



Government of Bangladesh  
Ministry of Environment and Forests  
Bangladesh Forest Department



Management Plan  
For  
Sathchari National Park

2016 - 2025

Bangladesh Forest Department  
January 2016

Management Plan  
For  
Sathchari National Park

**Supported by**

**Climate-Resilient Ecosystems and Livelihoods (CREL) Project**

This publication is made possible by the generous support of the American people through the United States Agency for International Development (USAID). The contents of this document do not necessarily reflect the views of the USAID or the United States Government.

**Office of the Chief Conservator of Forests**

Forest Department, Banabhaban, Agargaon,  
Dhaka-1207, Bangladesh

Phone: +88-02-8181737, Fax: +88-02-818174

**Office of the Divisional Forest Officer**

Wildlife and Nature conservation Division, Moulavibazar

Phone: +88- 0821-716358, Fax: +88- 0821-710215,

**Office of the CMC**  
**Satchari National Park**  
**Chunarghat, Habiganj**

## **Acknowledgement**

This management was prepared with active participation and co-operation of Bangladesh Forest Department and other Stakeholders.

Key contributions came from: Md. Yunus Ali, Chief Conservator of Forest (CCF) for his overall guidance and cooperation in preparing this management plan Mr. Tariqul Islam, Assistant Chief Conservator of Forest (ACCF), (focal point); Mr. Mihir Kumar Doe, Divisional Forest Officer (DFO), Wildlife and Nature Conservation Division, Moulavibazar; Md. Sayed Ali, Wildlife and Nature Conservation Division, Habiganj; Tabibur Rahman, Assistant Conservator of Forest (ACF); Golam Sarwar, Range Officer, Satchari range; and Forest Department staffs of Satchari National Park; Mr Abul Kalam Azad, Vice-President of Satchari CMC; all members of SNP CMC; participants in local planning sessions from the Village Conservation Forum (VCF) of Satchari National Park and other officials.

In CREL I would like to thank Paul Thompson, Senior co-management Advisor (CREL), Mr. A.K.M Shamsuddin, Ex-CCF and Co-management Coordinator (Forestry); Abu Mostafa Kamal Uddin, Senior NRM Specialist; Mr. Shams Uddin, Manager-Landscape Planning and Ruhul Mohaiman Chowdhury, M& E Specialist and his team including field staffs of CREL, for their efforts in advising and assisting in developing this management plan.

The compilation of the management plan was done by the CREL technical assistance team: A.Z.M. Shamsul Huda, Consultant, Forest Management Plan; Dr. Mohammed Muzammel Hoque, Aowlad Hossain, Abdullah Al Mamun, Deputy Consultant and Nizam Uddin Bhuiyan, Associate Consultant, Forest Management Plan, CREL. The process involved: consultations with 8 FD officers, 9 civil society representatives, and members of 10 village conservation forums and community patrol groups as individuals or small groups; review of existing documents and plans; drafting of an outline plan; and holding of consultation workshops on 30 November, 2015.

# Satchari National Park Management Plan 2016- 2025

<b>Table of Contents</b>		<b>Page</b>
<b>Acknowledgement</b>		iv
<b>List of Tables</b>		Vii
<b>List of Figures</b>		Viii
<b>List of Annex</b>		Viii
<b>List of Acronyms</b>		Ix
<b>Executive Summary</b>		1
<b>Introduction</b>		5
<b>Part 1 Current Status of Protected Area</b>		6
1.1 Basic facts of SNP		6
1.1.1 Location		6
1.1.2 Area		6
1.1.3 Boundary		8
1.1.4 Legal status and special regulatory provision		8
1.2 Physical features		8
1.2.1 Topography, geology and soil		8
1.2.2 Water areas		8
1.3 Climatic characteristics		9
1.3.1 Temperature, rainfall and relative humidity		9
1.3.2 Climatic hazards		10
1.4 Ecosystem, flora and land uses of PA and landscape		10
1.4.1 PA Forest type and vegetation		10
1.4.2 Landscape land uses and tenure		11
1.5 Fauna		14
1.6 Socio-economic profile		15
1.6.1 Population and settlement		15
1.6.2 Infrastructures and services		15
1.6.3 Livelihood activities and resources uses		16
1.7 Past management system and plans		16
<b>2 Emerging Issues</b>		17
2.1 Administration of forest PA and associated facilities		17
2.2 Co-management institutions and associated facilities		17
2.3 PA boundary delineation		18
2.4 Forest and habitat management interventions		18
2.5 Encroachment, illegal extraction and forest destruction (with causes)		18
2.6 Existing dependence on and use of forests resources		19
2.7 Gender, youth and ethnic communities		21
2.8 Ecotourism and education/information		21
2.9 Existing carbon stocks and scope to enhance		21
2.10 Management constraints/challenges		22
2.11 Conflicts and their resolution		22
2.12 Climate change and likely impacts on vegetation, fauna, ecosystem services		23
<b>3 Institutions</b>		24
3.1 Forest Department (FD)		24
3.2 Co-management structure		24

## *Satchari National Park Management Plan 2016- 2025*

3.2.1	Structure, roles & responsibilities of Co-management Council	25
3.2.2	Structure, roles & responsibilities of Co-management Committee (CMC)	25
3.2.3	Structure, roles & responsibilities of Peoples Forum (PF)	26
3.2.4	Structure, roles & responsibilities of Village Conservation Forum (VCF)	26
3.3	Training and capacity building	27
<b>4</b>	<b>Values of Protected Area</b>	<b>28</b>
4.1	Biodiversity	28
4.2	Extractive use	28
4.3	Non-extractive use-tourism	28
4.4	Climate change mitigation and other regulating ecosystem services	28
4.5	Cultural value	29
4.6	Archeological value	29
<b>5</b>	<b>Threats</b>	<b>30</b>
5.1	Resource extraction	31
5.2	Lemon cultivation	31
5.3	Plantations	31
5.4	Livestock	31
5.5	Encroachment	31
5.6	Human- wildlife conflict	31
5.7	Hunting	32
5.8	Conflict between conservation and development	32
5.9	Water scarcity	32
<b>Part 2</b>	<b>Analyses of Current Management Practices and Future Program</b>	<b>33</b>
<b>6</b>	<b>Objectives of PA Management</b>	<b>33</b>
6.1	General policy framework	33
6.2	Objectives	33
<b>7</b>	<b>PA and Landscape Zonation</b>	<b>35</b>
7.1	Zoning of landscape area	35
7.1.1	Core zone	35
7.1.2	Buffer zone	36
7.1.3	Impact zone/ landscape zone	37
7.2	Boundary delineation	37
7.3	Actions to address encroachment and tenure issues	37
<b>8</b>	<b>Management Actions</b>	<b>38</b>
8.1	Management of PA (Core zone)	38
8.1.1	Rules and norms	38
8.1.2	Restoring habitat and ecosystems	38
8.1.3	Wildlife conservation and recovery	38
8.1.4	Action to improve climate change resilience	39
8.1.5	Smart patrolling (CPGs, FD)	39
8.2	Management of Buffer zone	40
8.3	Management of impact zone/Landscape zone	41
8.3.1	Rules and norms	41
8.3.2	Social forestry	42
8.3.3	Livelihood diversification and enhancement	42
8.3.4	Action to reduce fuel wood collection/use	43
8.3.5	Measures to improve community level resilience to hazards and climate change	43
8.4	Management Information System (MIS) of PA	44
8.4.1	Archiving PA information	45

## *Satchari National Park Management Plan 2016- 2025*

<b>9 Ecotourism</b>	46
9.1 Ecotourism	46
9.2 Appropriate visitors level	46
9.3 Appropriate locations/zones in SNP	46
9.4 Entry fees	47
9.5 Facilities and infrastructure developments	47
9.6 Promoting visits	49
9.7 Ecotourism services (guides, training)	49
9.8 Education and interpretation	49
<b>10 Funding and Resource Mobilization</b>	50
10.1 Budget requirements/ costs	50
10.2 Internal resource mobilization	50
10.3 External fund raising strategy	50
10.4 Potential for ecosystem services payment (carbon payments)	50
<b>11 Monitoring, Adjustment of Plans and Research</b>	51
11.1 Monitoring, adjustment of plans and research	51
11.2 Monitoring forest protection	51
11.3 Monitoring changes in habitat/biodiversity/indicator species	51
11.4 Research	52
11.4.1 Socio-economic research	53
11.4.2 Ecological and biological research	53
<b>12 Gender, Youth and Ethnic Community</b>	54
12.1 Gender, youth and ethnic communities	54
<b>13 Model structure for annual plans</b>	55
<b>References</b>	59
<b>Annex</b>	60
<b>List of Tables</b>	
1 Climatic hazards in Satchari region (B.M.D 2012)	10
2 Land covers statistics of Satchari National Park (CREL, 2015 )	12
3 Infrastructural properties of Satchari National Park	15
4 Manpower involved in management of SNP	17
5 Co-management structure of Satchari National Park	17
6 Tea Estates surrounding the Satchari National Park and their level of impacts	19
7 Stakeholder groups in Satchari NP	19
8 Summary of Carbon inventory in SNP	21
9 Management objectives and challenges of Satchari NP	22
10 Present and required manpower of FD for SNP	24
11 List of institutes with their training and capacity building programs	27
12 Resource extraction from Satchari National Park (SNP)	30
13 Existing rate of entry fee fixed by the Govt. and proposed entry fees in SNP	47
14 Facilities/infrastructure development needed in SNP	48
15 Monitoring changes in habitat/biodiversity/indicator species and review plan	52
16 Model structure of annual plans for RKWS	55
<b>List of Figures</b>	
1 Protected areas of Bangladesh showing Satchari National Park	7
2 Monthly average rainfall (mm) and rainy days in Habiganj District (B.M.D 2012)	9
3 Monthly average maximum and minimum temperature at Habiganj (B.M.D 2012)	10
4 Land use map of the landscape area of Satchari national Park	13

## *Satchari National Park Management Plan 2016- 2025*

5	Zonation Map of SNP	36
<b>List of Annex</b>		
1	Gazettee notification of Satchari National Park	60
2	Useful glossary	65
3	Flora of Satchari National Park	66
4	Fauna of Satchari National Park	69
5	Plantation information of Satchari NP	76
6	Activities and indicative cost estimates for Satchari National Park	77
7	Proposed equipment for SNP	81
8	Proposed trail map for SNP	82



## **List of Acronyms**

**ACF** - Assistant Conservator of Forests  
**ADB** - Asian Development Bank  
**AIG** - Alternative Income Generation  
**ANR** – Assisted Natural Regeneration  
**CBC** – Community Based Conservation  
**CBD**- Convention on Biological Diversity  
**CCF** - Chief Conservator of Forest  
**CF** - Conservator of Forest  
**CMC** – Co-management Committee (the operational body of the Co-management Council which is referred to in full to avoid confusion, except that CMC may refer to the combination of both committee and council in some places)  
**CMO** – Co-management Organization  
**CPG** – Community Patrol Group  
**DCCF**- Deputy Chief Conservator of Forest  
**DCF**- Deputy Conservator of Forest  
**DFO** - Divisional Forest Officer  
**EIA** - Environmental Impact Assessment  
**FCC**- Forest Conservation Club  
**FD** - Forest Department  
**FG** - Forest Guard  
**FRH**- Forest Rest House  
**FRMP** - Forest Resource Management Project  
**FSP** - Forestry Sector Project  
**GIS** - Geographic Information System  
**GoB**- Government of Bangladesh  
**IPAC** – Integrated Protected Area Co-management  
**IUCN** - International Union for Conservation of Nature  
**JFM** – Joint Forest Management  
**LDF** - Landscape Development Fund  
**MIST**- Management Information System  
**NACOM** - Nature Conservation Management  
**NGO** - Non-Governmental Organization  
**NIC** - Nature Interpretation Centre  
**NP**- National park  
**NSP** - Nishorgo Support Project  
**NTFPs** - Non-Timber Forest Products  
**PA** - Protected Area

**PCVA** – Participatory Community Vulnerability Assessment  
**PF**- Protected Forest  
**PF**- Peoples Forum  
**PBSA** - Participatory Benefit Sharing Agreement  
**PP** - Project Proforma  
**PRA** - Participatory Rural Appraisal  
**RF** - Reserved Forest  
**RIMS** - Resource Information Management System  
**RO**- Range Officer  
**RRA** - Rapid Rural Appraisal  
**TA** - Technical Assistance  
**TFF** – Tree Farming Fund  
**UNDP** - United Nations Development Program  
**UNO**- Upzilla Nirbahi Officer  
**UP**- Union Parishad  
**USAID** - United States Agency for International Development  
**VCF**- Village Conservation Forum  
**WC** - Working Circle

## **Executive Summary**

Satchari National Park is an important protected area and managed by the Wildlife and Nature Conservation Division, Moulavi bazar. The National park is about 243 ha and it is established in 2005. It's comprised of forests of Raghunandan Hills Reserve Forests within the Satchari Range. The word "Satchari" is derived from "seven streams" (locally called 'chara') and refers to the streams that flow through the forest. The park is located in Chunarughat Upazilla of Habigonj District and is situated nearly 130 km northeast of Dhaka, and about 60 km southwest of Srimongol. The Raghunandan Hill Reserve borders the park on its northwestern side, while India lies to the south of the park. To the west and east are eight tea gardens which enhance the scenic attraction of visiting the area.

In Bangladesh local people's involvement and support for forest management has been viewed as an important element of enhanced conservation in recent years. This new approach commonly known as co-management or collaborative management is an emerging strategy for conservation in many countries that has been widely recognized and promoted by various international conservation agencies as a means of governance. This strategy enables active participation and support from local communities for conservation, and most often offers them some direct and indirect benefits that sustain their livelihood apart from achieving conservation goals. The Bangladesh Forest Department has adopted co-management as its approach for Protected Area Management under its master Plan and the Wild Life (Conservation and Security) Act 2012. By applying this concept into practice these organizations trying to protect forests with the help of local people more specifically by involving forest dependent communities.

