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Impacts of Biodiversity Conservation on Rural Livelihoods in and around the Sundarban Tiger Reserve (STR): A case study of struggles over access to forest-based resources*

Priyanka Ghosh**

Abstract: *This paper examines the impact of biodiversity conservation on rural population in and around the Sundarban Tiger Reserve (STR), West Bengal, India. More specifically, the paper analyses the impact of forest and wildlife conservation on the fisher folk who live on the edge of the STR and are allowed to enter STR for catching fish and crab in the numerous crisscrossed rivers and creeks. The ban on fishing in the core area of the STR and the regulation on number of fishing boats in the tiger reserve area often create tension between the foresters and fishers in the Sundarban. The paper explores this tension by looking at the everyday negotiations between the state Forest Department and Sundarban fishers. Furthermore, the paper addresses how ecotourism in the buffer region of the STR has limited capacity in improving the livelihood of local people, especially the fishers in the Sundarban.*

KEYWORDS: *biodiversity conservation, Sundarban, India, fishers, forest-based resources, livelihood*

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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, the Indian Sundarban, also known as Sundarban Biosphere Reserve (SBR), alone covers an area of 9630 Square kilometer (Ibid.) in the state of West Bengal (Figure 1). About half of the biosphere reserve is forested and the other half is inhabited. Since India's independence the Sundarban region has gained several protected area (PA) designations such as Critical Tiger Habitat or Core (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 status under the WLPA, 1972 (Ibid.). 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).

This paper explores the impact of biodiversity conservation on rural population living on the edge of the Sundarban Tiger Reserve (STR). The first section of the paper 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. The second section provides an overview of present forest-based resource access struggles in the Sundarban with a brief historical background of fishing rights and forest-based conflicts in colonial India.

It is important 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. The third section explores the expanding field of ecotourism around the STR as an important avenue of income generation and community development, which will keep people away from the forest. Summing up, the paper highlights the fishing related problems in and around the STR and how ecotourism has, so far, been insufficient in providing an alternative livelihood opportunity for the fishermen living in the Sundarban, irrespective of its recent expansion in the fringe villages of the STR.

Section 1: Management of the SBR and STR:

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).[1]

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 4263 square kilometer (Mandal, 2007). The transition area covering an area of 5367 square

[1] The six blocks of North 24-Parganas are: Haroa, Minakhan, Hasnabad, Sandeshkhali I, Sandeshkhali 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).

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 2585 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 1330 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 1699.62 square kilometer (STR Annual Report 2008-2009) (Table 1). The old core area (1330 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 buffer area of the STR covers an area of 885.27 square kilometer (Table 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 **recuperation zone** and the **multiple use zone**. The rationale behind this form of zoning in the buffer area was to avoid any adverse anthropogenic impacts on the core zone.[2] The recuperation zone comprises of two forest blocks: Pirkhali and Panchamukhani while the multiple use zone comprises of four forest blocks: Jhilla, Arbesi, Harinbhanga and Khatuajhuri under Basirhat 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 or recuperation zone is legally open only for ecotourism. The Forest Department only allows regulated fishing, honey and bee wax collection in the multiple use zone (Ibid.). During my interview with the present Director of the SBR, I was told that the Forest Department does not allow fishing in the Sajnekhali Wildlife Sanctuary because of the presence of high density of wildlife in the sanctuary. The biosphere reserve managers of the department feel that allowing fishermen in the sanctuary would disturb the wildlife. Though thousands of tourists pass through the rivers, they do not disturb the

[2] Interview with the present Director of the Sundarban Biopshere Reserve (SBR) on Tuesday, July 31, 2012.

wildlife as they are not allowed to disembark on the river bank /or mudflats during the boat/steamer ride. 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 core or Critical Tiger Habitat of the STR is completely prohibited for any kind of economic activities and human interference including ecotourism. However, until 2011-2012 tourists were allowed at Netidhopani ecotourism spot which falls under the newly formed core area or Critical Tiger Habitat. In 2012 the Supreme Court has passed an order to ban ecotourism in the core area of tiger reserves in India.[3] But so far the final decision regarding allowing tourists at Netidhopani is yet to be taken by the government. The argument 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).

