss
(Homewood and Brockington 1999; Bosak 2008; Kabra 2009). Therefore, creation of protected
areas and removal of people from such areas can be the only solution to prevent such
environmental degradation (Kabra 2009). The exclusion of people from protected areas leads to
the so called fortress conservation model which is often implemented through ‘fences and fines’
(Buscher and Whande 2007). For example, the cattle herders of Mkomazi Game Reserve in
Tanzania were viewed as hindrance to the biodiversity and preservation of large mammal
populations and, therefore, were evicted without proper compensation and rehabilitation. Some
evicted people then started living outside the boundary of the reserve and some dispersed to other
places near the coast (Brockington 2002). The history of the reserve points out that the
establishments of the game reserve was a result of growing concern on increasing number of
pastoralists in north-east Tanzania (Brockington 2002). From the ecological point of view,
Mkomazi Game Reserve falls under the savanna biome. The reserve has been used by different
ethnic groups such as Pare and Sambaa agropastoralists and Masai and Parakuyo pastoralists
Hunting and grazing were dominant activities for these ethnic people as suitable agricultural land was very limited. The reserve was formed in 1951 and the formation led to a number of protests by the local herders, hunters and honey collectors who lived on the edge of the reserve and who lost their access to the reserve (Brockington 2002). Nevertheless, after the formation of the reserve, some pastoralists such as Parakuyo were still allowed to reside within the reserve. Other ethnic groups such as Pare, Masai, Sambaa also had access to the reserve. However, in the 1970s the increasing livestock population in the reserve was perceived detrimental to the Savanna ecosystem and became a concern for the conservationists. Therefore, in 1988, all the pastoralists were evicted and the eviction of pastoralists was justified on the grounds that the Mkomazi Reserve was experiencing a serious ecological degradation (Ibid.). Research shows that the Mkomazi is definitely rich in biodiversity but it is not the “richest savannas in Africa and possibly the world” (Coe and Stone 1995 quoted in Homewood and Brockington 1999, 310). But this representation of Mkomazi as the most species rich savanna by the Tanzanian government became the basis for eviction of local residents from the reserve in the late 1980s (Homewood and Brockington 1999). The eviction created serious impacts bringing major changes in pastoral societies. Pastoralists became dependent on agriculture for their livelihood and there was increasing economic burden on women to support their families (Brockington 2002). Forced displacement and relocation of local resource users from parks and protected areas often occur without proper compensations and without providing viable alternatives (Brockington and Schmidt-Soltau 2004; Cernea 2006). Furthermore, displacement of people from protected areas is not just geographic displacement of people but also an occupational and economic displacement (Ibid.). Researchers have found that conservation related forced displacements have direct impacts on people’s livelihood (McLean 2003; McElwee 2006). Forced displacement also leads to problems of landlessness, joblessness, homelessness, marginalization, food insecurity, increased morbidity and mortality, and social disarticulation (Cernea 1997).
The evacuation of cattle herders from the Mkomazi Game Reserve reinforced the basic principle of fortress conservation in which humans and wildlife cannot coexist. Like the specific case of Mkomazi, in the Sundarban, the state Forest Department blamed the fishermen for the cutting mangrove tress and loss of forest cover. The forest officials completely ignored the existence of a transient fishing community (Tehelka – The People’s Paper October 23, 2004). Furthermore, transient fishermen were blamed as infiltrators involved in illegal timber trading and fish smuggling on the Jambu. The local administration also considered the transient fishermen of Jambu as “large alien population” (The Statesman December 15, 2001). In the case of Jambu, the Forest (Conservation) Act 1980 was employed as a legal tool to evict ten thousand transient fishermen from the Jambu Island. The Forest (Conservation) Act, 1980 explicitly explained that no forest land can be used for non-forest activities without prior approval from the Central Government. The Act also explained the range of non-forest activities which included cultivation of tea, coffee, spices, rubber, palms, oil-bearing plants and medicinal plants. It also explained, any non-forest purpose means any purpose “other than reafforestation” (Government of India, Forest (Conservation) Act, 1980). The state government also showed Jambu as an uninhabited island with no recorded rights of the transient fisherfolk (Down to Earth 2003) despite the fact that the transient fishers of Jambu paid taxes to the government for the seasonal use of the island and for collection of firewood since the late 1960s. The displacement of transient fishers from the island not just leads to geographical displacement, but also an occupational and economic displacement as fishers were forced to reduce their shabar size due to lack of adequate space. In addition, fishers (i.e. crew members and dry fish workers) were forced to migrate in other states of India in search of wage labors. The case study of Jambu shows that despite the emphasis on inclusion of local communities in conservation policies in the developing

93 See: Officials don’t see fishermen here http://www.tehelka.com/story_main7.asp?filename=Ne102304officials.asp

94 See Forest (Conservation) Act, 1980 from this link: http://envfor.nic.in/legis/forest/forest2.html

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world, the protected managers do not always implement a people-centric conservation program, nor do they always overcome the characteristics of a fortress conservation model.
**Table 5.1**: Minimum price of different types of dry fish at Amrabati in 2012-2013 fishing season

<table>
<thead>
<tr>
<th>Types of Fish</th>
<th>Price per kilogram</th>
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<tbody>
<tr>
<td>Lalpata</td>
<td>90</td>
</tr>
<tr>
<td>Chhuri</td>
<td>75</td>
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<tr>
<td>Bomla</td>
<td>100</td>
</tr>
<tr>
<td>Sadapata</td>
<td>130</td>
</tr>
<tr>
<td>Bhola</td>
<td>60</td>
</tr>
<tr>
<td><em>Chuno</em> (small sized <em>Lalpata</em> and <em>Sadapata</em>)</td>
<td>50</td>
</tr>
</tbody>
</table>
Table 5.2: Number and size of shabars in the Sundarban