Satchari National Park largely comprises of a remnant of biologically rich mixed evergreen and semi-evergreen forests. In past decades the forest has been substantially altered by felling and plantations. However, parts of the park's forest appear never to have been clear felled and good natural re-growth, particularly of ground flora and middle story, has come up, so it retains considerable biological significance. Nevertheless, several forest wildlife and plant species have disappeared and many more are declining or on the verge of disappearing due to habitat destruction, illegal poaching and over-exploitation.

The management plan takes into account recent developments towards co-management under the Wildlife (Conservation and Security) Act 2012 and international standards on biodiversity conservation of protected areas. The Management Plan was developed by following a landscape approach that identifies core zone, buffer zone and impact zone Satchari National Park (SNP) has an area of 243.10 ha, a further 1,542 ha of adjacent Forest Department lands form a buffer zone, and 16,003 ha around that has been identified as impacting SNP, giving a combined total landscape area of about 17,790ha. Satchari NP and the surrounding buffer and impact areas are the focus of the Satchari Co-Management Council and Committee (CMC). This plan was prepared in a consultative, participatory process and becomes the defining reference for activities of Forest Department (as well as the CMC) within Satchari National Park and within its buffer area, and sets out guidelines and activities for the CMC in the impact area.

The long term vision is to protect and restore a healthy biodiverse evergreen forest in the NP and restore the biological significance of buffer forests, enable these forests to be enjoyed responsibly by visitors; and ensure the NP is actively supported and protected by local

communities and enterprises who benefit from tourism, non-timber forest products, and soil and water conservation, and who adopt sustainable land management adapted to future climate changes. The aims of this plan are: 1) to protect and restore biodiverse evergreen forest through protection of the NP and enhanced natural regeneration and enrichment in the buffer area and by limiting biomass extraction from the NP; 2) to achieve sustainable natural resource use in the buffer forests and landscape; 3) to promote improved livelihoods based on sustainable climate change resilient enterprises and services for an estimated 4,700 households living around and impacting the NP as a means of reducing forest extraction; 4) to promote nature based tourism based on suitable visitor facilities that provide sustainable income flows for co-management and livelihoods; 5) Integrate the NP into local and regional development processes; and 6) to improve Forest Department capacity and performance.

The management issues and threats identified are: landuse, encroachment, forest resource extraction, habitat degradation and fragmentation, climate change, tourism, and wildlife conservation and protection. In addition Habiganj region is vulnerable to climate hazards and changes. Flash flood, rain, and landslides already cause losses to people, livestock, crops and natural vegetation; and may intensify over time.

The basic principle of this management plan is a people oriented approach where local stakeholders are organized and represented from their villages and interest groups, along with Forest Department and other government agencies in the Satchari Co-management council and its executive committee .The plan assesses the present situation of biodiversity, resource protection and management, human interferences, impact zone landscape positions, and based on this analysis sets out priority management actions for a ten year period.

Although the general extent of SNP is readily apparent from satellite imagery which shows the limit of more-or-less closed canopy forest coinciding with the NP, the actual boundary of Satchari National Park is not well demarcated on the ground. Although the NP was notified in 2005, no efforts have so far been made to physically demarcate the boundary in the field. The situation has been exacerbated by heavy human pressure on the forest, and forestry activities prior to declaring the NP, resulting in degradation of remaining forest. Moreover the NP is small, a larger area needs to be protected if it is to hold viable populations of wildlife and resist human pressure in the long term. An additional area of reserved forest of 268 ha stretching from the southern edge of the NP to the international border that currently contains degraded forest will be incorporated in an enlarged NP as a priority. Also the FD and CMC will review and propose accordingly strengthening protection and co-management in all or part of the buffer reserved forest north of the road which forms the northern boundary of SNP, which could become a destination for visitors and/or enlarged area for conservation either by expanding the NP or changing management objectives in the buffer. It is a high priority to resolve these expansions, and then immediately define and demarcate the boundary and update the record of rights if this plan of actions is to be implemented.

Non-Timber Forest Products (NTFPs) play an important role in Satchari NP and its impact zone providing livelihoods and employment to the forest dependent communities. Unfortunately over-exploitation of NTFPs including illicit cutting of fuel wood, bamboo, etc. has resulted in the degradation of the forest and NTFP resources. In Satchari area large areas were planted by FD with bamboos. Now the bamboo plantations are mature and there are dead stems. To reduce fire hazard it is appropriate to permit limited extraction of matured bamboos without adversely affecting habitat, a quota for bamboo stems for identified forest using households on condition that they end all other damaging practices (such as hunting or cutting saplings) can be developed.

There are 38 villages represented within the CMC of SNP, inhabited by 4,700 families with a total population of around 89, 000. A total of 18 stakeholder categories have also been identified in Satchari NP area, of which 13 are primary ones. The primary stakeholders are local elites, FD, forest villagers, forest settlers, fuel wood collectors, betel leaf cultivators, sun-grass collectors, bamboo collectors, charcoal producers, and hunters. Secondary stakeholders include farmers, dry leaf collectors, medicinal plant collectors, timber merchants, brick field owners, sand collectors, fodder collectors and livestock grazers.

Protection of habitat within the NP and its buffer area against illicit felling, encroachment, and grazing are the primary responsibility of FD working with co-managers. Satchari NP needs an additional 8 well trained staff including an Assistant Conservator of Forests to be posted as a responsible officer for the National Park. Co-management is based on a 24 member Co-management Council and 56 member Co-management Committee, representing almost all local stakeholders and including representatives of a People's Forum (PF) which itself represents the 38 villages. These bodies provide forums to discuss problems and take decisions, and ensure local participation in protecting remaining forest and its regeneration, and promote development of alternative livelihoods to reduce pressure on regenerating forest. The CMC and PF will promote enterprises such as high value horticulture and cottage industries, and stronger linkages with markets and service providers, so that poor people currently exploiting the forest and NP can earn higher incomes while reducing natural resource extraction.

This management plan specifies actions in three zones in accordance with the Wildlife Preservation and Security Act, 2012: core zone, buffer zone and impact zone). During 2015-2025 in the core zone no roads and other substantial infrastructure development will be permitted. Selected existing nature trails and trails used by resource extractors will be designated and maintained as visitor walking trails and existing facilities for ecotourism will be maintained and enhanced. In the areas to be added to the NP about 100 ha will be enriched by planting with indigenous forest tree species following the framework method (Thali model). Assisted Natural Regeneration will be taken up in 640 ha of degraded/barren lands (18 ha in SNP and 620 ha in the buffer zone) where natural regeneration is not coming up due to lack mother trees. In the buffer zone and degraded spots in SNP where there is degraded/bare land soil conservation measures (e.g. localized planting of native trees, bamboo and bushes) will be taken up to reduce erosion of stream/chara banks. The CMC will encourage tea estates and other owners of private land to restore native vegetation (trees and bushes) on slopes in the impact/landscape zone to stabilize slopes and conserve soil and water. Links between CMC, People's Forum and villages with other relevant agencies and organizations will be developed to help enhance livelihoods and community resilience to climate stresses.

Sapling regeneration and density will be monitored in sample representative areas jointly by the co-management stakeholders (CMC and FD).

FD will provide/arrange (with outside assistance as needed) suitable training for its staff and co-management stakeholders in protected area management including management of wildlife and nature based tourism, forest restoration, and climate change resilience. Links will be made with agencies that can provide training to local people to enhance enterprises without threatening natural resources.

In addition to maintaining and maximizing use of existing visitor facilities such as the interpretation center, interpretive displays, toilets, foot trails and resting places; if an expansion of tourism is agreed in the reserve forest north of the road, then additional facilities will be developed. These may include (provided it does not adversely affect wildlife) a picnic site and

shop, and as an attraction an arboretum/botanical garden with orchid house focused on indigenous species. The park will be publicized in electronic and print media to promote nature based tourism, raise the profile of the NP, and increase its use as part of formal and informal education.

Public-private partnership will be encouraged to increase eco-tourism based on local resources available in Satchari National Park area, and to increase resources available for nature conservation based on mutual transparency. This will involve agreed respectful publicity for building up the image of the contributors, SNP, FD and co-managers.

Monitoring and review will assess management activities, NP conditions and achievement of the management plan objectives. The results of monitoring and evaluation may be used to adapt the strategies to improve the management performance.

To implement the management plan several activities were identified which needs tentatively a total budget of Tk 151 million. These budget requirements cannot be fulfilled by the FD. The revenue budget of GoB mainly confined for meeting the salary of FD staffs. Separate additional budget is needed to allocate to FD in ADP for implementing the plan.

## Introduction

Bangladesh is a very densely populated country with small area of forest. These forests have been facing perpetual threats due to deforestation, illegal settlement, and conversion of forest for agricultural purposes, over grazing, illicit felling, fuelwood collection etc. Besides, natural calamities are also responsible for degradation.

In Bangladesh local people's involvement and support for forest management has been viewed as an important element of enhanced conservation in recent years. This new approach commonly known as co-management or collaborative management is an emerging strategy for conservation policy. This strategy enables active participation of local community in forest management and most often offers them some direct and indirect benefits in sustaining their livelihood apart from achieving conservation goals. By applying this concept into practice the Govt. is trying to protect the forest with the help of local people more specifically by involving forest dependent communities.

Satchari national park (243 ha) of Raghunandan Hill RF, has remnants of biologically rich forests located in the high rainfall bio-geographic zone with evergreen and semi-evergreen forests with a multi-tier vegetation assemblage of rich biodiversity. Raghunandan Hill RF originally supported by mixed tropical evergreen forests, which over the period have been substantially altered due to heavy biotic interference and plantations established after clear-felling of natural vegetation. However, at places good natural re-growth, particularly of ground flora and middle story, has come up over the period due to favorable climatic and edaphic conditions, thereby enhancing the Park's *in-situ* conservation values.

But in recent years, the biodiversity of the park has become degraded. Already a number of animals and tree species have disappeared, while many more are on the verge of extinction. Overall, a large number of species are threatened due to habitat destruction, illegal poaching and over-exploitation.

The Management Plan is developed by following a landscape approach core zone, buffer zone and impact zone. Main focus of forest management under this plan is the rehabilitation, protection and conservation of forests and its constituent biodiversity, sustainable use of landscape areas to achieve conservation on a broader scale, involvement of local people and other key stakeholders in the forest management (co-management), resilience of climate change, ecotourism activities and livelihood diversification. The Management Plan may act as guideline to the policy makers, decision makers, owning agencies and funding agencies.

Main long-term management aim of the plan is to bring the maximum possible area under forest cover, and to maintain this forest and its constituent biodiversity in the best possible condition and thus resilient the climate change.

The main objectives of the Management Plan are: to protect, maintain and enhance the biological significance and aesthetic value of Satchari NP and its surroundings as a healthy forest ecosystem; to integrate the surrounding local communities to ensure wider acceptance of the PA values for conservation and community development through co-management.

## **PART 1: Current Status of Protected Area**

# **1 ■ Description of SNP**

### **1.1 Basic Facts of SNP**

#### **1.1.1 Location**

Satchari National Park is located in the Raghunandan hills, under Paikpara Union, Chunarughat Upazilla, Habiganj District, 24°07'12"N latitude 91°27'03"E longitude (Figure 1). It is nearly 130 km east-northeast of Dhaka on the former Dhaka Sylhet highway and approximately 60 km southwest of Srimongal town. Northwest of the park is Raghunandan Hill Reserved Forest and the southern boundary is the border with India. It was declared a National Park in 2005.

Due to good communications the Park is very attractive for ecotourism, particularly for visitors from urban centers such as Dhaka. The road runs along the northern boundary the Park, within its small area are a number of foot trails.

#### **1.1.2 Area**

Satchari National Park is a protected area in Habiganj District, managed by the Wildlife and Nature Conservation Division, Moulavi bazar. According to Forest Department records Satchari National Park covers 243 hectares (600 acres) in the Satchari Range of Raghunandan Hills Reserve Forest. For this plan the total landscape area associated with Satchari National Park has been estimated as 17,788.94 ha comprising 242.30 ha NP or core zone, 1552.60 ha of adjacent reserved forests or buffer zone, and about 15994.03 ha of impact zone. Literally 'Satchari' in Bengali means 'Seven Streams'. There are seven streams flowing in this jungle, giving the name 'Satchari'.