Section 2: 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 STR. In the light of the past this section describes the current regulated economic activities in the STR. In addition, it explains the present problem of illegal fishing in the STR and causes of such illegal fishing linked to the problem of accessing Boat Licensing Certificate (BLC). 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 top-down conservation strategies which fail to address local people's needs in terms of earning livelihood.

[3] Please see BBC News: http://www.bbc.co.uk/news/world-asia-india-18967906

2.1. Regulated fishing 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 exploited 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 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 people explore the entire STR in search of beehives during the period of honey collection. Honey collectors who collect wild honey from the forest are obliged to sell their honey to the Forest Department at a fixed price which is lower than that at the open market. Generally, they sell honey at a rate of Rs. 45-50 per kilogram to the Forest Department. The same honey could be sold in the outside market at a higher price of Rs. 100-150 per kilogram (Fieldwork Experience, 2011).

In the summer, fishing is not allowed in the STR as fishes breed during this time. The fishing season remains closed from April 1 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 (Fieldwork Experience, 2011).

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 Sundarban, 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)

2.2. Fishing permits and related problems:

After agriculture, fishing is one of the major ways of earning 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 2, 69,565. Among this, 70,750 are considered active fishing population living in 237 villages (CMFRI 2005; Patel and Rajagopalan, 2009, 8). Among the several community development blocks of South 24 Parganas, Gosaba shares an immediate boundary with the STR. The landless people who live in several villages of Gosaba and adjacent to the boundary of the STR, frequently visit the mangrove forest for fishing and crab, wild honey and prawn seed collection. According to a recent enumeration conducted by the Fishery Extension Officer (FEO) of Gosaba the total number of marine fishermen in the block is 9427 (Discussion with the Fishery Extension Officer, Gosaba, 2011). In a discussion with the FEO of Gosaba I was informed that it is hard to count the number of genuine fishermen who venture in 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 find other employment.

Every fisher who ventures in the STR for fishing should register their boats (non-mechanized country boats) annually with the Forest Department. The Forest Department regulates the number of boats in the STR through Boat Licensing Certificate or BLC (See Figure 2). 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 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). 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).

During my fieldwork in Satjelia Island (Figure 3), 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 got permits for timber felling in the forest owned large saw mills in Kakdwip and Namkhana. These permit

holders would come with five-ten large sized dinghies. They brought along their own labourers from different parts of the Sundarban. During those periods of timber felling, the Forest Department provided some BLCs for smaller boats to the poor labourers in order to bring fuel wood to the villages for selling. Some took the fire wood as far as Kolkata and its suburbs. These BLCs were issued for one year. In due course, timber felling decreased and was discontinued by the government. But 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 resourceful. Thus the *khoali* BLC holders obtained a new tool for income generation by leasing their BLCs to those fishers who did not own any.[4]

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* or fish depot owners. Poor fishers then rent those BLCs from the *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 works in far off places such as Uttarakhand, Kerala, Tamil Nadu, and

[4] 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 the1990s 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.

Andaman as a wage labor, he rents his BLC to another fisherman. The amount of rent varies between Rs. 15,000-18,000. It also varies from one fishing season to another. Fishers who rent a BLC from a *khotidar* do not need to pay the entire amount of 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 the respective *khotidar* from whom he rented the BLC for the 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 *khotidar*s who pay a better price. Fishers who cannot even rent a BLC for a fishing season are forced to catch fish illegally within the STR (Ibid.). 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 either a boat or a BLC, are thus exploited in the hands of *khotidar*s and well-off BLC holders in the village who either have a lot of land or are in government services.

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. This permit allows fishermen to collect dry firewood from the forest during a fishing trip. The fishers cannot bring the residual dry firewood back 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.[5] 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 Sajnekhali Khal, along

[5] Interview with the present Director of the Sundarban Biopshere Reserve (SBR) on Tuesday, July 31, 2012.

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 per person per week. Therefore, for a period of 42 days (i.e. 6 weeks) a person used to pay Rs. 30. 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 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.[6] 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.

2.3. The problem of illegal fishing in the STR and the conflicts with the management:

Fishing in the Sundarban is usually 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 Manoranjan, 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 to10 days. Usually 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 4) during this

[6] The current charges of fishing in the STR for a period of 42 days have been collected from the Field Director of the STR.

time or prepare the *don*[7]. *Morani* is counted from the eight day to twelfth day of the each phase of the lunar calendar (Ibid.). From October, fishing is discontinued and Manoranjan goes for crab fishing with two other men from his village. Crab collection is always done with three people in a small sized dinghy (Figure 5). 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 longer ones.