<table>
<thead>
<tr>
<th>Fishing Season</th>
<th>Fishing Ground</th>
<th>No. of Shabars</th>
<th>Total Members</th>
<th>Average Size (Persons per sq. Km.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1994-1995</td>
<td>Jambudwip</td>
<td>27</td>
<td>3666</td>
<td>135.77</td>
</tr>
<tr>
<td>1967-1968</td>
<td>Bakkhali</td>
<td>17</td>
<td>550 (approx.)</td>
<td>32.4</td>
</tr>
<tr>
<td>1994-1995</td>
<td>Bakkhali</td>
<td>39</td>
<td>930</td>
<td>23.85</td>
</tr>
<tr>
<td>1967-1968</td>
<td>Frasergunj</td>
<td>13</td>
<td>170 (approx.)</td>
<td>13.8</td>
</tr>
<tr>
<td>1994-1995</td>
<td>Frasergunj</td>
<td>35</td>
<td>1340</td>
<td>38.29</td>
</tr>
<tr>
<td>1967-1968</td>
<td>Sagar</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>1994-1995</td>
<td>Sagar</td>
<td>109</td>
<td>3305</td>
<td>30.32</td>
</tr>
<tr>
<td>1967-1968</td>
<td>Mousuni</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>1994-1995</td>
<td>Mousuni</td>
<td>159</td>
<td>1571</td>
<td>9.88</td>
</tr>
<tr>
<td>1967-1968</td>
<td>Kalisthan</td>
<td>**</td>
<td>**</td>
<td>**</td>
</tr>
<tr>
<td>1994-1995</td>
<td>Kalisthan</td>
<td>22</td>
<td>2175</td>
<td>98.86</td>
</tr>
</tbody>
</table>

Note: ** During 1967-1968 dry fishing was not conducted in these places

---

Table 5.3: Distribution of fishing camps, fishing crafts, and fishermen at Jambudwip, 1994-1995

<table>
<thead>
<tr>
<th>No. of fishing camps or shabars</th>
<th>27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of boats (mechanized + non-mechanized)</td>
<td>133</td>
</tr>
<tr>
<td>Total no. of fishermen and fishworkers</td>
<td>3666</td>
</tr>
</tbody>
</table>

Table 5.4: Distribution of fishing camps, fishing crafts, and fishermen at Lakshmirpur Abad, 2012-2013

<table>
<thead>
<tr>
<th>No. of fishing camps or shabars</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of boats (mechanized + non-mechanized)</td>
<td>49</td>
</tr>
<tr>
<td>Total no. of fishermen and fishworkers</td>
<td>1200</td>
</tr>
</tbody>
</table>

Table 5.5: Distribution of fishing camps, fishing crafts, and fishermen at Paschim Amrabati, 2012-2013

<table>
<thead>
<tr>
<th>No. of fishing camps or shabars</th>
<th>61</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total no. of boats (mechanized + non-mechanized)</td>
<td>141</td>
</tr>
<tr>
<td>Total no. of fishermen and fishworkers</td>
<td>5000</td>
</tr>
</tbody>
</table>
CHAPTER VI

Conclusions: Understanding Conservation in the Sundarban Biosphere Reserve

In this dissertation I have examined the impacts of biodiversity conservation on the rural livelihoods of the Sundarban Biosphere Reserve (SBR), West Bengal, India. More specifically, I have examined the nuances of resource-access struggles of the local fishing communities living on the boundary of the Sundarban Reserve Forest (SRF) and the scope of ecotourism as an alternative livelihood opportunity for local communities including the fishermen. This dissertation answers the following research questions:

Overarching Research Question: How does biodiversity conservation in the Sundarban Biosphere Reserve impact the livelihoods of local rural populace?

Question 1(Q1): How do control and conflicts over access to the forest-based fishing by the state Forest Department affect local fishing communities of the Sundarban Biosphere Reserve?

Question 2(Q2): What are the impacts of ecotourism on the livelihoods of the local communities?

Sub-question 2.1 (SQ 2.1): Does ecotourism generate any income (direct and indirect) for the local fishermen and reduce the chances of conflicts with the biosphere resource managers?

The research demonstrates that the impacts of biodiversity conservation in the eastern and south-western parts of the Sundarban Biosphere Reserve (SBR) are different. In the eastern part of the biosphere reserve (Gosaba Block), fishers who catch fish in the Sundarban Tiger Reserve (STR), are heavily influenced by the regulations imposed on them by the Forest Department. In other words, their livelihood is impacted by the Boat Licensing Certificates (BLCs), a form of license required for every fisher in order to catch fish in the tidal waters of the STR. In the eastern part of the biosphere reserve (Gosaba Block), Sundarban fishers catch fish for their subsistence and experience the resource-access struggles through the everyday interactions with the officials of the forest department. The everyday livelihood earning of a Sundarban fisherman requires negotiation with the forest officials regarding the frequent fines, the confiscation of Boat Licensing Certificates (BLCs), boats and fishing implements. Furthermore, the expansion of
ecotourism outside the STR has little to no impacts on the fishers’ livelihood. Therefore, it fails to provide alternative incomes to fishermen living in the fringe villages of the STR to reduce the underlying tensions and conflicts between biosphere resource managers and fishermen. Finally, no fisher was evicted in the eastern part of the biosphere reserve during the formation of the STR in 1973.

In the Southwestern part of the biosphere reserve (Namkhana Block), fishers mostly catch fish in the open sea (Bay of Bengal) with mechanized boats. They don’t require a BLC but a license from the West Bengal Fishery Department. Fishers, who are involved in seasonal dry fish business in the southwestern Sundarban, were evicted from the Island of Jambu in 2002-2003, which resulted in a strong social movement by the fishermen involved in dry fish business. The eviction created a significant impact on fishers’ lives due to shrinkage of land required for drying the catch in the coastal areas of West Bengal. In sum, the current conservation in the SBR displays some characteristics of the fortress conservation model embedded in the colonial forest management. However, the conservation in the SBR is more complex than a classic fortress model where eviction of local population occurs due to formation of a protected area. The following paragraphs demonstrate the major findings from each chapter of this dissertation.

Chapter three explores the everyday life struggles of fishing communities of Gosaba – and demonstrates the problems of using BLCs in the STR. This chapter shows that few fishermen in Gosaba have BLCs which has led to the system of renting BLCs from other well off people or from local khotidars (fish depot owners). The annual amount of rent is quite high (Rs. 15,000-20,000) and therefore, is often unaffordable by the fishers to pay at once, in the beginning of fishing season. This system of renting BLCs therefore leads to the problem of illegal fishing and temporary migration of fishermen outside the Sundarban. Poor fishers who cannot rent a BLC either enter the STR without BLCs or leave fishing for a temporary period of time to work as wage labors in big cities such as Kolkata, Chennai, and Thiruvananthapuram. Illegal fishers who are killed by tigers in the forest are not eligible for compensation from the Forest Department and
therefore, their deaths are often not reported by the fellow fishermen to the forest office. Catching fish in the core and sanctuary areas of the STR leads to different types of harassments such as frequent fines, confiscation of BLCs, confiscation of catch and confiscation of fishing implements (e.g. fishing net). In case of confiscation of BLCs, fishers lose important fishing time and income as they are bound to return home without catching fish. This chapter also finds that within the fishing communities, fishers who have received BLCs from their ancestors earn more than the fishers who don’t have BLCs. Therefore, the BLC system creates an income gap among the members of the fishing community. Fishers are often verbally abused by the forest officials while they are caught in the non-permitted fishing zones.