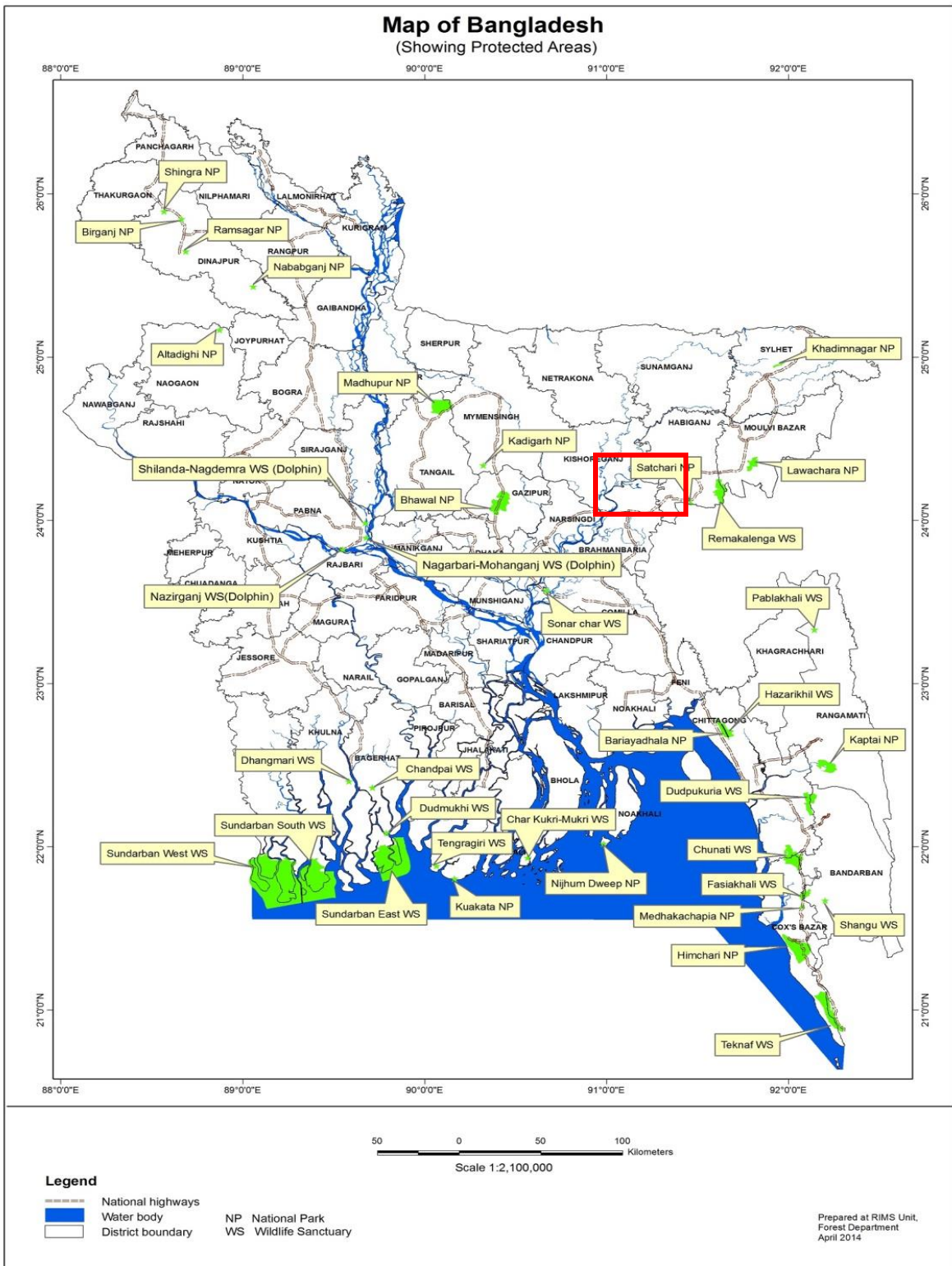


Figure 1: PAs of Bangladesh showing Satchari National Park



### **1.1.3 Boundary**

The Park is a part of Raghunandan Hill Reserved Forest (RF), which was reserved (Gazette No. 4238-R dated 22nd October, 1914) in the early twentieth century under the Forest Act 1878, and Assam Forest Manual 1898. The settlement claims of local communities were settled and legal boundaries identified with names of forest blocks, compartments, etc. Working Plans were prepared with topographical maps (1 inch to 1 mile or 1: 63,360) and specific recommendations for the maintenance of legal boundaries of forest blocks and compartments were given. Although the Park has been notified in the official gazette by FD in 2005, no efforts have been made to physically demarcate the boundaries in the field. However, there has been little encroachment in Satchari NP. The park has a 7.38 km periphery, identified from GIS map. However the park in the south is not demarcated or distinguished from the buffer zone. The NP southern boundary needs to be extended upto the Indian border, adding 268 ha to the NP- an area of degraded forest that can be restored.

### **1.1.4 Legal status and regulatory provision**

Satchari National Park was established through Gazette Notification No. PBM (S-3)/31/2004/1125 dated 10 October 2005. In exercise of the powers conferred by Article 23(3) of the Bangladesh Wildlife (Preservation) Order, 1973 (President's Order No. 23 of 1973), the Government declared 600 acres (243 hectares) of notified Reserved Forests of the 10,000 acre (4048.58 hectares) Raghunandan Hill Reserve as National Park.

## **1.2 Physical Features**

### **1.2.1 Topography, geology and soil**

The low and rolling hills (or "tilla") of the Park are composed of upper tertiary rocks in which soft sandstone predominates. The average elevation is 10 to 50 m. This originally supported mixed tropical evergreen forests (Alam, 1988).

These low hills extend north from India and are interspersed with narrow valleys of charas or streams. The soils of the Park are hill brown sandy loams with slight to strong acidity. The Park has well drained sandy loam soil with good humus but near streams the soils are sandy. Sandy loam soils also predominate in Raghunandan Hill RF but lack humus on hill tops, and in swampy areas forest soils are clayey.

### **1.2.2 Water**

Satchari NP and its landscape are characterized by high rainfall and a large amount of water drains from the hills into a valley fed by two main rivers, Khuway and Manu, which feed into the large wetland depressions or haors further north in Habiganj.

The Park and Raghunandan Hill RF form the catchment areas of a number of small streams, locally known as *charas*. These sandy-bedded charas pass through the Park and so aquatic habitats associated with forest cover, riparian (streamside) vegetation and associated animals are an important part of overall habitat composition. Many of these streams are subjected to intense collection of sand during the dry season for commercial sale, when almost all the charas remain dry. There is an acute scarcity of surface water in the dry season and in this period wildlife moves into adjacent areas in search of water.

Local erosion and accumulation of sand in the streams is a characteristic of the NP, and in the sandy stream beds can be found fossilized pieces of tree trunks.

### 1.3 Climatic Characteristics

#### 1.3.1 Temperature, Rainfall and Relative Humidity

The climate of the Park area is in general warm and humid, but with a cool and pleasant winter. The total annual average rainfall is 5173 mm. July is the wettest month, having an average of about 1370 mm of rain (Figure 2), while December is the driest, with no rainfall. April and May, the hottest months, have an average maximum temperature of around 33°C (Figure 3), while January is the coldest month with an average minimum temperature of about 14°C.

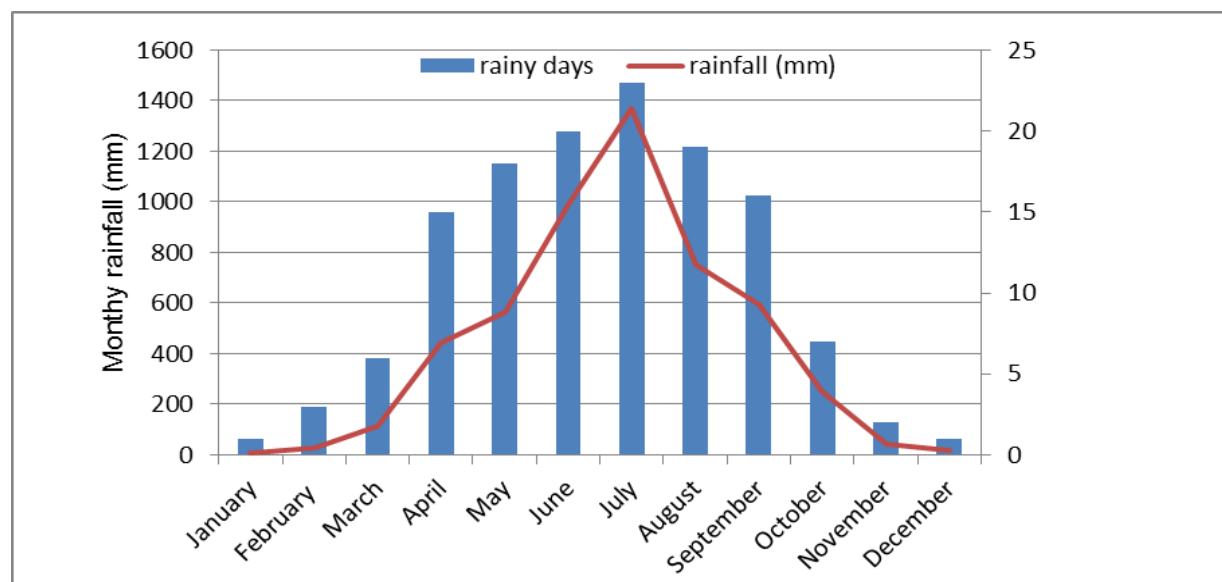


Figure 2: Monthly average rainfall (mm) and raindays in Habiganj District (B.M.D 2012)

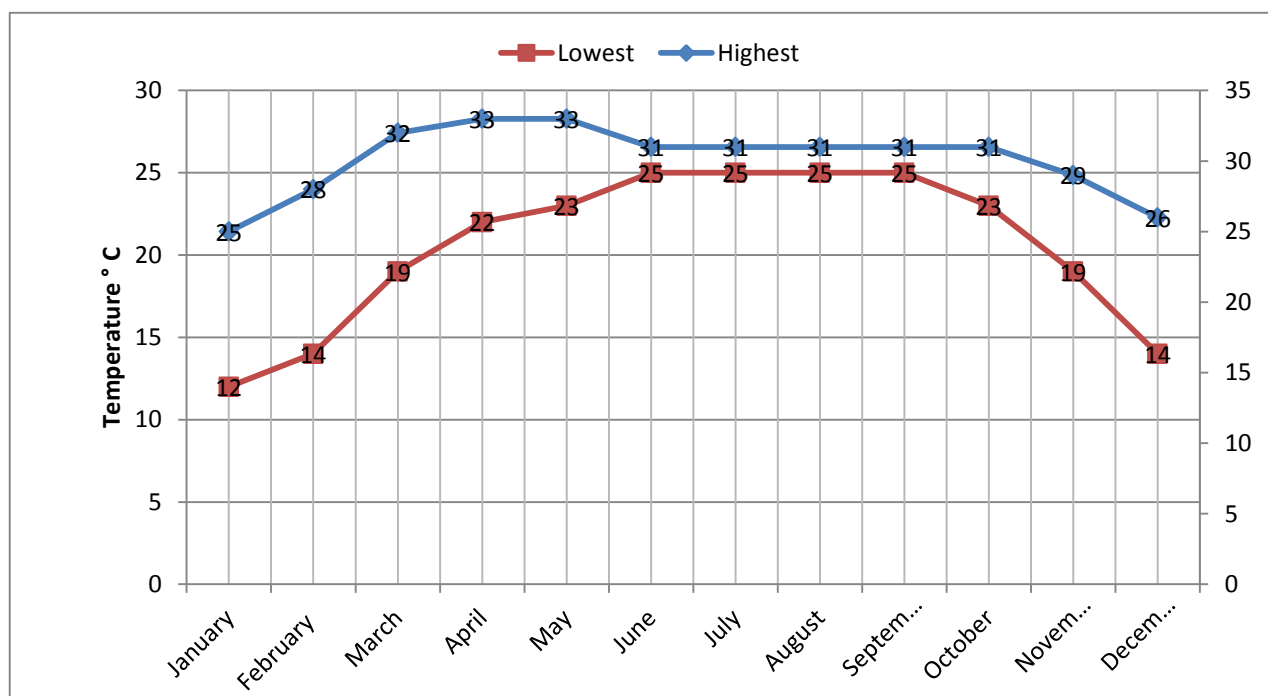


Figure 3: Monthly average maximum and minimum temperature at Habiganj (Source B.M.D 2012)

### 1.3.2 Climatic Hazards

Climatic hazard in Satchari region has been shown in Table 1.

Table 1: Climatic Hazards in Satchari region (Source B.M.D 2012).

Decades	Hazards Number		
	Flood	Drought	Cyclone/storm
1980	1	3	5
1990	3	3	4
2000	9	1	1
2010	6	5	6
Total	19	12	16

## 1.4 Ecosystem, Flora and land uses of PA and Landscape

### 1.4.1 PA Forest type and vegetation

The forests are mixed tropical evergreen and semi-evergreen, characterized by diverse multi-tier vegetation. Five broad types of habitats exist in the Park, buffer area and landscape:

- i) High forests - the remaining natural forests,
- ii) Plantations including exotics,
- iii) Grasslands and bamboos,
- iv) Wetlands, and

v) Lemon gardens, tea gardens, paddy fields and villages.

The first two habitats are the largest part (232 ha) of the NP.

Major parts of Raghunandan RF were converted to long rotation plantations of teak, mahogany, garjan, karai, sal, gamari, shiso, toon, pynkado, agar, jarul, cham, jam from the 1920s onwards. The NP comprises of 120 ha of natural forest and 112 ha of short rotation plantations. The plantations are of Acacia hybrid (*Acacia* sp.), Mangium (*Acacia mangium*), Akashmoni (*Acacia auriculiformis*), Malacanna (*Albizia falcataria*), and Eucalyptus (*Eucalyptus camaldulensis*). SNP's conservation value currently stems from the remaining natural forests and old plantations - most of the 120 ha appears not to have been clear felled in the past and this has developed/retained a tall, multistoried structure. This forest is dominated by chapalish (*Artocarpus chaplasha*), civit (*Swintonia floribunda*), shimul (*Bombax insignis*), fig (*Ficus* spp.) and bamboo (*Bambusa* spp. and *Melocanna* spp.). Of 245 species of plants recorded here, 86 species are herbs, 46 shrubs, 73 trees, 37 climbers and 3 epiphytes (Annex 3). In Magnoliopsida (Dicots), Moraceae is the largest family represented by 18 species, while in Liliopsida (Monocots), Poaceae (Gramineae) is the largest family represented by 12 species. Seven nationally threatened plant species (Khan *et al.*, 2001) occur in the Park: *Amomum aromaticum* (Zingiberaceae), *Aquilaria agallocha* (Thymeliaceae), *Cymbidium aloifolium* (Orchidaceae), *Globba multiflora* (Zingiberaceae), *Holigarna longifolia* (Anacardiaceae), *Rauvolfia serpentina* (Apocynaceae) and *Steudnera colocasiodes* (Araceae). Moreover, threatened tree fern, *Cyathea gigantean* and threatened gymnosperm, *Gnetum oblongum* Mgf. (Khan *et al.*, 2001) were also found to occur in the Park and landscape area.

A study by IUCN Bangladesh found the main trees to be: Jarul (*Lagerstroemia speciosa*), Chapalish (*Artocarpus chaplasha*), Shegun (*Tectona grandis*), Lohakath (*Xylia dolabriformis*), Kadam (*Anthocephalus chinensis*), Shimul (*Bombax ceiba*), Kanthal (*Artocarpus heterophyllus*), Champa (*Michelia champaca*), Chikrashi (*Chickrassia tabularis*), Koroï (*Albizia procera*), Garjan (*Dipterocarpus* spp.), Dewa (*Artocarpus lakoocha*), Gamar (*Gmelina arborea*), Jam (*Syzygium* spp.), Sundhi (*Michelia oblonga*), Bohera (*Terminalia belerica*).