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.[8] However, the total number of people entering the STR for fishing increases between July and October when five to six people go 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. 2000-3000 per month. Fishers who have their own boats, BLCs, and fishing gear

[7] *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.

[8] 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.

often work as team leaders (*sainder*) and they can earn up to Rs. 5000-6000 per month. But the income depends on the amount of catch and market price given by the *aratdars* or warehouse owners 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. The forest guards write the name of the forest block of non-permitted fishing 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. If the same person was caught second time the fine amount was Rs. 400 (Fieldwork Experience, 2011). The fine varies from Rs. 200-1150 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 as fine. If the same person is caught by the department for the second time, the fine amount will be Rs. 800. The fine amount increases up to Rs. 1150 if the same person is caught for the third time. After this the department has the legal power to cancel the BLC if necessary. According to the fishers who depend on forest-based fishing in the Sundarban, forest guards sometimes seize their boat and other fishing accessories such as fishing net and cold store (Fieldwork Experience, 2011). If the foresters seize the BLC of the fishers the fine could be as high as Rs. 1150. 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 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. 1150 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.

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 charge sheeted and therefore are not taken to the court (Patel and Rajagopalan, 2009). In 2008-2009 the no. of CORs was 1490 which increased to 1684 in 2009-2010. In 2010-2011 the number of COR again increased from the previous year to 1957 (STR Annual Report 2010-2011) (Figure 6). 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. Increasing number of CORs could also mean that many more number of fishers entered the forest in that particular fishing season. On the other hand the number of COR was less in the year of Aila[9] (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.

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 patrolling the forest from several territorial and floating camps, do not dare to challenge the Bangladeshi intruders who frequently enter the STR and smuggle timber across the border. There are even gangs which are involved in illegal smuggling of cows

[9] 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.

between India and Bangladesh. 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 while harassing 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. Fishers in the Sundarban do admit that there are also some Indians who are engaged in timber smuggling along with the Bangladeshis. 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.

2.4. Historical background of fishing and forest-based resource access struggles in colonial India:

In the British period fishers in Bengal enjoyed their customary fishing right without paying any fees and without any restrictions imposed on them (Patel and Rajagopalan, 2009). Hunter in his *A Statistical Account of Bengal* (1875; 1998, 19) acknowledged people's customary fishing right by saying that "The right to fish in the navigable channels of the Sundarban 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).[10]

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 paid 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 which gradually made fishing difficult in the numerous crisscrossing rivers of the STR.

The current conservation strategies for the STR in terms of regulated fishing in the core and sanctuary area and restriction on firewood collection from the forest for household consumption share similar characteristics with the colonial forest conservation policies of the British Government in which rural people of India were restricted from access to forest-based resources such as collection of fodder for domestic animals, 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 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

[10] Interview with former Field Director Mr. Pranabes Sanyal on Wednesday, August 17, 2011 at his residence in Kolkata.

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 the forest on fire were adopted by the local people to challenge the colonial forest management policy (Saldanha, 1998). The protest against the state forest management in colonial India did not always take open and 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.).

Considering this 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 ignores the need of subsistence of the rural people. Like in colonial India, Fishers in the Sundarban are denied access to forest-based resources which in this case are different varieties of edible and economically viable fishes. Though fishers do not react violently against the state like in the colonial past, they do not always follow the current conservations policies strictly. Sometimes fishers who collect honey in summer do bring some amount of wild honey to their homes without informing the forest guards (Fieldwork Experience, 2011). The most common form of resistance of the fishers to the current fishing regulation is to enter 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.

Section 3: Ecotourism in and around the STR:

This section provides a brief introduction on ecotourism in the fringe villages of the STR, primarily in Gosaba. It explores the fact that although ecotourism has been identified as a vehicle of economic development in the Sundarbans the benefits do not always trickle down to the local people living around the STR. More specifically, the section shows that to date ecotourism has been insufficient in providing any economic benefits to the fishing communities of the Sundarban.