Chapter four finds that the role of ecotourism as an alternative income opportunity for the fishermen on Gosaba is insignificant. It also demonstrates that the positive impacts of ecotourism in the fringe village of Pakhiralaya are confined to the area along the Gomor River, where most of the hotels and shops are located. Villagers who live in the interior parts of Pakhiralaya and who cannot afford to invest in ecotourism by establishing a hotel or a small shop (e.g. tea stall and grocery store) or by pulling vans are least likely influenced by the impacts of ecotourism. In addition, the research points out that the bulk of the profit from ecotourism is not going to the local villagers nor it is going to the fishing communities. This dissertation research shows that even though fishermen are open to accepting ecotourism and will not hesitate to embrace new job opportunities, they are also doubtful about the total income they may earn from the ecotourism, considering their low level of education. Furthermore, fishermen who have learnt fishing from their ancestors and have been catching fish for a long period of time do not necessarily want to change their occupation. The expansion of tourism or ecotourism at Pakhiralaya has also brought some negative impacts such as increasing trend of alcohol consumption among local people which results in conflicts in their households. Local women are the most affected groups as alcohol consumption by their family members, especially by their
spouses, leads to domestic violence. In addition, local people complained that tourism has increased the price of local products such as eggs and vegetables.

Chapter five of this dissertation examines the impacts of biodiversity conservation on the fishermen in the south-western part of the Sundarban Biosphere Reserve (SBR). With a historical background of India’s partition it examines the eviction of fishermen on the island of Jambu and its resultant impacts on the fishermen’s livelihood. The fishers (shabar maliks), who were evicted from Jambu Island, had their ancestral roots in East Bengal or present day Bangladesh. After India’s partition, large scale fishermen migrated to West Bengal from Bangladesh (Barman 2008). These fishermen belonged to different fishing castes such as Jalia Kaibartya, Malo, Patni, and Rajbanshi (Ibid.). Like other East Bengali migrants, the fishermen were rehabilitated by the West Bengal government to different states of India mainly in Bihar, Jharkhand, Orissa, Madhya Pradesh, Chhattisgarh, Andhra Pradesh, and Andaman and Nicobar Islands (Jalais 2005; Barman 2008). However, migrant fisherfolk who came from East Bengal could not adapt them in dry and harsh environment in Central India and therefore looked for a similar ecological environment where they can continue their traditional occupation which was fishing (Jaladas 2013). Later, they migrated and settled to the south-western parts of Indian Sundarban region (Kakdwip and Namkhana) and introduced the art and technique of shabar business. In other words, the shabar maliks, who used to visit Jambu Island, mostly settled in Kakdwip Block. The transient fishers’ struggles on the Jambu Island are not only struggles to continue a traditional livelihood, but also these struggles point to a larger struggles which resulted from India’s independence and resultant partition in 1947. Furthermore, transient fishers’ struggles over access to Jambu remind us the refugee-rehabilitation politics which occurred in West Bengal after the partition. The lower caste poor Hindus including the East Bengali fisherfolk who migrated to West Bengal had little means to survive by their own, and therefore, were bound to depend on government’s relief. They had to also accept Congress government’s decision to rehabilitate them in other states of India because Congress government argued that there was no adequate vacant land to resettle the large
numbers of refugees in the state (Mallick 1999). The eviction of transient fishers from Jambu suggests that conservation related struggles can occur in a context of a larger political struggle which may originate outside the conserved territory. The ban on drying fish on Jambu in 2002-2003 has led *shabar maliks* to scatter in Kalisthan, Frasergunj, Sagar Island, Mousuni and Lalgunj (Namkhana Block). The eviction has also created an acute problem of space to build seasonal fishing camps for *shabar maliks*. Additionally, *shabar maliks* are facing a shortage of trustworthy labors or dry fish workers in their seasonal *shabar* business.

My research in the SBR finds that the management of the Sundarban mangrove forest and its wildlife displays characteristics of a fortress conservation model. A fortress conservation model is a conservation model in which humans and wild animals cannot co-exist (Kabra 2009). This conservation model was inspired by the idea of wilderness in which a land is valued when it is free from human presence (Cronon 1996; Adams and Hutton 2007). In the United States, the idea of wilderness became the strong impetus for creating its first national park, the Yellowstone National Park in 1872 (Neumann 2004). This idea motivated creation of national parks in other parts of the world such as in colonial Africa and Asia. Thus, the conservation of a pristine, wild nature often led to the displacement of people from the protected areas both in the colonial and post-colonial periods (Adams and Hutton 2007; Vaccaro 2013). For example, in Tanzania, 5,000 pastoralists were evicted from the Umba-Mkomazi Game Reserve Complex in 1988 (Neumann 1998). Furthermore, in fortress conservation, human activities such as extractive resource use such as grazing, fuel wood collection, collection of non-timber forest products and agricultural activities are often considered as detrimental to biodiversity conservation (Rangarajan and Shahabudin 2006). For example, in colonial India, Baiga tribes were displaced from the Banjar Valley Reserve Forest which later formed the Kanha National Park as their slash and burn agriculture was considered extremely detrimental to the regeneration of *shal* (*Shorea robusta*) trees (Ibid.). Tribal people of India often resisted the colonial fortress conservation by forming everyday resistances. For instance, Baigas resisted the colonial conservation policy by not paying
tax and by continuing *jhum* cultivation in non-permitted forest land (Guha and Gadgil 1989). Similarly, villagers of Jaunsar Bawar, a hilly region located in Dehra Dun district of present day Uttarakhand, followed a form of everyday resistance to the colonial forest management policy. The villagers of Jaunsar Bawar resisted to the colonial forest management by pilfering government’s timber along the river Yamuna and its major tributary, the Tons. The pilfering of timbers led the colonial government to impose higher amount of fines (Ibid.).

In post-independence India, formation of tiger reserves in the 1970s led to the displacement and relocation of many local communities (Kabra 2009). According to the Tiger Task Force of Government of India, a total number of 80 villages and 2,904 families were evicted due to the formation of tiger reserves in many parts of India (Ibid., 251). In sum, in fortress conservation, local people’s activities such as hunting, grazing, fuel wood collection, and subsistence agriculture are either partially or completely denied and therefore, local population living outside the protected areas bear the highest cost of conservation (Neumann 1998; Rangarajan and Shahabuddin 2006; Bosak 2008).