There are many types of bamboo such as Jai bansh (*Bambusa burmanica*), Muli bansh (*Melocanna baccifera*).

#### 1.4.2 Landscape land uses and tenure

This management plan covers about 17,790 ha (Table 2) of which 242.30 ha is in the NP or core zone, 1,552.60 ha is in reserved forests forming a buffer zone, and about 16,000 ha is the landscape zone /impact zone (Table 2). A diverse land cover is found in the impact zone including homestead and village areas with trees, degraded forest, agricultural land, tea garden, and wetland. Agriculture, tea and degraded bushy lands dominate the impact zone Table x. The land use map of Satchari National Park is shown in Figure 4.

**Table 2: Land covers Statistics of SNP**

Landcover	Core (ha)	Buffer (ha)	Impact (ha)	Landscape (ha)
Forest	221.73	727.41	108.28	1057.43
Degraded forest	17.01	628.97	3666.73	4312.71
Homestead Plantation			47.23	47.23
Industry			7.66	7.66
Oil Palm Plantation		91.10	0.48	91.58
Sandbar			15.72	15.72
Settlement	0.91	0.03	2278.71	2279.65
Agriculture		0.67	5796.46	5797.12
Brick field			8.96	8.96
Builtup(Roads)	0.33	0.07	29.94	30.34
Tea	1.22	101.67	3622.07	3724.96
Water body	1.10	2.69	411.78	415.57
Grand Total	242.30	1552.60	15994.03	17788.94

Over the past few decades, land cover has changed significantly due to illegal felling, conversion of land to agriculture, and encroachment. The core zone and buffer zone are reserved forest land, with the legal title held by the Government of Bangladesh through the FD. A large part of the impact zone is also public land, leased long term to tea estates. The impact zone refers to the area where people live and cultivate who depend partly on resources from the protected area and who impact and may be influenced by the protected area by for example human-wildlife conflict.

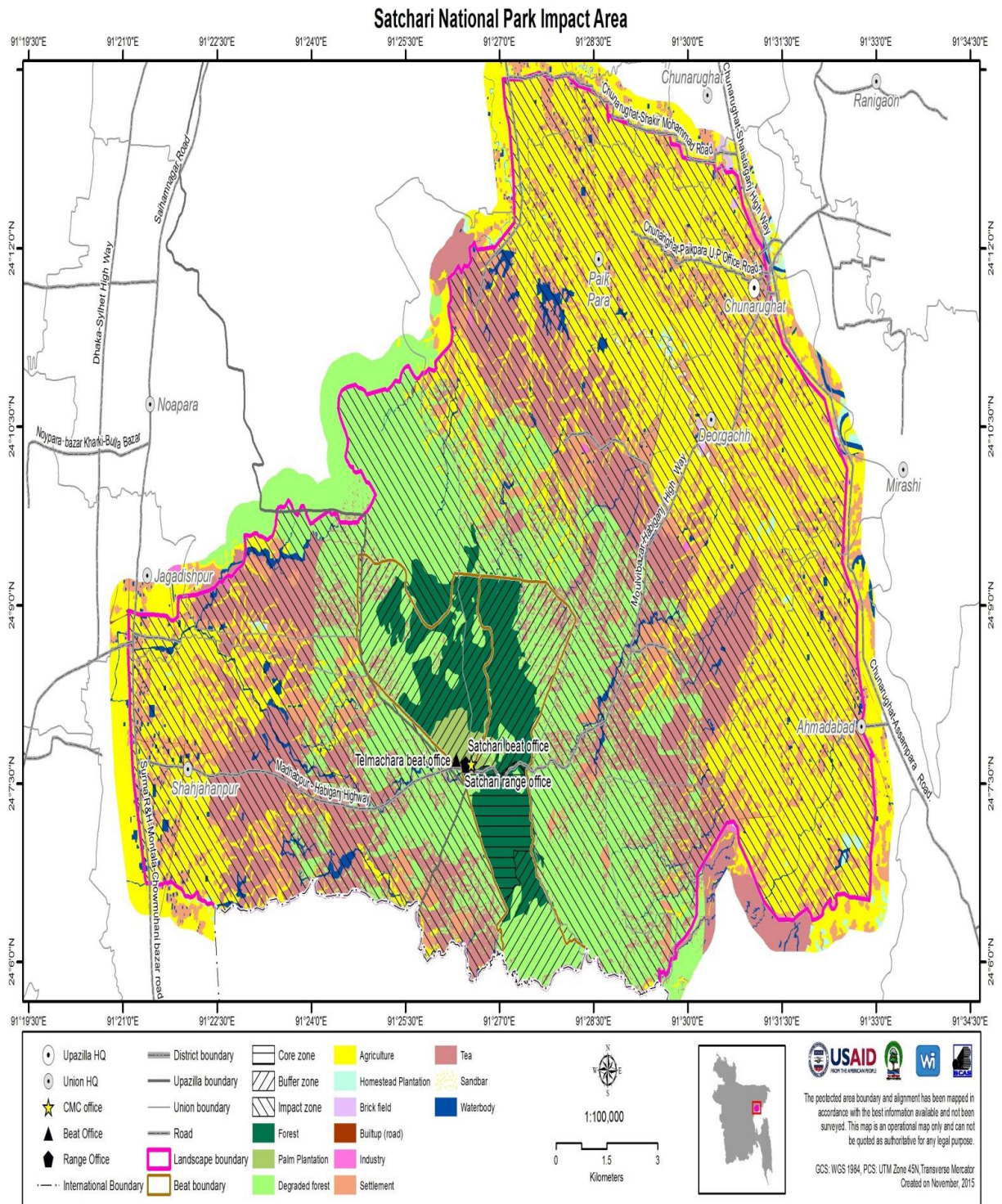


Figure 4: Land use map of the landscape area of Satchari National Park

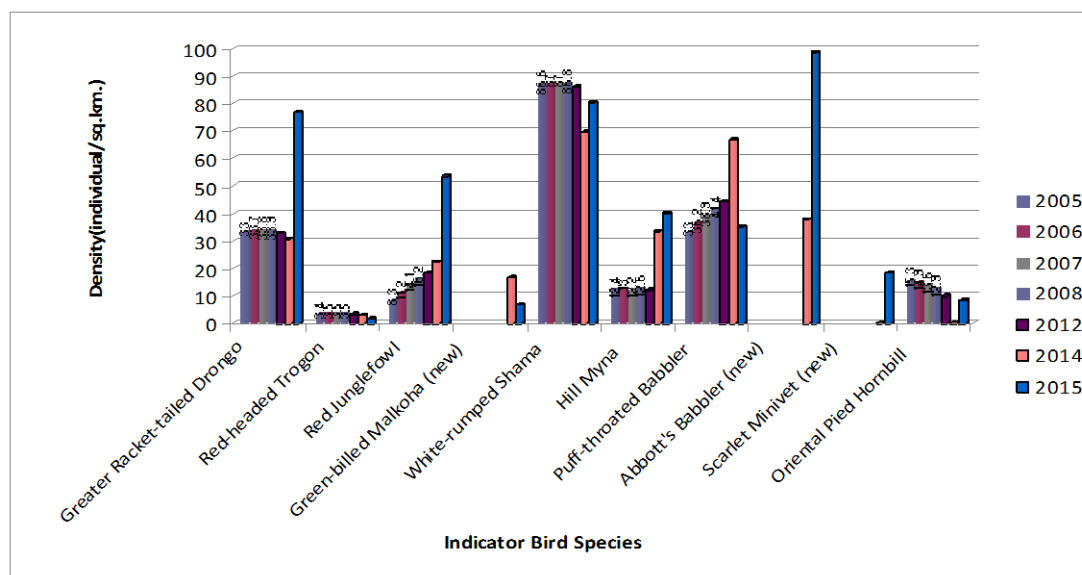
## 1.5 Fauna

The National Park has a diverse fauna. Identified species include 24 mammals (including 6 species of non-human primates), 203 birds, 6 amphibians, 18 reptiles (see Annex X). Viable populations of many small and medium-sized mammals that can survive in limited forest areas and/or disturbed or secondary habitats (e.g., Golden Jackal, small cats, Barking Deer, Wild Boar) are found in the NP. The NP is important for protecting seven globally threatened mammals: Western Hoolock Gibbon (*Hylobates hoolock*) endangered, Capped Langur *Trachypithecus pileatus* vulnerable, Phayre's Leaf Monkey *Trachypithecus phayrei* endangered, Northern Pig-tailed Macaque *Macaca leonine* vulnerable, Bengal Slow Loris *Nycticebus bengalensis* vulnerable, Fishing Cat *Prionailurus viverrinu* endangered, Asiatic Black Bear (*Selenarctos thibetanus*) vulnerable (still seen and reported to breed in nearby grassland –Chan Khola).

Out of 203 species of birds recorded in Satchari, 47 are considered common, 57 uncommon, and 56 rare, while the remaining 43 species have been recorded five or less times. Of these 40 species are winter visitors, mostly from the east Himalayan-Indian mountains and some from southern Siberia, and five are summer-monsoon visitors. The following globally threatened and near-threatened species have been recorded: White-cheeked Partridge (near-threatened) is an uncommon and secretive resident, Lesser Adjutant (Vulnerable) – one sighting flying over, White-rumped Vulture (Critically Endangered) rare past sightings although numbers in the region have now crashed, Slender-billed Vulture (Critically Endangered) – one older sighting before the crash in vulture numbers.

Locally important resident birds that attract bird-watchers include, Common Hill Myna (*Gracula religiosa*), Oriental Pied Hornbill (*Anthracoceros albirostris*), Red-headed Trogon (*Harpactes erythrocephalus*), Hooded Pitta (*Pitta sordida*), and several fruit eating species of pigeon including Green Imperial Pigeon (*Duculia aenea*).

Monitoring of a set of indicator bird species since 2005 (Fig. X) shows an increasing trend in Red Junglefowl, Abbott's Babbler, White-rumped Shama, Greater Racket-tailed Drongo and Hill Myna populations. The increasing densities of ground-understory dwellers (Red Junglefowl and Abbott's Babbler) indicate possible regeneration and improved ground vegetation. The health of the understory or middle strata is uncertain given that different species representing this strata show different trends. The population of Common Hill Myna has increased, while the other species of the top strata (Oriental Pied Hornbill) was recorded in 2015 after absence in 2014, so the condition of top canopy may be stable.



## 1.6 Socio Economic Profile

### 1.6.1 Population and settlement

In the Satchari landscape covered by this plan there are 38 villages under 4 unions (Deourgas, Paikpara, Shahjanpur and Ahmedabad) of two Upazills Chunaroghat and Madhabpur in Habigonj District. A total of about 4,700 households live in these villages with a total population of just over 89,000 people (47% Male 53% Female). Among them 70% are Muslims and 30% are Hindu and Buddhist. A significant part of the population is of diverse origins brought in the 19<sup>th</sup> century to work on the tea estates that surround the forest. 'Tipra' is the only ethnic community living in the landscape area of the PA, with a village on the edge of the NP and well defined culture and traditions.

### 1.6.2 Infrastructure and services

Communication system is good in the landscape area. There are schools, market area, concrete road, earthen road and different organizations, as shown in Table 3.

**Table 3: Infrastructural properties of Satchari National park area**

Name	Area/ number	Remarks
Metalled/Pucca road	12 km	Old highway cuts through the area
Earthen road	56 km	-----
Educational institute	28	Primary school-19, High school-5, College-1 and Madrasa-3
Bazaar	13	At village, Union and Upazilla level
Community Hospital	7	At village and Union level
Upazilla health clinic	2	At Upazilla level
Religious institute	53	Mosque-41, Mandir-12



### **1.6.3 Livelihood activities and resource uses**

An estimated 65% of people are poor, followed by middle class 22-25%, extreme poor 17-20%, and 4-5% is rich. This picture in tribal community is different, about 65% HHs are poor and 12% extreme poor and the rest belong to rich (5%) and middle class 14%. The major primary occupation of the local people is agriculture (65-70%), principally paddy cultivation, followed by day labor (20-25%), fuelwood and timber poaching (3-5%), small business (2-3%), service (3%) and overseas employment (1-2%). The literacy rate is low (35-40%). Currently 80-85% of children go to school. In average, about 15 % of people of working age in the area (including tea estates) are unemployed, this figure varies with seasons, unemployment is highest in Chaitra, Baishakh, Jaistha, Ashar.

Almost all the households in the landscape are involved in rearing livestock for extra income. NTFP's such as cane and bamboo also are an important source of income. Lemon cultivation and livestock rearing is the main income source of Tipra villagers (Nishorgo support management plan for SNP 2010-2015), who also help guard and patrol the NP. Day laborers also collect fuelwood on their off days.

### **1.7 Past Management System and Plans**

Scientific forest management in South Asia started during British rule in 1876. In those days, only valuable trees were extracted to get revenue. Then a forest management plan or work plan was prepared for each forest division. This management plan guided day-to-day work: where to cut trees, how much to cut and what to plant in the cleared land each year. The first working plan for this region was prepared in 1938 for 1938-1947. Under Ahmed working scheme, a system was introduced in 1950 for conservation of selected areas for artificial regeneration. For the next four decades, plantation development was the main thrust of forestry. The last forest management working plan for Sylhet Division covered 1999-2008. Prior to declaration of Satchari National Park this forest was declared as Reserve Forest in 1957. Soon after the designation of the NP the first five year management plan for Satchari National Park (NP) as developed under Nishorgo Support (NSP). This is the second management plan for Satchari NP.

During the NSP a Co-management Committee was established, but zonation was not developed. The concept of core zone, buffer zone and impact zone has been included in this plan based on enhancing people's participation in conservation.