Since the 1990s the Government of India started acknowledging the role of ecotourism in protecting natural environment as well as

providing economic benefits to communities living around a natural reserve area. The Ministry of Tourism came up with a national guideline of ecotourism in 1998 (Boora, 2005). Along with this line the State Forest Department has encouraged ecotourism in the buffer area of the STR as a tool for protecting the mangroves and wildlife of the Sundarban. The popular ecotourism spots in the STR are: Sajnekhali, Sudhanyakhali, Dobanki, Netidhopani and Burirdabri. On an average 30,000-40,000 domestic and international tourists (Figure 7) visit the STR each year (STR Management Plan, 2000-01-2009-10, 64). Pakhiralaya village (Gosaba Block) which is located just opposite to Sajnekhali Wildlife Sanctuary and Sajnekhali Range Office is one of the main entry points of ecotourism in the STR. Since 1990s ecotourism started to develop at Pakhiralaya. In 1992 there were only three hotels that catered to the accommodation need of tourists. These were: Zillah Parishad Guest House, Madhuban and Krishnakunja (Fieldwork Experience, 2011). In 2005, there were just 9 hotels including the Zillah Parishad Guest House (Dinda, 2010, 40). At present there are 19 hotels[11] at Pakhiralaya of them, 18 are privately owned. Among these 19 hotels only the Zillah Parishad Guest House is owned by the state government. November to February is considered the peak season for ecotourism at Pakhiralaya. Here I would like to clarify that for this paper, I use ecotourism and tourism interchangeably as there is still lack of clear guidelines from the government how ecotourism should be practiced to boost conservation which will benefit host communities. In the long run, in spite of clear guideline on ecotourism, the West Bengal Tourism Policy 2008 mentions Sundarban region as an attractive destination for Eco-forest tourism and/or ecotourism around sanctuaries and national parks. In addition, the government encourages engagement of private sector in developing tourism in the Sundarban. For many travel agencies and tour operators the term "ecotourism" has been a mere word to attract tourists to the Sundarban. Visiting tourists from Kolkata and its suburbs in the Sundarban also lack required environmental consciousness in terms of not polluting

[11] 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.

rivers and not making loud noise while observing wildlife from watch towers.

At Pakhiralaya tourism is a seasonal business for the local people and can provide income for only four months in a year. People who are not directly involved in tourism at Pakhiralaya such as local shop keepers (including grocery and tea stalls), van drivers, and daily wage laborers who work as cooks or sweepers also enjoy some indirect benefits of tourism. During my fieldwork at Pakhiralaya in December 2011to February 2012, 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 19 private hotels, only 9 have local ownerships. Two of the hotels have a joint ownership with a resident of Kolkata. At present (until February 2012) there are 28 shops (both grocery and tea stalls) at Tiger Mor of Pakhiralaya. Gaurango, one of the local tea stall owners at Pakhiralaya, informed that atleast half of the shops will close during the off season, as tourist arrivals stop. Gopal Mandal, 37 years old, who used to catch fish in the STR, but now operates a non-motorized van between Gosaba and Pakhiralaya, said that just 15 people at Pakhiralaya have stopped fishing to avoid risks in the forest. According to Mahadev Khatua, a resident of Pakhiralaya, 30% of total population of the village (i.e. 3871 according to 2001 census) is engaged in fishing and honey collection in the STR. The present Rangabelia Gram Panchayat Pradhan indicated that economic benefits of tourism is largely limited to Pakhiralaya and people of Rangabelia (located within just two kilometer) are not that much involved in the business of tourism. Local residents say that people of Pakhiralaya do not have the money to invest in tourism. They also point out that in recent years people are selling agricultural lands (paddy fields or *dhan jomi*) to rich people living outside the region, mainly from Kolkata and its suburbs.These people have the money to invest in the tourism business. For example, Gulshan Group of Hotels, a private company is currently building a four-star hotel at Pakhiaralaya, Tiger Mor. They have already acquired five acres of land at Pakhiralaya. The total cost of the project is Rs. 150 crore and the estimated completion time is August 2013. 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.[12]

Section 4: Discussion:

Ecotourism has been identified as a tool for conservation and development around protected areas and a means of providing economic benefits to local communities (Stem et al,. 2003). Ecotourism is also considered as an "example of a broader strategy" of "integrated conservation and development projects" or ICDPs in which it is believed that "people will conserve resources when they have an incentive to do so." (Ibid, 389). One of the popular definitions of ecotourism 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. 2003). The State Forest Department defines ecotourism as a type of tourism which strengthens "the cause of conservation" and enlightens the visitors about the biodiversity values of the region (STR Management Plan 2000-2010, 64). Thus the definition and meaning of ecotourism provided by the STR authority allows no provision of including economic benefits to local people living in the fringe villages of the STR along with the fishers.