The current conservation in the Sundarban Biopshere Reserve (SBR) displays some characteristics of a fortress conservation model. For example, local fishermen living outside the buffer areas of the biosphere reserve are the vulnerable ones as their customary fishing rights have been curtailed since the formation of the Sundarban Tiger Reserve (STR), which is a significant part of the SBR. The local fishers are not allowed to catch fish in the core and wildlife sanctuary areas of the Sundarban Tiger Reserve. Fishing is only allowed in the buffer area of the biosphere reserve with valid permits. Except honey and bee wax collection, any kind of extractive resource use such as collection of timber, fuel wood, and collection of *golpata* (*Nypa fruticans*) and *hental* (*Phoenix paludosa*) are now completely banned in the Sundarban Reserve Forest (SRF) which form the core and buffer areas of the SBR. The introduction of Boat Licensing Certificates (BLCs) in the 1980s by the Forest Department has also created problems of illegal fishing in the core and sanctuary areas of the biosphere reserve. The problem of illegal
fishing results into increased chances of tiger attacks in the forest. The fishers who mostly catch crabs are more vulnerable than those who catch only fish as crab fishers enter the narrower creeks. In general, illegal fishing in the SBR leads to the harassment of fishers in the hands of patrolling forest guards in the form of confiscation of BLCs, fishing implements, and catch. Additionally, fishers pay frequent fines in the non-permitted fishing zones of the SBR and are often humiliated by the forest officials. The ban on fishing in the core and sanctuary areas of the SBR and the current resource management through BLCs in the SBR—all demonstrate the characteristics of a fortress conservation model which restricts people’s access to the forest-based resources.

It should be noted that like colonial India, fishers and honey collectors of the Sundarban region respond to the characteristics of fortress conservation model by forming everyday resistances. Honey collectors, who collect honey in the STR with valid permits, are forced to sell the honey to the forest department at much lower rate (Rs. 45-50 per kg) than the outside market. This does not satisfy the honey collectors when they compare their earning with the hard work they do in the forest to collect the honey from beehives. In order to compensate their earning, honey collectors therefore do not always comply with the rules and regulation of the forest department. In other words, their resistance to the current forest and wildlife conservation is expressed by not giving all the honey to the forest department, rather bringing some amount to home to sell in outside market. For example, as soon as honey collectors of Pakhiralaya return from forest, the local shop keepers visit their homes and buy bulk of the honey in double prices. The local shop keepers then sell that honey to the tourists in winter. Like the honey collectors, Sundarban fishers also try to find loopholes of restrictive resource use, which demonstrate the underlying conflicts between the biosphere resource managers and fishermen. For examples, fishers who catch fish with a BLC and fishing permit, often try to stay more than the usual granted period of fishing which is six weeks. When fishers find that they are getting good catch and they have chance to catch more, fishers decide to overstay in the forest. The fine which they
need to pay for overstaying is offset by the amount of their earning from good catch. This strategy is often followed just prior to the beginning of three months closed season of fishing in the summer.

Despite displaying characteristics of fortress conservation model, the conservation model of the SBR does not resemble a standard fortress conservation model. The colonial environmental history of the Indian Sundarban region helps to explain how the conservation model in the SBR departs from the classic fortress conservation model. If we review the environmental history of the Sundarban region, we would find that the formation of the protected area in the Sundarban in 1878 by the British Government did not lead to any forceful eviction of local communities as local people always lived outside the forest boundaries. Furthermore, in the Sundarban, rivers and creeks created clear boundaries between the villages and the forest. The Sundarban Biosphere Reserve (SBR) is significant in the sense that formation of the protected area in 1878 did not lead to the eviction of local population from the forested areas. This alone should suggest either a departure from the fortress conservation, or a deficiency in the concept. The point being that the kinds of displacements that happen in conservation are not always the eviction of households. Besides eviction of people’s households during the formation of a protected area or eviction of people during the rehabilitation program by the government (Brockington 2002 quoted in Hutton, Adams, and Murombedzi 2005), eviction of people can happen in a larger historical and political background. The case study of Jambu suggests that besides considering the environmental history of a protected area, we also need to look at the larger political history of the region in which the protected area is located. The following historical background of mangrove forest conservation in the colonial period explains why the current conservation in the Sundarban departs from the classic fortress conservation model.

When the British East India Company came into power in Bengal in 1765, the Sundarban mangrove forest extended up to Kolkata (De 1999). The process of converting a mangrove forest full of wild animals, including Bengal tigers, into a revenue generating agricultural land was
started by the East India Company as early as the 1770s (Richards and Flint 1990). Since then, the area of mangrove forest land started to diminish gradually and between 1880 and 1910 the agricultural land in the three Sundarban districts of 24 Parganas, Bakarganj and Khulna increased by 1,975 sq. km. (Ibid.). However, rapid conversion of mangrove wetland into agricultural land for revenue creation also led to a counterargument among some colonial government officials who became interested in scientific forestry and careful management of the forest for its future environmental and economic benefits. In the late nineteenth century, in order to maintain the continuous supply of timber and other forest products for the growing urban population of South Bengal, the colonial government decided to protect the remaining Sundarban mangrove forest. Therefore, in 1878, the entire Sundarban forest of undivided Bengal (i.e. including Sundarban forest of India and Bangladesh) was protected for the first time under two categories “Reserved” and “Protected” (Ibid.). The mangrove forest cover of 24 Parganas (currently in West Bengal, India) came under the “Protected” status while the forest cover in Khulna (currently in Bangladesh) was classified under the category of “Reserved.” The difference between the two categories is that in case of the “Protected” status, the colonial government could lease the forest areas for paddy cultivation or could transfer the forest land for timber production (Ibid.). However, by 1943 the entire Sundarban forest in the district of 24 Parganas was declared as “Reserved” (STR Annual Report 2007-2008, 2-3). Thus, if we look at the history of land reclamation and forest conservation in the Sundarban region, we find that there was no eviction of the local population following the formation of protected and reserved forests. There were no villages or settled areas within the Sundarban forest. Therefore, the case study of the Sundarban Biosphere Reserve (SBR) or the Indian Sundarban region does not lead to the classic example of top-down conservation or fortress conservation where local people were forcefully evicted by the state in order to establish a protected area, like in the case of East Africa. Instead, it suggests that the current fortress conservation in the SBR is embedded in the colonial resource management policy. For instance, if we examine the regulation of the number of fishing boats through the
annual boat registration system (i.e. annual renewal of Boat Licensing Certificates or BLCs) in the Sundarban Tiger Reserve (STR), we would find that this regulation system was not newly invented by the West Bengal Forest Department. In the colonial period, local people who were involved in trading of timbers and other forest products were needed to measure and register their boat. Furthermore, the forest officials had the power to stop and examine any boats passing through the rivers of the Sundarban region (Trafford 1905). The post-independence boat regulation in the STR through the annual renewal of BLCs demonstrates that the current resource management in the Sundarban Biosphere Reserve (SBR) follows the colonial conservation and resource management and thus supports my claim that current conservation in the SBR is in some ways similar to the fortress conservation and in some ways it is not.