## 2. Emerging Issues

### 2.1 Administration of Forest PA and associated facilities

Satchari National Park is administered and managed by the Forest Department's WMNC Division, Habigonj. At present SNP has only four personnel (Table 4). Although it is a small NP some additional staffs are needed. These FD staff lack adequate transport and field equipment such as motor cycle Computer, GPS. The Offices and quarters of range officer and beat officers need to be renovated.

**Table 4: Manpower involved in management of SNP**

Number of staff	Satchari beat
ACF	
Forest Ranger	0
Deputy Ranger	0
Forester/Beat Officer	1
Forest Guard	1
JWS	1
Plantation mali	1
<b>Total</b>	<b>4</b>

### 2.2 Co-management institutions and associated facilities

Traditional management strategies have failed to conserve forest PAs, so a co-management strategy was adopted in 2005. Collaborative management or co-management is defined as a situation in which two or more social actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources.

For Satchari National Park the relevant co-management actors are the FD as legal custodian of PAs, and local people.

Co-management institutions comprise a co-management council, co-management committee, peoples forum (PF), several village conservation forum (VCF), community patrol group (CPG), and Forest conservation club (FCC)/Youth club, numbers are given in table 5.

**Table 5: Co-management Structure of SNP**

SL No	Name of Activity/ Organization	No organization	Member
1	Co management Council	1	56
2	Co management Committee (CMC)	1	24
3	Peoples Forum (General Body)	1	76
4	Peoples Forum (Executive Body)	1	11

5	Community Patrol Group (CPG)	2	40
6	Village Conservation Forum (VCF)	38	1720
7	Forest Conservation Club	5	100

A co-management committee, responsible for overall management of a PA in Satchari National Park consisting 24 members, is elected by the co-management council. The functions of both bodies follow a guideline specifying the membership of each category of stakeholder, their election procedures and the tasks to be performed. Members of the committee comprise of: 2 representative from civil society (local leaders, social workers etc), 12 representative from local government and government agencies (UNO, UP members, FD etc), 14 representative from local people (resource user groups 1, ethnic community 2, FCC 2, CPG 3 and Peoples Forum 6), other government organization representatives 1. Range Officer acts as Member-Secretary of the committee.

People's Forum has two bodies, one general body with 76 members (two from each VCF) and an executive body with 11 members. There are two CPGs with 40 members charged with protecting forest. A total of 38 VCFs have a combined membership of 1720 and there are five forest conservation clubs/ Peoples Clubs comprised of 100 members.

### 2.3 PA Boundary Delineation

SNP is bounded by eight tea gardens and the Indian boarder. The park was notified by the Government in 2005, no efforts have so far been made to physically demarcate the boundaries in the field (and an enlargement is recommended – see later).

### 2.4 Forest and habitat management intervention

As previously noted a significant part of the NP comprises of plantations. Prior to designation as a NP the FD cleared undergrowth and regenerating saplings in what is now the NP to plant cane - Jali bet (*Calamus guruba*) and Golla bet (*Daemonorops jenkinsianus*), which now covers part of the undergrowth. Plant species are listed in Annex 3. In the mid 1970s an oil palm (*Elaeis guineensis*) plantation was raised immediately north of the NP with a huge investment (Choudhury et. al. 2004). Now this is considered to be one of the major threats to that park (Mukul 2007) as oil palms in Bangladesh have no commercial value, and it is widely recognized that they have little or no value for wildlife (various studies in southeast Asia). Since designation as a NP, a total of 115 ha have had direct interventions through plantations by Bangladesh Forest Department within Satchari National Park from 2007 to 2014 (see Annex 5), some of them turned into forest and some failed.

### 2.5 Encroachment, illegal extraction and forest destruction

A total of just 2.13 ha of SNP is encroached by settlements, Tea Garden, and Tipra para (Table 2). Illegal removal of forest produce (e.g. fuelwood, medicinal plants and small timber) is the main problem in SNP. Tipra villagers are engaged in a small area of lemon cultivation and also in grazing inside the PA, the latter affects regeneration of forest.

Mostly elite are directly or indirectly involved with forest resource extraction. But the encroachment problem is minimum in SNP as it is surrounded by tea gardens. The eight tea

gardens (Table 6) around the park act as a natural barrier to permanent settlement in the NP but encourage extraction of forest resources (see below).

**Table 6: Tea Estates surrounding the Satchari National Park and their level of impacts on Forest**

Sl. no.	Name of the tea estate	Location	Impact
01.	Chaklapunji Tea Estate	East-South, adjacent	Minor
02.	Chandpur Tea Estate	North-East, adjacent	Major
03.	Kapaichora Tea Estate	North, adjacent	Major
04.	Laskarpur Tea Estate	North-East, adjacent	Major
05.	Nababkhan Tea Estate	East, adjacent	Minor
06.	Satchari Tea Estate	West-South, adjacent	Major
07.	Surma Tea Estate	West, adjacent	Major
08.	Teliapara Tea Estate	West, adjacent	Medium

## 2.6 Existing dependence on and use of forest resources

Villagers are more or less dependent on forest resources. Timber continues to be felled illegally; fuelwood is extracted on a large scale, bamboo and building materials on a medium scale, wildlife, fruits, vegetables, and sun grass on a minor scale, while honey, cane, and medicinal plants are hardly used here. In total 287 people (246 men and 41 women) were identified in a survey in 2013 to be regularly entering the NP for resource collection.

CNRS has identified three categories of stakeholder in Satchari NP:

**Primary stakeholders (13)**- involved with direct extraction of resources or directly affecting the forest. Three primary stakeholders (moholdar, fuelwood collector, illegal timber feller) have major stakes, being responsible for forest degradation (Table 8), three (bamboo collectors, house building material collectors and lemon cultivators) have minor stakes, whereas the remainder have only minor influence on the NP. Most of the primary stakeholders are poor and earn their livelihoods by carrying out forest-based activities.

**Secondary stakeholders (5)** – indirectly linked with the forest, involved with trading or exert influences on the forest.

**Institutional stakeholder**- involved with developmental activities and administration of the adjoining areas, notably Forest Department, NGOs, CBOs, Police, BDR, banks, Union Parshads and Gram Sarkar.

**Table 7: Stakeholder groups in Satchari NP**

Stakeholder	Description	Role/Description of activities	Level of stake
<b>Primary</b>			
Moholder:	Rich and influential people from the outside of the forest.	Legally clear fell forest through winning auction. In addition to timber trees; completely destroy all over understory vegetation.	Major
Illegal Tree feller:	Adult male from some villages,	Selectively fell the valued timber trees. Usually enter the forest at night. Reduce	Major

Satchari National Park Management Plan 2016- 2025

Stakeholder	Description	Role/Description of activities	Level of stake
	unemployed people from tea state,	forest cover, thus destroy habitat They come from some nearby settlements	
Fuelwood Collector:	Forest villagers, tea garden labour and local and outside people	Collect dead trees,small trees, non-timber trees, tree branches etc.	Major
Honey Collector:	Forest villagers and local and outside people	Collect from forest seasonally or occasionally.	Negligible
Bamboo Collector:	Individual/group local poor forest villagers	Collect bamboos from forest for domestic or commercial use.	Medium
Sun-grass Collector:	Forest villagers, Local poor people and employed labor	Harvest and bundle and carry as head load or shoulder load.	Minor
Fruit collectors	Local poor people	Mainly collect Kanthal	Negligible
Hunter:	Elite and rich from the area and outside, Forest villagers.	Mainly hunt game birds, wild fowl, wild boar, small deer and others.	Minor
Vegetable colector	Influential local people and some ethnic people (Tipra villagers)	Collect vegetables like kachau, Dekhisak.	Minor
Medicinal Plant:	Local and adjacent area villagers.	Some limited species not on large number.	Negligible
Lemon Cultivator:	Forest villagers	Clear the area by weeding and than plant graft/sapling of lemon plant.	Medium
Sand Collector:	Outside people	Dig up stream beds which have been silted up and collect sand.	Minor
House building materials	Forest villagers, surrounding people.	Collect various materials as per need.	Medium
<b>Secondary</b>			
Saw Mill Owner:	Individual/group	Encourage illegal tree felling and trading.	Minor
Furniture Owner Shop:	Individual/group	Have a good link with illegal feller and encourage illegal felling by purchasing illegal timber.	Minor
Brick field owner:	Individual	Use fuelwood and small timber, encourage illegal tree felling	Minor
Transport Driver (van,truck):	Individual/group	Help in illegal tree transportation.	Negligible

Table 7 shows the major resource extraction from the NP and reserved forest. The main purposes for resource extraction include meeting household needs and selling for added income. Besides a small tract of forest land used by a Tipra village for cultivating Lemon, green chilli, ginger etc.

Laborers of the tea estates earn very low wages for their subsistence and the rate of unemployment is very high among tea estate families. Most of the tea laborers collect their daily fuelwood and housing materials from the nearby national park and reserve forest.

## 2.7 Gender, youth and ethnic communities

There are 38 villages within the landscape of Satchari NP inhabited by around 4,700 households with 89,048 people (Male 41,628 and Female 47,420). The rate of literacy of the villagers is reportedly only 29 %.

Tipra is the only ethnic community living in the the NP. This ethnic group has its own culture and tradition.

## 2.8 Ecotourism and education/information

Nature based tourism has developed with the aim of promoting biodiversity conservation and educating the visitors as enlightened eco-tourists. However, due to good access, SNP has turned into a mass tourism site. Better management of visitors so that this does not harm conservation objectives in the NP is a high priority. SNP provides scenic beauty of green hills with natural forest and trails. It has a rich biodiversity, particularly birds and other wildlife and plants.

Existing tourism facilities in SNP are:

- Nature interpretation center
- Three foot trails (hiking time nearly 30 minute, 1hour and 3 hour).
- Toilets.
- Watch tower in foot trail and resting shed.

## 2.9 Existing carbon stock (by land cover)

Carbon stock (in Co<sub>2</sub> equivalent) is an indicator of forest condition and contribution to mitigating climate change. A carbon inventory was conducted in Satchari NP in 2015 which is presented in table 8.

**Table 8: Summary of Carbon Inventory in SNP (source: Latif et al. 2015) (Mg = mega gram or ton)**

PA	Live trees CO <sub>2</sub> (Mg/ha)	Dead trees CO <sub>2</sub> (Mg/ha)	Non- trees CO <sub>2</sub> (Mg/ha)	Litter CO <sub>2</sub> (Mg/ha)	Soil CO <sub>2</sub> (Mg/ha)	Total CO <sub>2</sub> (Mg/ha)
SNP	219.1	0.3	1.0	11.5	33.9	265.8

## 2.10 Management Constraints /Challenges

The management objectives in Satchari NP are set out in Table 9.

**Table 9: Management objectives of Satchari NP and this plan**

Management objectives	Management Challenges
To maximize the population of Western Hoolock Giboon in SNP and its landscape	Loss of closed canopy (gibbons cannot cross areas without tree cover) Lack of trees forming diet of gibbons in exotic plantations within NP and in buffer forests and challenge of converting exotic plantations to restored natural forest Weak protection and high demand for timber Road forms boundary of NP
Restore and maintain as far as possible forest biodiversity	Weak protection and maintenance of Wildlife Habitat. Poor regeneration of forest due to grazing and other extraction Collection of forest products – fuelwood, , wild fruits - within the PA. Road separates NP from buffer area (roadkills, linear gap in canopy) High pressure on forest resources due to lack of economic opportunities for tea garden inhabitants/laborers Lack of trained professionals, staffing and infrastructure. Incentives and funds for CPGs
To strengthen co-management for sustainable biodiversity conservation in SNP.	Lack of trained professionals who make an effective collaboration among the CMC, Stakeholders and FD. Inadequate financial support for the community patrol groups (CPG).
Sustainable and responsible nature based tourism providing an income to CMC and local stakeholders	Lack of infrastructure, etc. Lack of awareness among the tourist, local people about conservation and responsible tourism. Lack of controls over mass visitors
To divert forest resource users to other sustainable climate resilient livelihoods	Limited economic opportunities Inability to diversify livelihoods within tea gardens Knowledge and training lacking for high value climate resilient crops

## 2.11 Conflicts and Resolution

The main sources of conflict among local people are: land dispute, children affairs, livestock grazing, marriage related affairs, family affairs, money lending, local politics, local elections etc.

Conflicts are resolved by arbitration by local elites and public representatives (MP, UP chairman, members), Gram Sarker. If the local efforts are not fruitful it may lead to filing cases with Thana-police and ending up in courts.

There is a huge conflict between FD local staff and local people, particularly with loggers and people who graze cattle within the NP and reserve forest. Sometimes there are violent conflicts with loggers during patrolling, leading to exchange of fire and even murder.

## **2.12 Climate change impacts on vegetation, fauna and ecosystem services**

Climate change has become a long term issue in the recent years. Average increment of temperature in Sylhet region yearly is +0.11°C. From recent participatory community vulnerable assessment (PCVA) three types of climatic trend and hazard have been identified in the SNP: cyclone/storm, drought and flood.

These climatic phenomena can impact vegetation, fauna and ecosystem services. Change in vegetation pattern alters other ecosystem services. More intense storms with heavy rainfall can directly damage vegetation, particularly trees, more likely is soil erosion when tree cover is reduced (as the root system of vegetation prevents soil erosion and helps to retain soil water through infiltration) in the absence of forest, intense rainfall causes landslide and rapid surface run-off, and in the dry season there is lower flows in streams with loss of surface water for aquatic life and wildlife.

From the recorded data climatic hazards appear to be more frequent compared with 20 years ago, and are expected to be more frequent in future. The main adaptation measure within the NP and buffer area is to maximize tree cover.