Since 1996 the State Forest Department has formulated Eco-Development Committees (EDCs) in the fringe villages of the STR as a strategy of more effective conservation by involving local people in conservation and by reducing anthropogenic pressure on forest through providing alternative livelihood opportunities to local people (Patel and Rajagopalan, 2009; West Bengal Forest Department, 1996). The local EDC members are eligible for 25% of tourism or ecotourism revenue if the respective EDCs have worked satisfactorily for one

[12] Please see: Gulshan Group to set up four-star property in Sunderbans http://www.indiahospitalityreview.com/news/gulash-group-set-four-star-property-sunderbans-investment-rs-150-crore

year after their establishment (West Bengal Forest Department, 1996). In reality, fishers and other people who have developed personal contacts with the local members of the executive committee (e.g. Secretary of the executive committee) of the EDC sometimes receive economic benefits such as temporary employment opportunity with the Forest Department as cook and patrolling guards. Hence, there are enough examples in park and protected area literature where economic benefits out of ecotourism and/or "integrated conservation and development projects" have been accrued in the hands of selected groups of people (Stem et al. 2003; Wood 1995; Wells, 1996) and the specific case of the Sundarban is not an exception.

Ecotourism and fishing in the buffer area and the involvement of local people in forest protection through EDC have created a unique "nature-society hybrid" (Zimmerer 2000, 356) in the STR. In this model of "nature-society hybrid" (ibid.) fishers have regulated access in the buffer area of the STR. While the presence of fishers are not so much welcomed in the buffer area, huge number of tourists are allowed in the same buffer area and at one specific site of the core (i.e. Netidhopani ecotourism spot) for enjoying the pristine nature[13] of the Sundarban. On one hand fishers are restricted in the core area for fishing and collection of any forest products such as honey, on other the Forest Department seeks cooperation from the fishing community for protecting the Sundarban mangrove ecosystem. I argue that this discrepancy in the resource management of the STR has created a social distance between the rural residents and urban outsiders who mostly visit the region for recreation. The fishers argue that the government is only concerned about earning huge revenues by allowing tourists in the forest and that is why their economic activities such as fishing is 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

[13] The website of the Sundarban Biosphere Reserve created by the State Forest Department describes that nature exists in the core of the SBR in "pristine glory".
(See: http://www.sundarbanbiosphere.org/html_files/management_indian_sunderban.htm)

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 this mangrove wetland. Furthermore, the regulation on fishing and encouragement of ecotourism by the state has merely created a "landscape of consumption" in the Sundarban (Neumann, 1998). This landscape can only be consumed and enjoyed by affluent urban tourists who can afford the cost of expensive tours. The biodiversity conservation in the Sundarban still contains characteristics of the fortress conservation model in which resource utilization of local people are curtailed in favor of larger commercial benefits. Summing up, the combination of a top-down conservation strategy with a participatory resource management policy through EDCs creates a unique "nature-society hybrid" (Zimmerer 2000, 356) in the Sundarban.

In spite of the Forest Department's effort to reduce dependency of local people on the mangrove forest ecosystem, the Sundarban forest plays a major role in providing livelihood to several thousand people living along the boundary of the STR. Therefore an effective conservation strategy in and around the STR should address the needs of the local people in a holistic manner. The active participation of local people (including the fishers) in the conservation process and developing long term and sustainable livelihood opportunities should be encouraged in the region. The Forest Department might think of providing new BLCs to the poor fishers in order to reduce their exploitation by rich BLC owners including the *khotidars* and *aratdars*. A clear guideline on CORs is also necessary so that the fishers can understand what kind of offences they have committed and for what they are paying fines. The fine amount should be determined after consulting with the fishing communities living around the STR. The participation of local fishers in the conservation process could be further beneficial in terms of providing valuable information to the Forest Department for controlling intruders across the India-Bangladesh international border. In order to minimize the harassment of the fishers in the hands of the BSF and Bangladesh Police, fishers of the Sundarban should be encouraged to apply for the biometric identity cards (*Indian Express* [Kolkata] 25 July 2011) which will enable them to prove their identity. Currently the distribution of biometric cards is in process