There are some other reasons which explain why current conservation cannot be labeled as fortress conservation. This is due to the fact that local people in the Sundarban do participate in the conservation process through eco-development activities which include local people’s cooperation in forest protection and in preventing tiger straying in the fringe villages located outside the buffer area. Furthermore eco-development committees in the fringe villages are eligible to receive 25% share of total revenue earned from ecotourism which then should be spent in development of those villages. The current eco-development in the fringe villages has an origin in the ideas of community based conservation and Joint Forest Management (JFM) and therefore, we cannot label the conservation in the SBR as fortress.

Summing up, in this dissertation, I demonstrate how the conservation model in the Sundarban Biosphere Reserve (SBR) is more complex than the classic fortress conservation model found in Asia and Africa leading to eviction of households. In most instances, people have historically lived in their land and later, they were evicted by the colonial and post-colonial governments to either create a game reserve or to protect particular animals such as tigers or Indian barasinghas (Neumann 1998; Rangarajan and Shahabuddin 2006). My dissertation suggests that eviction from the protected areas can happen even to any community (e.g. transient
fishers of Jambu) even that community depends on forest land for a limited period of time. The impacts of such displacement are often similar to the classic cases of eviction leading to loss of traditional livelihood and increased dependence on wage labor. Hence, this dissertation demonstrates that despite enormous criticism against the fortress conservation, the characteristics of a fortress conservation model continue to live on in one way or other.

In this dissertation, I recommend some measures for the effective conservation and livelihood development in the Sundarban Biosphere Reserve (SBR). First, a detailed survey is necessary to estimate the actual number of fishers who catch fish in the Sundarban Tiger Reserve (STR). A similar survey is needed for the forested areas located outside the jurisdiction of the STR. These surveys will provide an estimate of the number of fishers who do not have a BLC and therefore, rent a BLC or work as a crew-member with other fishers who either possess a BLC or can afford one. These surveys can be jointly conducted by the West Bengal Forest and West Bengal Fishery Departments. This joint effort will open an avenue for conversation and cooperation between the two departments, which will lead to more effective resource management in the SBR.

Instead of BLCs, fishers who are engaged in fishing in the STR for 8-9 months of the year should be given individual fishing rights. This will bring an end to the current renting system of BLC which puts an enormous economic burden on a fisher. The STR authority should provide individual identity cards to the fishers whose boats are registered under its jurisdiction. Although the STR authority considered the distribution of identity cards to individual fishers in 2008, the process was not completed when I conducted my research in the Sundarban in 2011-2012. None of the 35 fishers I interviewed in Gosaba received individual identity card from the STR authority. However, individual fishing rights in the STR might lead to the problem of overfishing as every fisher might want to maximize his catch leading to the exploitation of common-pool resources. This problem of overfishing can be overcome if local fishing communities practice some regulations by establishing a limit on catch and by maintaining the
closed season of fishing in the summer. This type of community management at the local scale was successful in other parts of the world such as in the case of lobster fishing in Maine, United States (Burger and Gochfeld 1998). Despite the government’s regulation through fishing license in Maine, local lobster fishers practiced a system of exclusion in which only the members of the fishing community could catch lobsters. This helped them to maintain a sustainable harvest of commercially valued lobsters (Ibid.). Sundarban fishers can manage the common pool resources by forming cooperatives at the village levels which would then limit the fish catch and determine the price. Here, we should remember that community based resource management is not beyond criticism. Political ecologists such as Robbins (1998) have pointed out the danger of a romanticized vision of a homogeneous community leaving out the questions of class, and gender which influence the conservation outcome. For Robbins (1998) it is not the matter which forms of tenure, state or local community, is better than the other. Instead, the effective enforcement of rules and regulations is important for the conservation outcome. The alternative of an entirely community based resource management could be co-management in which government should consult with the fishers and involve them in decision making.

To avoid harassment and arrest by the government officials, the Sundarban fishers can carry uniform biometric card issued by the Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India. This will help them to prove their identity if they are harassed by the Border Security Force (BSF) along the India-Bangladesh international border in the name of illegal intruders. So far, the application and distribution of biometric card is under process in Gosaba Block. However, it is possible that fishers who are engaged in deep sea and open fishing in the Bay of Bengal would need this card more often than the fishers who catch fish in the estuaries. Introduction of biometric card among India’s coastal fisherfolk was decided in 2009-2010, as part of the strengthening coastal security after the terrorist attack in Mumbai in 2008. In that incident, the terrorists used the porous coastal waterways to enter the city and attacked multiple places in Mumbai. More than hundred people
were killed in that single incident. Since then there is this conversation within the government officials what if terrorists use the India-Bangladesh international border to enter the country and attack major cities in the eastern part of India including Kolkata. Even the government officials of the Department of Sundarban Affairs, which is responsible for the socio-economic development of the Sundarban region, raised this question what would happen if terrorists enter under the guise of fishermen using the waterways of the Sundarban region. The government officials of the Department of Sundarban Affairs also pointed out that the waterways of the Sundarban are difficult to vigil considering the geomorphology of the region. Government officials further indicated that since the terrorist attack in Mumbai in 2008, national security is the utmost importance for the West Bengal state government.

According to Indian government, the new biometric card would empower marine fisherfolk of India. Another objective of the Indian government is to establish a National Marine Fishers Database (NMFD) which will include information of all fishers in India. Although this system would increase surveillance on fishers, this would be useful to the deep-sea fishermen who are often harassed by the Border Security Force (BSF), Indian Coast Guard (ICG) and by the neighboring countries. There is a risk that this uniform biometric card may erode individual freedom and there could be chance of misuse of collected data by the government, but this card will help India’s marine fishermen to instantly prove their citizenship when they are intercepted by the government officials in the coastal water. Although it cannot be said that upon using this biometric card, there will be no harassment, with this card, at least, the fishers will be able to prove that they are Indian fishermen and not intruders under the guise of fishermen. Some fishers who catch fish in the Sundarban Tiger Reserve (STR) possess the identity cards issued by the West Bengal Fishery Department. However, these identity cards are not recognized by the

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patrolling forest officials in the STR. Biometric card will be useful in this case considering that it has a uniform recognition among all government officials. Besides proving identity as a marine fisher, this card would help fishers to provide a valid identity in case of registering their land or applying for phone connections and passports (The Hindu August 11, 2012)\textsuperscript{97}.