## 3. Institutions

### 3.1 Forest Department

Forest Department is formally responsible for the protection and conservation of SNP. To complement limited resources co-management has been adopted with active involvement of local communities in supporting protection of remaining forest. Nevertheless for more effective management of the NP and its buffer area a specific team of FD is needed (Table 10). An enlarged FD team will also need sufficient modern equipment (Annex 7)

**Table 10: Present and required manpower of FD for SNP**

Number of staff	Existing staff	Additional Requirement	Total
ACF	0	1	1
Forest Ranger	0	1	1
Office assistant cum Computer operator	0	1	1
Deputy Ranger	0	1	1
Forester/Beat Officer	1	1	2
Forest Guard	1	3	4
Junior Wildlife Scout (JWS)	1	0	1
Plantation mali	1	1	2
Care taker	0	1	1
<b>Total</b>	<b>4</b>	<b>10</b>	<b>14</b>

### 3.2 Co-management structure

Co-management in SNP is based on a system adopted generally for PAs in Bangladesh based on four bodies:

1. Co-management Council – a representative body of government and community stakeholders, including representatives of 3
2. Co Management Committee (CMC) – the executive body of 2
3. Peoples Forum (PF) – comprising two representatives of each VCF
4. Village Conservation Forum (VCF) – a small group of mainly forest/natural resource users in each impact zone village.

### **3.2.1 Structure, roles and responsibilities of Co-management Council**

To establish participatory PA management through co-management, the council has been formed with the full support and active participation of all relevant stakeholders in SNP and its landscape. Different categories of stakeholders select/ elect their own representatives for the Co-management Council. The categories are: Civil Society (maximum 5 persons), Local Administration (maximum 3 persons), Forest Department (maximum 8 persons), Local Government (Union Parishads, maximum 5 persons), Local Community (maximum 39 persons largely from the People's Forum and Community Patrol Groups, but including other members of civil society and any minority groups), and representatives from other Government bodies (maximum 5 persons). The Local Member of Parliament, Upazila Parishad Chairman and Divisional Forest Officer are the advisors of the council. The UNO and the respective Range Officer serve as the Chairman and Member Secretary of the Co-management Council. The Co-management Council can have a maximum of 65 members, of which at least 15 must be women.

The roles and responsibilities of Co-management Council are given below:

- To ensure the participation and take care of co-management activities of PA by involving local government and administration and civil society representatives.
- To grant and discuss the yearly work-plan of PA
- To monitor and evaluate the granted plan of PA and adjacent area
- To provide support to CMC
- To provide advice and role for distributing goods and services produced from PA among the stakeholders
- To dispute any kind of conflict produced from co-management implementation
- Ensure the keeping of all income-cost of co-management activities

Organize yearly meeting along with council meeting.

### **3.2.2 Structure, roles and responsibilities of Co Management Committee (CMC)**

The CMC is the executive body of the Co-Management Council.

- DFO and Upazila Nirbahi Officer (UNO) are the advisors of the CMC
- The respective Range Officer (RO) serves as the Member- Secretary;
- People belonging to the respective categories/groups elect members for the CMC according to the quota mentioned in government order;
- All members are elected for 2-year tenure except the nominated (ex-officio) members and no person can be a member for more than 2 consecutive terms;
- The members of the CMC elect one chairperson, one vice-chairperson and one treasurer among themselves;
- The maximum number of members of the committee is 29.

Responsibilities of the CMC are to:

- enable voluntary work in forest conservation and management;
- facilitate effective conservation of natural resources;
- coordinate and ensure effective participation of all the stakeholders in forest conservation;

- help in the implementation of adopted development activities;
- prepare annual work plans;
- scrutinize the activities of VCF and PF;

### **3.2.3 Structure, roles and responsibilities of Peoples Forum (PF)**

The peoples Forum is formed by election of representatives from each VCF within the Protected Area landscape. All key stakeholders should be represented, particularly women, youth, lower income households, and important resource user groups. Thirty-three percent of the members of the people's forum will be women. Its role is to:

- Ensure uses of natural resources and livelihood issues are taken into account in the preparation and implementation of Protected Area Co-Management plans;
- Recommend and support initiatives for protecting natural resources in SNP and conserving biodiversity, and assist the Forest Department and CMC in implementing habitat restoration, nature tourism activities and other management activities in the NP;
- Assist preparation of overall management plans and annual work plans, particularly with regard to the landscape area conservation and development around the NP;
- Represent the interests of VCFs/local communities in decision making;
- Provide any other required assistance to the CMC.

### **3.2.4 Structure, roles and responsibilities of Village Conservation Forum (VCF)**

Village conservation forum is an inclusive grassroots tier in the co-management institutions, where the poor villagers can ensure direct participatory representation in a democratic co-management process.. It offers equal opportunities to all inhabitants of a village, including women and ethnic minorities to discuss, criticize and propose relevant activities for take up by the stakeholder bodies in co-management. The steps to form a VCF are:

- Organize village meeting to describe the objective of the census;
- Household census to identifying the position and condition of the village people;
- At the time of census, clearly describe the power and responsibilities of the VCF, PF and CMC; and that 50% of the committee members should be women;
- Form VCF with all households interested to be involved;
- Elect Peoples Forum representatives (one man, one woman) from the VCF.

Responsibilities of the VCF are to:

- monitor and discuss the implementation of any activities and the development projects in their area and suggest to PF and CMC to improve the quality of work;
- select laborers for any sorts of activities organized by CMC or FD coordinated with PF, CMC and FD;
- control anti-conservation activities and inform the CMC if any such activities happen in their village;
- give comments and recommendations for CMC activities through PF,
- review project proposal and financial document of CMC if they have any question or confusion, if they are not satisfied by the answer of the CMC they can raise the question in front of Divisional Forest Officer (DFO);
- meet at least four times in a year, or more often according to the necessity of community.

### 3.3 Training and capacity building

To develop skills and capacity among the SNP landscape communities, many of whom are poor with limited capacity to take up better earning occupations and enterprises, several government and non-government organizations (NGOs) are active in the area. Some NGOs work on social welfare, some work on economic solvency, some work on climate change, some work on livelihood programs. NGOs are now the leading training and capacity building institutions serving local people see Table 11 for details.

Skills of local level BFD staffs, co-management institution members, resource users groups, and other local stakeholders need enhanced capacity and skills such as: organization building, leadership and management, livelihood enterprises, financial management including revolving funds, responsible nature-based tourism, human-wildlife conflict mitigation, conservation of biodiversity.

**Table 11: List of institutes with their training and capacity building programs**

NGO/CBOs	Area	Capacity building program
CNRS	SNP CMC area	Climate change, Biodiversity Conservation, VCF Formation,
CARITAS	Surmagate	Livelihood activities
FIVDB	Saheb Bazar	AIGA, Education, Micro-credit
IDEA	SNP CMC area	Sanitation Programme
ASA	Saheb Bazar	Microcredit
PASKP	Saheb Bazar	Sanitation, Health
BRAC	Surmagate	Micro credit, Health and Education
TMSS	Majortilla	Micro credit, Health
Grameen Bank	Saltikor	Micro credit

CMO's (both CMCs and PF) functional and financial capacity needs to be built so that they follow good governance practices of inclusiveness and transparency, can in future prepare through participatory processes adaptive management plans, and can mobilize resources and funding to implement this and future plans.

Ultimately, the CMCs have to continue to deliver valued services or benefits through protecting and sustaining biologically significant eco-systems and improving the lives of people dependent on the area. Regular capacity enhancement is needed to cover changes in membership, new challenges, and best practices as they emerge. Learning will be enhanced and continue when CMC leaders make study/ cross visits, attend and participate in workshops and symposia, and attend trainings on appropriate skills related to NRM and climate change adaptation.

## **4. Values of protected area**

An ecosystem is defined as ‘a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit’. The SNP and associated landscape ecosystems have intrinsic value for their biodiversity, and in addition provide ecosystem services - "the benefits people obtain from ecosystems".

### **4.1 Biodiversity**

The park has a rich flora (about 245 known species) and fauna (24 mammals (including 6 species of non-human primates), 203 birds, 6 amphibians, 18 reptiles). It is a key site for seven globally threatened mammals including four charismatic primates, as well as seven nationally threatened plant species.

### **4.2 Extractive use**

The park is surrounded by eight tea estates, and several villages including one “Forest Village” with formal rights in forest lands inhabited by 24 households of Tripura ethnic community. People from surrounding villages, specially the tea estate laborers and forest villagers, depend on forest resources in various degrees. Although lemon cultivation bordering the NP is the main economic activity of the Tipra forest villagers; 12 types of NTFPs are currently obtained from the Park and adjacent forests: medicinal plants, bamboo, cane, sun grass, honey, wax, fish, lac, leaves and seeds, wild animals (Mollah *et al.* 2004). More significantly there is large scale extraction of fuelwood, and bamboo and building materials (sand) are also extracted in substantial quantities. Extraction of resources from the forest is seasonally dependent.

### **4.3 Non-extractive use - tourism**

Satchari NP is 130 km away from Dhaka and bordered by a national highway. The easy accessibility of Satchari from Sylhet and Dhaka combined with forest ecosystem and nearby scenic tea gardens makes the NP attractive for tourism. The numbers of visitors rose to a peak in 2012-13 remarkably, but has since declined. Already the NP has facilities for visitors and with greater publicity visitor numbers could increase further, although these will need to be controlled and directed away from the core area to ensure no adverse impacts on the wildlife and ecosystems of this small NP.

### **4.4 Climate change mitigation and other regulating ecosystem services**

Forests contribute to carbon fixation, which mitigates global warming. Forest degradation, therefore, contributes to global warming, while conversely forest restoration mitigates climate change. Maintaining forest cover, reducing degradation and ensuring forest recovery in SNP and its buffer area, and tree cover in its wider landscape contributes to net carbon sequestration. Forest cover helps to regulate water flows into the charas and rivers fed from Satchari and ensure a slower release of water that helps to recharge groundwater, but is compromised in some places by forest degradation and also by sand mining from the charas.

#### **4.5 Cultural Value**

The inhabitants of Tipra para have a rich historical, social and cultural heritage associated with the forest, and have for generations lived in the forest and subsisted significantly from its resources. Their culture is distinct from that of Bangalis as reflected in their dance, music, festivals, management of community affairs, dress and diet.

#### **4.6 Archeological value**

This is one of the few places in Bangladesh where petrified pieces of wood can be found along the sandy chara beds, evidence that there has been forest here since long before humans existed. .

## 5. Threats

A number of threats have been identified in SNP through focus group discussion. The major causes for the decline in forest in order of magnitude are as follows:

1. Resource collection (fuelwood, house building materials, hunting, bamboo and cane collection)
2. lemon cultivation
3. FD's plantation strategies
4. livestock grazing
5. others

### 5.1 Resource extraction

A summary of information collected on resource exploitation from SNP is provided in Table 12. A total of 12 different types of resource are extracted from the forest. Of them, timber ( both legal and illegal extraction) and fuel wood are extracted on a medium scale; bamboo and building materials on a small scale and remain as major threats to the biodiversity of the SNP. Wildlife, fruits, vegetables, sun grass etc. are used on a minor scale, while there is negligible use of honey, cane, and medicinal plants. The collection of these forest resources has removed the indigenous, non-traditional timber trees and small trees and shrubs. All these contribute to forest degeneration and poor abundance of these exploited species. Sand extraction from the charas that flow through the NP is a particular issue and destabilizes banks and slopes in the forest, and results in vehicles and teams of workers entering.

**Table 12: Resource Extraction from Satchari National Park (SNP)**

Name of Resources	Resource collector	Extent	Impact	Future Risk
Timber	Some rich and influential people from outside of the forest.	medium	Reduce forest density and canopy, Loss of biodiversity	High
Fuel wood	Adult male from some villages, unemployed people from tea state.	Large	Loss of undergrowth and regeneration of habitat and forest biodiversity	High
Wildlife	Forest villagers, tea garden labor and outside people.	Little	Populations depleted.	High
Honey	Forest villagers and local and outside people	Little	None	Negligible
Bamboo	Individual/group local poor forest villagers	Medium	Loss of habitat for undergrowth and bamboo dependent species	Moderate
Sun-grass	Forest villagers, Local poor people.	Little	None	Negligible
Fruit	Local poor people.	Little	Hamper forest regeneration	Little
Cane	Local people.	Negligible	None	Negligible

<b>Name of Resources</b>	<b>Resource collector</b>	<b>Extent</b>	<b>Impact</b>	<b>Future Risk</b>
Vegetables	Influential local people and some ethnic people (Tipra villagers)	Minor	None	Negligible
Medicinal Plant	Local and adjacent area villagers.	Little	Negligible	Negligible
Sand	Outside people	Negligible	Destruction to habitat, affects water flow and erosion in streams	Minor
House building materials	Forest villagers, surrounding people.	Medium	Reduce abundance of small tress, Loss of Habitat biodiversity	Medium

## 5.2. Lemon cultivation

Lemon cultivation is done by the Tipra tribe (Forest villagers) in some areas, allocated by the FD the purpose. This is their traditional activity and is their major source of income. The cultivation practices include clearing of the area and subsequent weeding. Thus the activity contributes to habitat loss and poses a threat to the local biodiversity. The lemon farming covers an area of about 4-5 ha and thus has a limited impact on the forest.

## 5.3 Plantations

In the past the FD felled natural forest and old mixed native plantations and replaced these with plantations of exotic trees which are of very low biodiversity value. In addition just prior to declaration as a NP in the area where native forest tree cover was retained the undergrowth was completely cleared to plant cane, which adversely affected vegetation and habitat for a range of wildlife and also resulted in removal of saplings affecting regeneration. All such forestry operations are now banned through designation as a National Park, but remain a threat in the buffer area.

## 5.4 Livestock

The introduction of livestock is prohibited according to the “Wildlife Preservation Act” (2012), but livestock grazing is common and destructive, particularly by interfering with forest regeneration. Villagers (including Forest Villagers and Tea Estate laborers) maintain cattle which invariably graze in the NP.

## 5.5 Encroachment

This is a minor issue, a total of 2.13 ha forest land in the NP has been encroached for settlements, Tea Garden, and Tipra para in SNP (under 1%). Among the encroached area over half (1.22 ha) is tea garden and the rest is settled by Tipra community. They cultivate lemon within the NP. The tea estates and Tipra community should be restricted from expanding further.

## 5.6 Human- wildlife conflict

There are two issues. Monkeys raiding orchards and crops is reported in fringe villages including the Forest Village and surrounding Tea Estates. It is important that affected landowners do not take any response that could injur or kill threatened primates, growing crops



less attractive to monkeys is preferable. Secondly, the road passing through the edge of Satchari NP results in roadkills and impedes safe movement of wildlife.