in West Bengal. Sundarban fishers must be an integral part of saving the Sundarban mangrove ecosystem. They will cooperate with the government if they are offered better livelihood opportunities and have stakes in conserving the ecosystem. The sooner we understand this fact the sooner we will be able to protect the amazing ecology of the world's largest mangrove forest.

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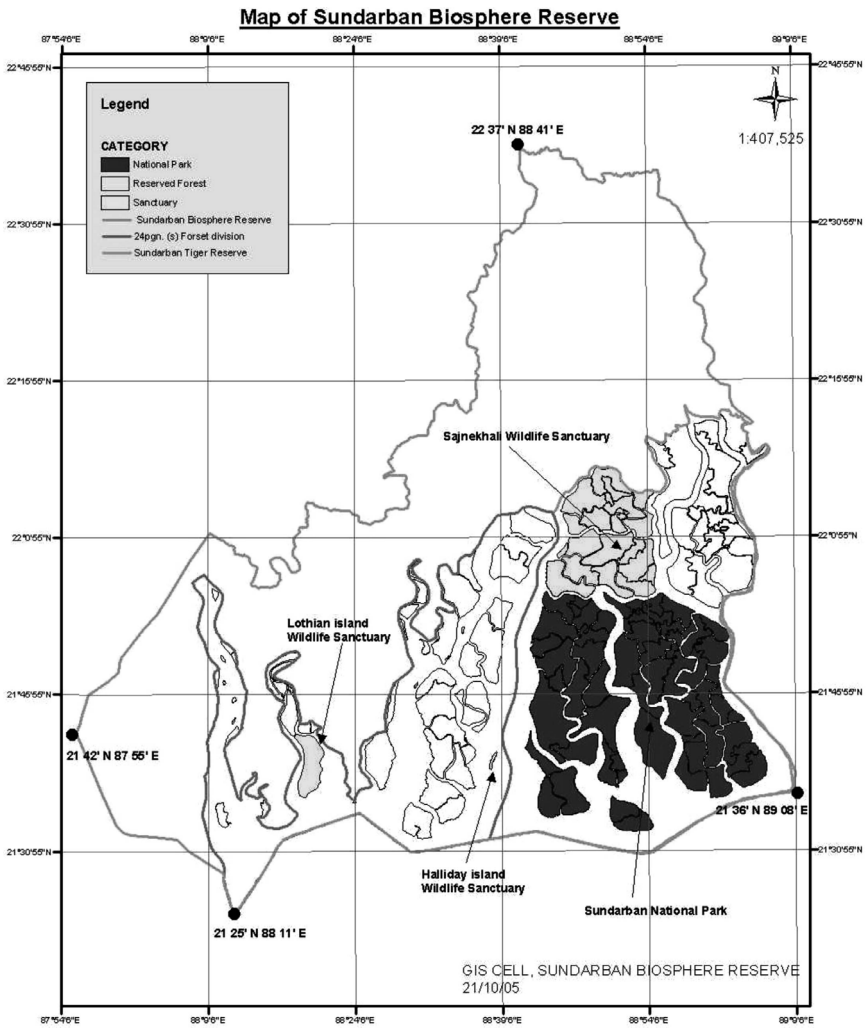

Figure 1: The Sundarban Biosphere Reserve (SBR) is divided into core, buffer and transition areas. The Sundarban Tiger Reserve (STR) is a part of the SBR and the core of the STR overlaps with the core of the SBR. Here, the dark gray colored area is the core area of the STR. The light gray colored area is the Sajnekhali Wildlife Sanctuary. [Source: GIS Cell, Sundarban Biosphere Reserve, West Bengal State Forest Department, 2005].