Instead of thinking of fishers as offenders, the Forest Department must seek cooperation from the fishing communities in terms of determining restrictions on fishing. An opinion based survey could be conducted to understand the fishers’ views on current restrictions. Any kind of restrictions on fishing should be enforced after consulting the fishermen at the village level. The information related to fishing restrictions should be widely disseminated among fishers to reduce communication gap between the forest department and fishing communities. If the government continues with charging fines for catching fish in the core and sanctuary areas and fishers agree with the current fine system, then the government should be more transparent regarding the amount of fine and the type offence for which that fines are collected. The government should try to keep the fine amount as minimal as possible. The fine amount should be mentioned on the spot where a government official intercepts a fisher in the forest. Finally, the forest officials must respect the fishermen as individuals and stop verbally abusing them.

Fishermen should be encouraged to be actively involved in the local Eco-Development committees (EDCs). At present, fishermen are least involved in the eco-development committees except for casting votes during the formation of the executive committee. The Secretary of the EDC should encourage fishermen to be involved with activities like forest protection. So far, the benefits from EDCs did not reach to the fishing communities and EDC committee members were accused of favoritism while distributing benefits such as job allocation. Executive committee members should discuss with other members of the EDCs before taking any major decisions on

\textsuperscript{97} Please see Kerala scores a first, issues biometric ID cards for fishermen http://goo.gl/MOfcb6
allocating government funds on development activities. They should try to identify people’s needs before starting any activity such as digging a pond or excavating a canal.

Fishers, who catch fish in the STR, accused the Forest Department for not taking actions against the pirates who loot fishers’ catch and often abduct fishermen for high ransoms. Abducted fishermen are often forced to work for the pirates. Fishers stated that even they reported the whereabouts of the pirates, the patrolling forest officials did not take any actions; instead, they scolded the fishers for catching fish in the core area. In some cases, the pirates are from Bangladesh; however, there are local people involved in such type of piracy (Chatterjee, Bhuniya and Mondal 2009). The Forest Department should take strong actions against the pirates who often loot fishers’ catch.

Fishers, who have at least studied up to grade VIII-IX, can be trained as tour guides. They can also arrange a traditional boat (dinghy) ride for visiting tourists and earn some money. These can provide an alternative income opportunity to those fishers who do not catch crabs during the winter season and look for other income options. The West Bengal Tourism Department should provide proper guidance in terms of practicing ecotourism in the fringe villages of the Sundarban Tiger Reserve (STR). Furthermore, government should encourage home stays so that local villagers, including fishers, can be directly involved in ecotourism. Financial support could be given at village level to enthusiastic local entrepreneurs who want to invest in ecotourism. Local people can also develop their own community based ecotourism project with the help of government support or with the help of a non-profit organization to prevent leakage of profit to outsiders. Although, ecotourism literature shows the shortcomings of community based ecotourism with economic benefits accruing in the hands of few members of the community and increased socio-economic differences within community, this type of effort is necessary in the fringe villages of the Sundarban to prevent the domination of outside entrepreneurs who build large hotels and provide limited number of low-paid jobs to the local people. The current hotel and lodge owners of Pakhiralaya, who are outsiders, should actively
involve themselves in creating jobs for local people. The outside entrepreneurs who invest in the tourism business at Pakhiralaya should think of capacity building of local residents by providing them required training so that they can get higher paid jobs such as office assistant, receptionist and manager.

**Areas for Future Research**

This dissertation provides an inspiration to continue research in the Indian Sundarban region or the Sundarban Biosphere Reserve (SBR) using a political ecology approach. For my future research, I plan to focus on the displaced transient fishermen of Jambu Island. Most of the displaced transient fishermen were from Kakdwip Community Development Block, district South 24 Parganas, West Bengal. Although some of my interviewees were from Kakdwip in this present study, and they discussed how forceful eviction from the island of Jambu had an impact on their livelihood, I was not able to conduct an in-depth research on Kakdwip fishing communities. Therefore, in my future work, I plan to study how the livelihood of the fishing communities of Kakdwip were affected after the close of Jambu as a major center of dry fish business in the Sundarban.

I also plan to study the impacts of global warming and climate change on the Southwestern parts of the Sundarban Biosphere Reserve (SBR). Currently, the Sundarban Bisosphere Reserve (SBR) is facing a number of climate-related challenges such as relative sea level rise and its resultant coastal erosion, tropical cyclones, reduction in sediment supply in the lower Bengal delta, and subsidence. Since the cyclone Aila in 2009, there has been a decline in the agricultural production and an increase in the migration of young men in search of jobs from the Indian Sundarban region to large nearby cities such as Kolkata and Chennai.

The Indian Sundarban region, which is comprised of 102 islands, has also become warmer and it has been seen that the sea surface temperature near Sagar Island increases annually at a rate of 0.9 degree Celsius. Coastal erosion is very prominent in Sagar, Ghoramara, and the
Mousuni Islands of the Indian Sundarban region; the northeastern, southeastern and southwestern parts of Sagar Island are facing severe coastal erosion (Gopinath and Seralathan 2005) and since 1860, Sagar Island has lost one fourth of its land area (Bandyopadhyay 2000 quoted in Gopinath and Seralathan 2005). Therefore, the future research project will investigate the impact of climate change—including sea level rise and coastal erosion, change in temperature and rainfall, and tropical cyclones—on local people’s livelihoods. In addition, it will examine how local people respond to such climatic changes and what kind of strategies they adopt in order to mitigate the effects of climate change on their livelihood and subsistence.

Recently, there has been an increased emphasis from the IUCN World Commission on Protected Areas (WCPA) and from the WWF on the role of protected areas in mitigating and adapting global climate change by reducing the emission of greenhouse gases. Protected areas can provide essential ecosystem services that help society to cope with the negative impacts of climate change such as change in agricultural production and potable water supply (Dudley et al. 2010). Therefore, another objective of this future research project is to examine the role of the biosphere reserve managers of the Sundarban in mitigating the effects of climate change and to investigate how the mitigation strategies adopted by the biosphere reserve managers affect local people’s livelihood.