### **5.7 Hunting**

Widespread hunting in the past contributed greatly to the reduction in wildlife diversity in the RF. Hunting in RF and within the PA is now less, mainly because there is less wildlife. However, some level of hunting is still done. The local ethnic community hunts /traps some wildlife; the important species sought are Wild Boar, Red Junglefowl and a few otherspecies of birds. It is reported that sometimes people from distant places come to the forest for bird hunting. The extent of any trapping of reptiles for trade is unknown, but may also be a threat. Therefore this poses a threat to the wildlife of the SNP.

### **5.8 Conflict between conservation and development**

At present, there are modest numbers of visitors, but future development of visitor facilities and growth in nature based tourism could threaten the primary purpose of conservation if not planned and regulated.

### **5.9 Water scarcity**

In the dry season all the charas inside the NP become dry And most of the charas are silted up with sands. Due to the scarcity of surface water some mammalsare reported by local people to move into neighboring areas.

## **Part 2: Analyses of Current Management Practices Future Program**

# **6. Objectives of PA management**

### **6.1 General policy framework**

As a signatory party of the CBD Bangladesh has developed National Biodiversity Strategy and Action Plan (NBSAP). According to the guideline of NBSAP (GoB 2004) and National Forest Policy (1994) regarding CBD the primary objective of Bangladesh's biodiversity conservation policy is "to establish conditions to conserve, and wherever necessary, to restore the biodiversity of Bangladesh as an essential component to ensure the wellbeing of the present and future generations, and equitable sharing of benefits. This involves maintenance and improvement of environmental stability for proper functioning of ecological systems, and ensuring the preservation of the unique biological heritage of the nation as an asset for the benefit of the current and future generations. Co-management is one of the widely accepted approaches for protected areas management."

### **6.2 Objectives**

The long term vision is to protect and restore a healthy biodiverse evergreen forest in the NP and restore the biological significance of buffer forests, enable these forests to be enjoyed responsibly by visitors; and ensure the NP is actively supported and protected by local communities and enterprises who benefit from tourism, non-timber forest products, and soil and water conservation, and who adopt sustainable land management adapted to future climate changes. It is hoped that, the Park will be a show case of a well conserved ecosystem sustained by nature based tourism and used for education. Within this perspective, the management objectives for Satchari National Park are:

#### **(1) Protect and restore biodiverse evergreen forest**

- Regulate land use through zoning and zone demarcation, taking into account land capability, present status and function as well as crucial and vulnerable habitats important for wildlife;
- Protect crucial habitats in SNP particularly trees preferred by key stone species such as Western Hoolock Gibbon and Capped Langur;
- Enhance regeneration and enrich forest in the buffer zone with native trees preferred by wildlife
- Survey and monitor biodiversity resources to understand ecological values, processes and threats;
- Control and exclude from the NP invasive non-native species, including domestic animals and exotic trees;
- Develop and implement effective surveillance and law enforcement regulating biomass extraction;

**(2) Achieve sustainable natural resource use in the buffer forests and landscape**

- Promote resilience to climate change through adapted land uses and farming practices;
- Improved watershed management and protection in the buffer and impact zone;

**(3) Promote improved livelihoods based on sustainable climate change resilient enterprises and services for an estimated 4,700 households**

- Reduce dependency on the PA by improving livelihood of people by encouraging diversification and developing skills
- Ensure enterprises are resilient to climate change and

**(4) Realize the Park's potential for nature based tourism as a source of income from visits sensitive to the Park's ecological value**

- Develop and maintain tourism infrastructure (information facilities, observation shelters, nature trails, picnic sites, toilets);
- Promote Satchari as a nature tourism destination;
- Support local and private initiatives in the field of tourism development;
- Control and minimize negative impacts of tourism (pollution, animal disturbance, noise disturbance)
- Ensure the income from tourism is shared through the CMC with local stakeholders;
- Promote (re)investment in tourism development.

**(5) Integrating the NP into local and regional development processes, especially surrounding local communities to ensure wider acceptance of the PA's values**

- Create conservation awareness among stakeholders including local resource users as well as key actors determining land and resource use, involving also local educational institutes;
- Establish co-management and benefit sharing.

**(6) Improving the BFDs staff capacity and performance**

- Enhancing office and accommodation facilities for BFD staff;
- Improving logistics and mobility;
- Improving field equipment (uniforms, arms, GPS);
- Training (law enforcement, co-management, and ecotourism).

## **7. PA and landscape Zonation**

### **7.1 Zoning of landscape area**

For better management, SNP and its landscape are divided into three zones i.e. Core zone, Buffer zone and landscape zone / Impact zone (Figure 5).

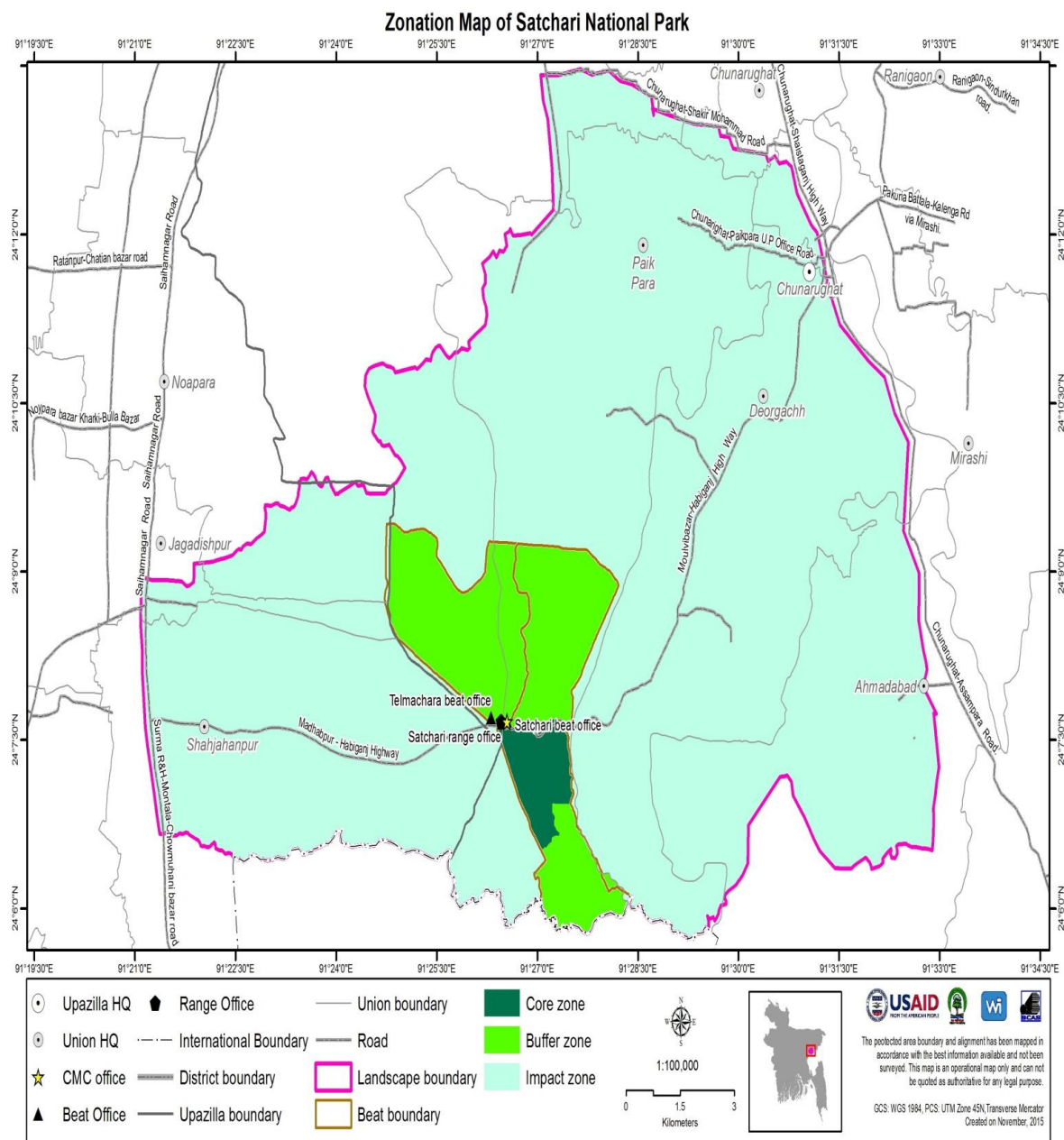
#### **7.1.1 Core zone**

The entire forest area that was declared as National Park in the official gazette is designated as core zone due to its conservation value. Out of 243.10 ha, 120 ha are natural forest, but 112 ha comprise plantations of exotic trees of low biodiversity value and about 18.6 ha is degraded forest. The target is to protect the remaining natural forest, restore biodiverse hill forest in about 130 ha (exotic plantations and degraded forest) through enrichment planting and ANR. Also when converted to core zone the existing southern buffer area will be managed with the same objectives and approach.

Forest management in this zone will focus on conserving natural forest and its wildlife by protection against illicit logging, removal of plants and animals, encroachment, grazing and fire. Natural processes for regeneration will be encouraged. Visitor use will be encouraged but regulated to low impact activities (hiking and wildlife watching). There will be no off-road vehicle access.

Limited infrastructure will be developed, with most constructed along the roadside.

The boundary of the Tipra village area will be reviewed and formalized between FD and the village, and its role in protection of the NP through the CMC and community patrols assured on condition that it does not expand beyond its boundary.



**Figure 5: Zonation Map of SNP**

### 7.1.2 Buffer zone

The Buffer zone is land outside the protected area managed by BFD as Reserved Forest, where human settlement and cultivation is prohibited but where sustainable resource extraction is allowed. Satchari National Park has a Buffer zone of 1542.52 ha of 91 ha of oil palms and 620 ha of degraded forest are targeted to be restored as sustainable use plantations during the management plan period. Management of this area will focus on intensive production of replacement resources, particularly fuel wood, poles and timber, and NTFPs while maintaining biodiversity. Plantations will use indigenous species and be managed through a participatory

approach with local villagers. The participants will, in addition to protecting and benefiting from plantations, be responsible for protection of the NP (core) area. These plantations will not be clear felled but instead be managed under selection felling (to remove exotic species) so that the area can recover through a combination of natural regeneration and targeted planting, into a mixed native forest. Vacant forest lands without adequate rootstock will be taken up for buffer plantations and managed by following the relevant FSP guidelines as decided by FD. The management of FD lands in this sub-zone will focus on sustainable use of the remaining natural patches, bringing existing plantations under co-management practices, raising participatory plantations of indigenous species in vacant areas, checking conversion of forest land into agriculture and maintaining biodiversity conservation values. Local stakeholders will be identified and co-management agreements signed for providing livelihood opportunities and protecting habitat.

### **7.1.3 Impact zone**

An area of about 16,000 ha is considered to impact on or be impacted by SNP. The focus here will be to persuade land owners to respect the value of the forest and its wildlife, and adopt environmentally friendly and sustainable land use practices. Relevant agencies and organisations will be encouraged to promote improvements in the off-forest livelihoods of people living here. Subsistence consumption needs of local people for fuelwood, NTFPs and timber will be met through co-management of the buffer area and through biomass production within the impact zone.

### **7.2 Boundary delineation**

All the marginal boundaries of the SNP will be recognized, surveyed and drawn on the maps and on ground. The borders of the buffer forests will also be defined, mapped and recognized on the ground during the implementation of the plan. Zoning boundaries should be determined by GPS in the field and where necessary consolidated concrete pillars need to be positioned in the field. The GPS data will be stored and mapped. The benefit of natural features like rivers, streams/*charas*, bridges, roads, etc. may be taken out during the demarcation. Posts e.g. concrete pillars, or other markers e.g. wooden or iron pillars, trenches, mounds, etc. will be fitted in place at all important and turning points and will be labeled. Boundary markers are vulnerable to alteration due to human-interference or natural calamities. Therefore, a regular annual maintenance program will be necessary for boundary and pillar renovation and maintenance. Maintenance of legal documents and land records of FD should be kept properly in all offices up to beat level.

### **7.3 Actions to address encroachment and tenure issues**

A database will be developed to document encroachment, e.g. by Tipra tribes and tea gardens. Strong communication will be established with forest villagers, CMC and tea garden owner to accumulate information on encroachment. Mapping and up to-date records should be kept in Range and Beat Offices. On the basis that the Tipra village is actively engaged in protecting the NP forests, limiting its area to the existing area would be accepted, but further encroachment of SNP would not be permitted.

## 8. Management actions

### 8.1 Management of PA (core zone)

#### 8.1.1 Rules and norms

All tree felling, cutting of plants, killing of wildlife, encroachment, forest fires and cattle grazing are prohibited in and around core zone area.

#### 8.1.2 Restoring habitat and ecosystems

The main management objectives in the core zone are: i) to protect and maintain remaining native forest vegetation and encourage natural regeneration to gradually bring back natural forests, and ii) to improve forest habitat for forest dependent wildlife through selective management interventions. The outcome will be near natural forests with a natural ecological succession. This will be achieved by strong protection against all illicit acts (see 8.1.1). To restore native forest restoration work will target areas of monoculture of teak and other exotic species which will need canopy manipulation to restore trees of wildlife value (focusing on species eaten by threatened primates and forest dependent birds. This will be achieved by Assisted Natural Regeneration (ANR), Enrichment Planting, and andsoil and water conservation.

**ANR (Assistant Natural Regeneration)** will be adopted in some degraded areas where there is natural rootstock or natural regeneration is coming.