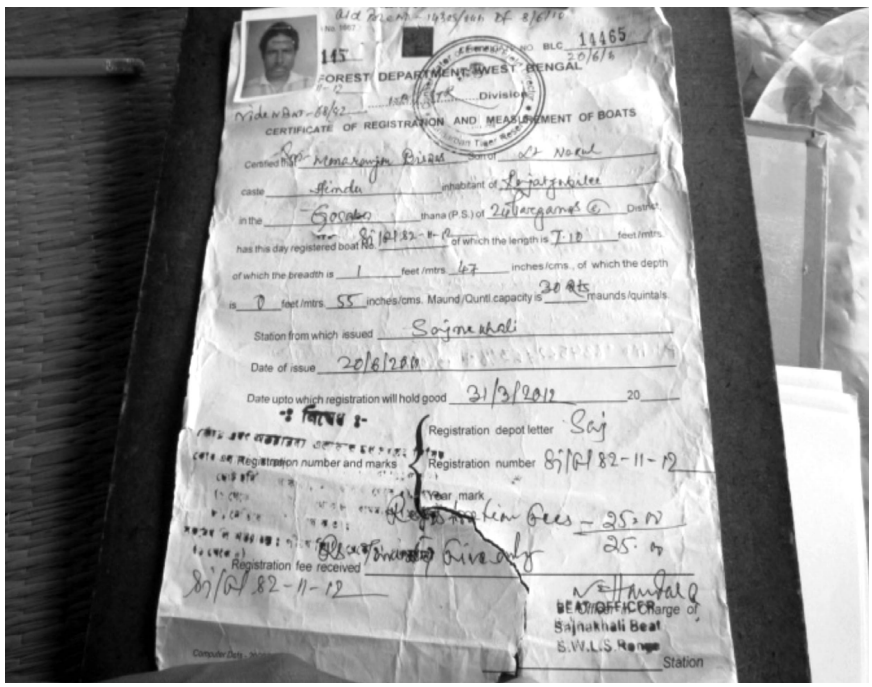

Figure 2: A BLC with the name and address of the owner along with the description of the boat. Each BLC should also contain a passport size picture of the owner. (Photography by Priyanka Ghosh)

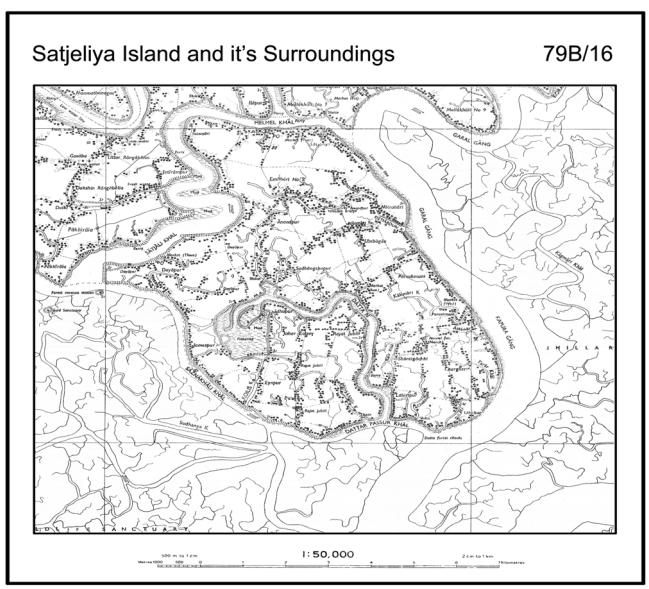

Figure 3: Topographical Map of Satjelia Island (Sheet No. 79 B/16), Gosaba Block, South 24 Parganas (Cartography by Jayanta Sen).

Figure 4: A fisher preparing fishing net at home during the lean period of fishing or *morani*.

Figure 5: A small dinghy used for crab collection in the Sundarban. (Photographs by Priyanka Ghosh)