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99 A biosphere reserve more or less coincides with the category 5 of IUCN protected areas which is Protected Landscape/Seascape
Sub: **RESTORATION OF THE SEASONAL FISH DRYING RIGHTS ON JAMBUDWIP**

Respected Sir,

Around 10,000 poor fishworkers were evicted from Jambudwip, an island in the mouth of Hooghly River in West Bengal, in 2003. It was alleged that the transient fishers, who sorted and dried fish caught from neighbouring waters from October to February every year, were destroying environment. The eviction destroyed livelihood practices of not only the 10,000 men and women fishworkers working on the island but also that of another 10,000 fishers who fished in the waters. Together with it the earnings of thousands of people engaged in transport and trade of dry fish throughout the length and breadth of the country were jeopardized.

These fishers were pursuing their fishing and fish processing practices in and around Jambudwip Island from the 1950s (Anthropological Survey of India document ‘The Moon and Net’ testifies this). Their fishing gears were benign and passive. The structures they erected on the island for storage and staying were all temporary and made of light perishable eco-friendly materials like bamboo and dry leaves. All these temporary structures were pulled down at the end of the fishing
season by the fishers. The Department of Forest used to issue seasonal permits and passes to use dry fuel since 1968.

In 2003 the Central Empowered Committee appointed by the Supreme Court, on a complaint lodged by some environmental groups, ordered eviction of fishers from Jambudwip. In August 2003, the local fishermen’s association of Jambudwip along with National Fishworkers’ Forum appealed their case in the Supreme Court against the CEC report, seeking their traditional rights back.

In 2004, MoEF had filed an affidavit in the SC saying that if the State government agrees to give land on Jambudwip to these fishermen then the Ministry would have no problems with that. Whereas the State Government agreed in 2004 itself on giving 100 ha land to these fishermen to continue their activity and also submitted that they are ready to provide another 100 ha as a "compensatory afforestation."

In spite of this the case is lying pending in the Supreme Court of India.

In July 2009, the Expert Committee appointed by MoEF and headed by Dr. M. S. Swaminathan admitted in its historic report “Final Frontier” that the fishers did not destroy environment in Jambudwip and derided the forcible eviction of seasonal fishers from Jambudwip as an example of “conservation without people”.

Respected Sir, all we want is justice – restoration of the traditional right of the fishers to do seasonal fish drying on the island of Jambudwip. For this seasonal use of only 200 hectare out of the island’s area of more than 2000 hectares would suffice. The fishers, in their own interest, will take care for proper afforestation in the rest of the island’s area.

We would request you to take immediate steps to make it possible for the evicted fishers to continue with their seasonal fish drying activities on the island of Jambudwip.

Thanking you,

Yours faithfully

Thomas Kocherry
APPENDIX B

Questionnaire for Tourists

Instruction for the surveyors: This survey questionnaire will be filled out by the domestic and international tourists staying in any of the hotels/lodges at Pakhiralaya village and WBTDC-run Tourist lodge in the Sajnekhalii Wildlife Sanctuary or at range office of the Sajnekhalii Wildlife Sanctuary, where tourists arrive to obtain a permit. Information should be collected from those tourists who have already completed their trips into any of the ecotourism spots located within the Sundarban Biosphere Reserve (SBR). Not more than one respondent from a single family should be surveyed.

Questionnaire No.

Date of survey: Surveyed by:

Place of survey:

Section A: Personal Information

1. Name: ..............................................................................................................................

2. Address: ...........................................................................................................................

3. Age: .................................................. 4. Sex: Male /Female (Please tick ✓)

5. Nationality: .............................................. 6. Religion: 

7. Caste: (Please tick ✓; if this is Not Applicable to you, please write NA)
   ○ General
   ○ SC
   ○ ST
   ○ Others

8. Occupation: (Please tick ✓)
   ○ Student
   ○ Service Holder (permanent)
   ○ Service Holder (temporary)
   ○ Self-employed (own manufacturing/ business etc.)
   ○ Agriculture/Fishery
   ○ Professional (Doctor/Engineer/Lecturer/ Teacher/Consultant/Other)
   ○ Housewife
   ○ Retired

9. Any other (Please specify)
   ........................................................................................................................................

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10. **Level of Education:** (Please tick ✓)
   - Post Graduate and above
   - Graduate
   - Higher Secondary (10+2)
   - Secondary (10th grade)
   - Below Secondary (Below 10th to 5th grade)
   - Primary (1st to 4th grade)

11. **Family Composition:** (Please write numbers in the appropriate column)

<table>
<thead>
<tr>
<th>Persons</th>
<th>At Residence</th>
<th>Accompanying in this tour</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of Adult Male</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Adult Female</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. of Children/Dependents (below 18 years)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. **A. Monthly Family Income** (Please tick ✓)
   - < Rs. 5000
   - Rs. 5001-20,000
   - Rs. 20,001-35,000
   - Rs. 35,001-50,000
   - Rs. 50,001-65,000
   - Rs. 65,001-80,000
   - Rs. 80,001-95,000
   - Rs. 95,001-1,000
   - Rs. 1,001-1,25,000
   - Rs. 1,25,001-1,40,000
   - > Rs. 1,40,000

11. **B. Monthly Family Income for Foreign Tourists:** ........................................ (In US $ if possible)

13. **A. Monthly Family Expenditure for Indian Tourists:** ..................................................

12. **B Monthly Family Expenditure for Foreign Tourists:** ........................................
    (In US $ if possible)

**Section B: About Ecotourism**

14. In your opinion, what best describes the term ecotourism? *(You may tick ✓ more than one answers)*
   - Travel to a natural destination
   - Minimal impact to the environment
   - Provides economic benefits to local people
   - Provides financial benefits to conservation
   - Involves active participation of local people in protecting local ecology
   - Includes environmental and cultural education for both tourists and host community
   - Protection of natural habitats of wild animals from urban transformation
   - Other, please specify

15. **Duration of stay in the Sundarban:**
   - **Date of Arrival:** __________/________/________ (DD/MM/YY)
   - **Date of departure:** __________/________/________ (DD/MM/YY)
16. Number of visit to the Sundarban (Gosaba block):
[ ] First [ ] Second [ ] Third [ ] Fourth [ ] More

Please Specify..............................................................................................................................................

17. Purpose of visit...........................................................................................................................................

18. Arrangement of the trip: Package tour/ Self arranged tour (Please tick ✔)

If other please specify ...........................................................................................................................................

18. If this trip is a package trip, operated by a travel agency or tour operator, then please write the name and address of your tour operator or travel agency.
........................................................................................................................................................................
........................................................................................................................................................................
........................................................................................................................................................................

19. Name of the hotel/lodge/resort:
........................................................................................................................................................................

20. Hotel rent being paid daily (Applicable in case of self-arranged tour):
Rs. .........per ...........room; Rs. ...........per ...............room;

Rs. .........per ...........room; Rs. ...........per ...............room.

21. Cost of the trip
   o Total cost of the package trip: Rs.
   o Per head cost of the package trip: Rs.

   o Total cost of the self-arranged trip (including return journey): Rs.
   o Per head cost of the self-arranged trip (including return journey): Rs.
   o Per head transport cost in the self-arranged trip to reach at your destination in the Sundarban from the place of origin of your trip: Rs.
   o Per head food and lodging cost for the self-arranged trip: Rs.

22. Please mention who else is accompanying you in this tour? (Please ✔)
   o Visiting single
   o With own family members
   o In a group of more than one family (with relatives/ office colleagues/ friends)
   o In a group of friends without families
23. **Place of origin of this trip**

Name of the place: .................................................................

District/State: ...........................................................................

24. How did you hear about the Sundarban? (Please ✅)

- Recommended by friends or relatives
- Tourism trade fare
- Internet
- Travel agency or tour operator
- Other (Please specify)

25. Please mention your expenditure on the following items, which you might have bought/ or you have planned to buy during your current trip in the Sundarban.

<table>
<thead>
<tr>
<th>Item bought</th>
<th>Money spent (Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honey</td>
<td></td>
</tr>
<tr>
<td>Fish, shrimp, and crab</td>
<td></td>
</tr>
<tr>
<td>Local artifacts</td>
<td></td>
</tr>
<tr>
<td>Any other (Please specify)</td>
<td></td>
</tr>
</tbody>
</table>

26. Did you hire a boat or launch to visit any of the eco-tourism spots in the Sundarban forest (e.g. Sajnekhali, Sudhanyakhali, Dobanki, Netidhopani, Burirdabri, Jhingekhali etc.)? **If this question is not applicable to you, then simply write N/A beside it.**

- YES
- NO

26. A. If, “YES” then,

Name of the boat or launch operator/owner: ..............................................................

Address of the boat operator/owner: .................................................................

How many days was it hired for? .................................................................days

How many persons hired the boat together? ..................................................persons

What was the hiring cost in total: Rs. .................................................................
What are the places you visited? (Please tick ✓ the relevant names)

Sajnekhali/Sudhanyakhali/Dobanki/Netidhopani/Burirdabri/Others (Please specify)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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<td>F. Condition of the watch towers</td>
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<td>G. Service provided by the tour operator</td>
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<td>H. Service provided by the tour guide</td>
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<td>K. State of transportation in Gosaba</td>
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<td>L. State of transportation from Kolkata to the SBR</td>
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<td>M. Behavior of the local residents</td>
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<td>N. Level of pollution</td>
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30. Please consider the following statements carefully. Based on your knowledge and understanding on ecotourism, and your experience in the several ecotourism spots in the Sundarban, please circle the answer that most reflects your opinion.

A. Ecotourism in the Sundarban is the same as sustainable tourism.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly agree

B. Ecotourism in the Sundarban benefits the local people financially.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly agree

C. Ecotourism creates jobs in the Sundarban.
   - Strongly disagree
   - Disagree
   - Neutral
   - Agree
   - Strongly agree

D. Ecotourism in the Sundarban damages the environment.
E. Ecotourism in the Sundarban has minimal impact on the local environment and culture.
   o Strongly disagree
   o Disagree
   o Neutral
   o Agree
   o Strongly agree

F. Ecotourism promotes biodiversity conservation in the Sundarban.
   o Strongly disagree
   o Disagree
   o Neutral
   o Agree
   o Strongly agree

G. Ecotourism in the Sundarban educates the locals and tourists about the local ecology and culture.
   o Strongly disagree
   o Disagree
   o Neutral
   o Agree
   o Strongly agree

31. Do you think that the mangrove forest in the Sundarban is well conserved by the state Forest Department?
   o YES
   o NO

   If, “YES” then,

31. A. How do you understand that the Forest Department has conserved the mangrove forest well?

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32. Do you think there is further scope for developing ecotourism in the Sundarban?
   o YES
   o NO
32. A. If, “YES”, then what should be done? (Please put tick ✔️ for 3 most important requirements and rank those using numbers. For example: 3, 2, and 1; 3= Most required and 1= Least required).

- Develop and improve transport and communication from Kolkata and other places
- Develop more accommodation facilities (at existing price)
- Develop more low priced private accommodation facilities
- Develop more low priced accommodation facilities by the West Bengal Tourism Department
- Develop marketing (opening more booking offices)
- Provide 24 hours electricity
- Increase number of watch towers in the forest
- Building more government guest houses and forest bungalows to accommodate tourists within the Sundarban forest
- Allow tourists to stay at nights within the forest in guest houses and forest bungalows
- Disseminate more information about the Sundarbans

33. Do you think that ecotourism has been able to decrease local people’s dependence on forest by providing them with alternative earning opportunities?

- YES
- NO

33. A. If, “YES” then could you write how does ecotourism in the Sundarban reduce the local people’s dependence on forest by providing them alternative means of livelihood?

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33. B. If, “No” then could you explain in detail that why you think ecotourism in the Sundarban is not able to provide alternative means of livelihood to local people?

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34. Do you think ecotourism in the Sundarban negatively influencing the local culture of the fringe villages of the Sundarban Tiger Reserve (STR)?

- YES
- NO
34. A. If, “YES” then, how is ecotourism negatively influencing the local culture of the fringe villages of the Sundarban Tiger Reserve (STR)?

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Professional Experience

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Scholastic and Professional Honors

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2013  Asian Geography Specialty Group Student Travel Award, Association of American Geographers.

2013  Graduate School Travel Award, University of Kentucky.

2013  Graduate Teaching Assistantship, University of Kentucky.


2010-2012  Doctoral Dissertation Research Improvement Grant, National Science Foundation.

2010  Graduate School Travel Award, University of Kentucky.

2009  Travel Award, South Eastern Division Association of American Geographers.

2009  Graduate School Travel Award, University of Kentucky.

2007-2010  Graduate Teaching Assistantship, University of Kentucky.

2007-2008  Lalchand Mookerjee Foreign Scholarship, University of Calcutta, India.
**Professional Publications**

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<td>2008</td>
<td>Privatization, Shrimp Aquaculture and Coastal Degradation in Bangladesh</td>
<td>Ghosh, Priyanka</td>
<td>In <em>Traverse</em>. Department of Geography, Presidency College, Kolkata, India.</td>
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