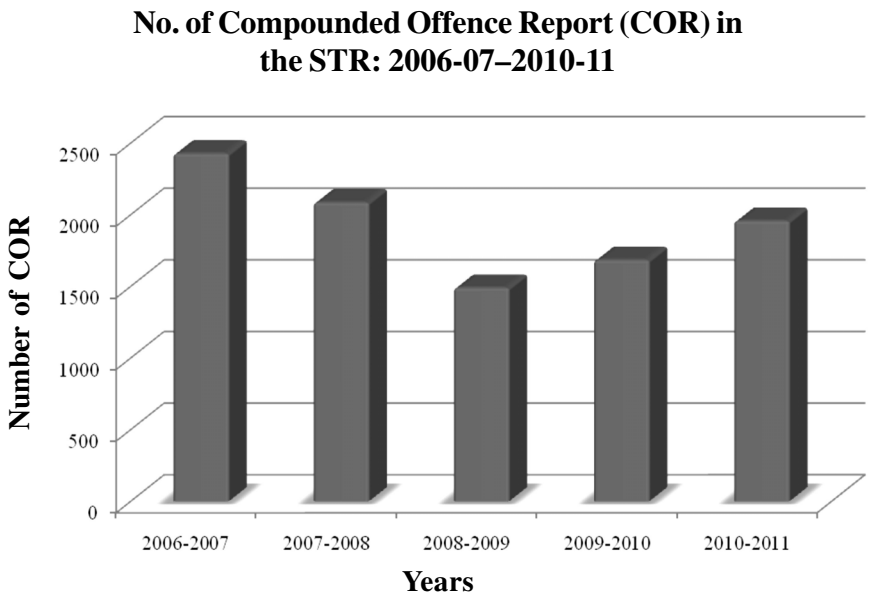

Figure 6: The bar graph shows the year wise distribution of number of Compounded Offence Report (COR) in the Sundarban Tiger Reserve (STR). (Graph by Priyanka Ghosh)

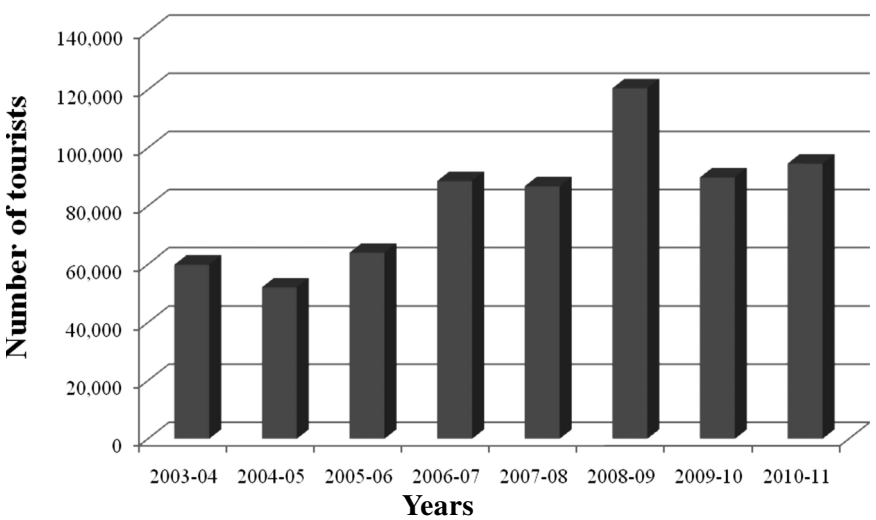

Figure 7: The bar graph shows the year wise distribution of number of tourists (both domestic and international) visiting the Sundarban Tiger Reserve (STR). (Graph by Priyanka Ghosh)

Table 1: Core area or the Critical Tiger Habitat

SL No.	Name of the forest blocks with compartment numbers	Area in square kilometer
1.	Matla (1-4)	176.30
2a.	Chamta (1-3)	96.32
2b.	Chamta (4-8)	124.37
3.	Chotahardi (1-3)	175.67
4.	Goasaba (1-4)	171.73
5.	Gona (1-3)	139.03
6a.	Bagmara (1)	24.30
6b.	Bagmara (2-8)	269.63
7.	Mayadwip (1-5)	273.36
8.	Netidhopani (1-3)	93.00
9.	Chandkhali (1-4)	155.91
	Total	**1699.62**

Source: STR Annual Report: 2009-2010

Table 2: Buffer area

SL No.	Name of the forest blocks with compartment numbers	Area in square kilometer
1.	Panchamukhani (1-5)	176.66
2.	Pirkhali (1-7)	185.76
3.	Arbesi (1-5)	150.43
4.	Jhilla (1-6)	123.14
5.	Khatuajhuri (1-3)	132.41
6.	Harinbhanga (1-3)	116.87
	Total	**885.27**

Source: STR Annual Report: 2009-2010

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