**Enrichment planting** of indigenous trees will be taken in those areas where natural regeneration is not coming up due to lack of existing rootstock. Enrichment planting will also be done after canopy is opened in monoculture of exotics. Planting (spacing 2.5m x 2.5m) of indigeneous trees will follow irregular patterns according to gaps and opportunities. Maintenance operations including weeding and casualty replacement will be taken up in subsequent years. Suitable species for enrichment are recommended based on their significance for fruit dependent wildlife, while also providing canopy habitat: all forest *Ficus* spp., *Artocarpus* spp. (including Chapalish), Amloti (*Phyllanthus amblica*), Bahera (*Terminalia belerica*), Gutgutia (*Bursera serrata*), Kadam (*Anthocephalus chinensis*), , Jarul (*Lagerstroemia speciosa*), Phalsa (*Grewia asiatica*), *Syzygium* spp (including Jam and Dhakijam),. A plantation journal will be maintained for each enrichment planting. Exotic species such as teak, acacia, mangium and eucalyptus will not be planted inside the core zone.

**Maintenance of charas** - Several sand-beded seasonal streams locally called charas flow in the Park, in the dry season these charas become dry. The priority will be to end sand extraction, unless this is found necessary to maintain the charas, and to control bank erosion, which in places may require use of silt traps, gully plugging and planting of forest ground coverplants.

#### 8.1.3 Wildlife Conservation and Recovery

For the conservation and recovery of wildlife, their habitat needs to be protected and restored. This is mostly addressed in the above actions. In addition, efforts will be made to ensure that visitors and local people do not pick notable flowering plants such as orchids, and that all

components of the forest ecosystem are retained. In particular no dead trees or dead branches will be removed as decaying timber and hollows in trees are vital habitats for a range of species from hole nesting birds, woodpeckers and reptiles, to fungi and invertebrates.

Overhead connections/ropeways and under passes (pipes) to reduce road casualties. Speedbreakers and signs to reduce vehicle speed.

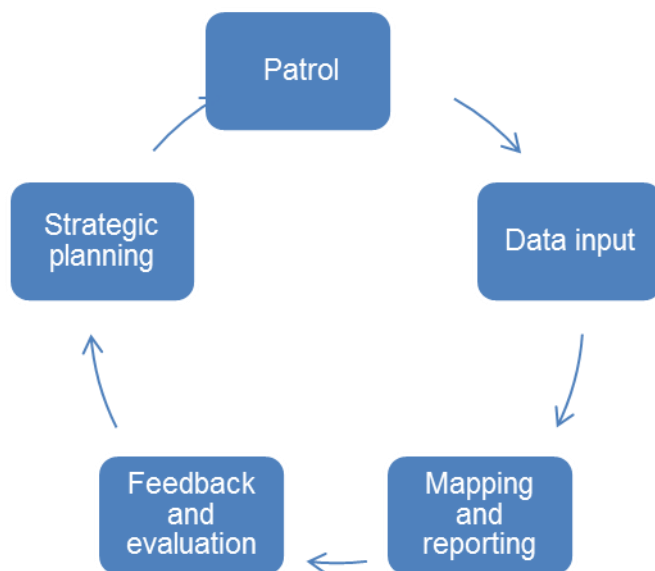
If animals come into conflict with adjacent villages over water in the dry season, then one or more shallow banked ponds in the buffer area may be established to act as water sources.. Also to reduce human wildlife conflict restoration of forest attractive to wildlife will be a target in buffer areas close to the NP and close to villages, education and awareness programs for villagers will highlight the benefits from wildlife and the forest, and environment friendly practices will be promoted in the impact zone including growing crops and trees that are less preferred by animals

#### 8.1.4 Action to improve Climate Change resilience

Within the core NP area the main climate stress threat is an increased fire risk resulting from more prolonged dry seasons and unreliable rainfall. This will be addressed by awareness raising, patrols, capacity building in fighting fires, and fire breaks/lines between the core area and other land uses. Secondly more intense storms are likely to lead to gulying and erosion along charas, restoring forest cover and small scale soil and water conservation works will address this. There is at present no information on possible changes in forest composition for eastern forests of Bangladesh that might be associated with predicted climate changes.

#### 8.1.5 SMART Patrolling (CPGs, FD)

For effective protection of SNP SMART (Special Monitoring and Reporting Tool) patrolling may be apply by the FD with CPG. With the technical support from CGEIS, BFD has developed in the the Sundarban Reserved Forest a GIS/ GPS based system for the systematic collection of patrolling data (Anon, 2003). The following diagram may be applied in smart patrolling for effective protection of the sanctuary.





Community Patrol Group (CPG) is the most significant element of co-management concept. Their main duty is to protect forest against any criminal activities with the help of forest guards. Among the CPGs the man's group and woman's group have separate roles and responsibilities in forest management. Women perform duty near their houses/villages, while men visit the forest away from their villages. Men and women are divided in sub-groups of 5-6 persons for patrolling in different times.. This has overcome the constraints of limited staff resources of Forest Department. After organizing CPG, the condition of forest has improved and forest crime has been reduced remarkably. Local people have joined in CPG mainly for the purpose of forest protection. Moreover they get some remuneration.

Illegal removal of forest products within the SNP is considerably checked through widespread joint patrolling (FD staff, CPG member). Local people involved in CPGs are well informed about the points and routes of forest extractors. Communications will be strengthened by use of walkie talkies and mobile telephones. Movement within the NP is by foot..

To sustain the two CPGs the FD and CMC will seek funding to enhance the allowances for CPG members from the present (2014) Tk 10 per person per day for patrolling to Tk 100. A reward system is required for good work for the members to motivate their conservation in the forest.

### **Summary of Main Prescriptions in Core Zone**

- 1) ANR (Assistant Natural Regeneration) in degraded core areas.
- 2) Enrichment planting of indigenous trees; mainly fruit bearing species to restore native forest in exotic plantations within the NP.
- 3) Watershed conservation of charas to reduce erosion; making one or more ponds to mitigate human-wildlife water conflict in the buffer area.
- 4) Measures to reduce wildlife road casualties (e.g. speed breakers and ropeways).
- 5) Limit on any expansion of area of Tipra village, and support to diversify livelihoods there in return for its support for conservation.
- 6) Sufficient resources for FD staff and CPGs
- 7) Limited ecotourism facilities including trail development.

## **8.2 Management of Buffer zone**

The overall aims of this zone are: to protect the core zone of SNP, bringing existing plantations under co-management practices, raising participatory plantations of indigenous species in vacant areas, preventing conversion of forest into cultivated lands and maintain biodiversity conservation values. Local stakeholders will be identified and co-management agreements signed for providing livelihood opportunities and protecting habitat.

Management of this area will focus on three aspects:

1. Conversion of FD lands bordering the NP (particularly to the south up to the international border, into biodiverse evergreen forest using methods detailed in 8.1, ready for incorporation in an expanded NP. These plantations will not be clear felled but instead be managed under selection felling (mainly of exotic species) so that the area can be naturally regenerated to be ultimately included in core zone as a mixed forest.
2. Ensuring protection of other remaining natural patches of forest and adding native trees and understorey plants to plantations to enhance their ecological value.

3. Intensive production of replacement resources, particularly fuel wood, poles and timber, and NTFPs while maintaining biodiversity through short and long rotation plantations of indigenous species grown under participatory approach (social forestry). The participants will, in addition to the protection of plantations, be responsible for providing biodiversity protection in the Park areas.

Social forestry practice involving co-management stakeholders. Species that are economically valuable and fast growing will be used in case of social forestry. The Plantation established under social forestry program will be harvested at the end of rotation (10 years) and the sale proceeds are distributed according to clause-20 of Social Forestry Rules-2004. This may include fuelwood, bamboo and cane.

### **Grassland (Sunkhola) management**

There are 154.68 ha of “Sunkholas” (grassland) in the Reserve Forest of the buffer area to SNP. A large number of poor people depend on this for their livelihood (sungrass is sold in local markets as thatch roof material). This system of grassland patches will be continued, but sunkhola cutting needs to be on a sustainable basis, and to allow sufficient time for those species that use mature grasses to nest/forage in them before cutting. Excess / too rapid cutting is degrading this annual habitat. A controlled use of grasslands through rotational harvesting should be immediately put in place by the CMCs. So special groups of grass users may be formed and linked with the CMCs.

**Gully plugging** – additional grassland areas (either as sunkholas or as cut and carry fodder) may be created in the Reserved Forest where recovery of forest is unlikely. Palatable grasses include *Typha angustifolia*, *Alpimia nigra*, *Themeda arundinacea*, *Saccharum arundinaceum*, *Sacharumnarenga*, *Sacharum hookeri*, *Impreta cylinder*, *Sacharum spontaneum*, *Cymbopogan flexuosus* and *Setaria palmafolia*. These grasses may also be used for gully plugging in case soil erosion takes place due to gradient, run off in hillocks and chara bank. The grass user groups would plant these grasses and have rights to make harvests so long as soil erosion is controlled and grass cover maintained.

At least one four wheel jeep along with sufficient nos. of motor cycles needs to be provided for the use of FD field staff; each beat would have at least one motor cycle.

### **Summary of Main Prescriptions in Buffer Zone**

- 1) Restoration of native forest in areas to be added to SNP
- 2) Social forestry based on producing firewood and NTFPs, while restoring and protecting native forest trees.
- 3) Sustainable co-management of Sunkholas and limited expansion of grass areas for livelihood of poor people based on group rights overseen by CMC.
- 4) Infrastructure development for ecotourism close to road bordering NP and buffer area, in the buffer more recreational based use within prescribed areas.

## **8.3 Management of impact zone/ Landscape zone**

### **8.3.1 Rules and norms**

In this zone the CMC supported by FD and by relevant government agencies will promote environment friendly practices in private land use (such as limiting use of agro-chemicals), and will raise awareness of relevant laws protecting wildlife. As opportunities for receiving tangible

benefits from the conservation-oriented management of core zone are limited, links will be made to improve the returns from off-forest livelihood opportunities in this zone. Subsistence consumption needs of local people for fuelwood, NTFPs and timber will be met through social forestry in this zone and the buffer zone.

### **8.3.2 Social forestry**

Social Forestry will be encouraged to meet the forest product requirements of local people and to reduce dependency on the NP. Tree planting will reduce ecological and climatic degradation through proper soil and water conservation, and improve socio-economic condition. Due to scarcity of land, marginal and fallow land (slopes of roads and embankments) will be brought under social forestry. Local people will be involved in social forestry program. Plantations established under social forestry will be harvested after 10 years and the sale proceeds distributed according to clause-20 of Social Forestry Rules-2004. Strip plantation is recommended on both sides of the village roads involving local community. Awareness and training program will be conducted to make the people capable of homestead plantation.

### **8.3.3 Livelihood diversification and enhancement**

As commercial harvesting is not allowed inside the PA, any financial benefits associated with the NP are limited to direct or indirect incomes associated with tourism. Incentives for local people to not exploit the NP are needed such as alternative income generation activities (AIGA). The CMC and FD will seek to develop appropriate linkages with livelihood programs and other projects/initiatives that will improve the lives of local people and reduce biotic pressure on forests by providing enhanced alternative livelihood opportunities to poor stakeholders living in and around the PA. The CMC may raise funds to address this need, but more likely will attract Government and NGO programs to target poor households known to have been involved in forest product extraction. These households will be encouraged to set up micro-enterprises to generate added value locally. The benefits from eco-tourism may also be ploughed back for the development of local communities and SNP. The following appropriate technologies may be promoted through extension efforts and partnerships, and were identified based on field investigations done by NGOs:

**Integrated homestead farming:** Diversification of production will help reduce vulnerability of livelihood to hazards including during natural calamities. Possible components include vegetables/horticulture (on open fields, dykes and other unutilized places around houses), cash crops, nurseries (vegetable and tree seedlings), poultry rearing, stall fed cow rearing (local improved breed with crossing for fattening), fish culture (in micro-ponds), duck-cum-fish culture (in family ponds), pigeon farming and apiculture .

**Cultivation of high value crops:** This is suitable for landowners able to make a minimum investment. Suitable high value crops include tomato, potato, fine rice, papaya, ginger, turmeric, yard long bean, leafy vegetables, aroids, chilly, beetle leaf, maize, guava, banana, jackfruit, pineapple, etc. Vegetables that can be grown during the off-season may be preferred.

**Drought resilient crops and varieties:** Drought resilient paddy (BRRI-42, BRRI-43), changing to lower water demand crops in the dry season (maize, oilseeds, sunflower and others). Examples of suitable varieties may include: Potato- Diamond, Genola; Cucumber-Queen, BARI-1&2; Bitter Gourd- BARI-3 & 4; Brinjal- BARI-4; Kakrol- Local variety: Chilli- 1701; Summer

Tomato- BARI 4 & 6; Winter tomato- Surma and Udayan; Mug variety- BARI 4 & 6) (see PCVA report of CREL).

**Village tree nurseries:** Promotion of village tree nurseries to increase availability and reduce costs of saplings of timber, fruit, vegetable, flower, fuel wood, fodder, medicinal and other NTFP bearing species.

**Agro forestry and homestead NTFPs production** (such as planting bamboo, cane, medicinal plants): this can add value from under used private land and reduce pressure on forests.

**Food Storage and Processing** Simple food storage, processing and preservation techniques can be promoted for local enterprises to add value locally and provide self-employment opportunities. For example, pickles of mango, lemon and jackfruit can be made locally for sale and home consumption.

**Livestock rearing:** Focusing on stall fed systems and species which are not related to environmental degradation, such as poultry, rabbits, cow and ducks.

**Cottage industries:** Bamboo and cane cultivation and related products for handicrafts.

**Ecotourism:** as eco-guides, and producing crafts or operating catering services that target sales to visitors.

### 8.3.4 Actions to reduce fuel wood collection/use

Fuel wood collection is one of the major causes of forest destruction. Most of the people in and around the Park depend on fuel wood for cooking. Poor landless women and young boys collect seedlings, saplings, bamboos and deadwood as fuel wood from the forest. To reduce demand for firewood the following measures may be taken:

- Promote/subsidize adoption of improved cooking stoves (ICS) including training
- Promote reduction in fuelwood use and adoption of biogas or other systems in tea estates and institutions within the landscape.
- Promote manufacture of compressed rice husk (brickets)
- Facilitate fuel wood plantations (e.g. *Acacia auriculiformis*) under the social forestry programs.
- Promote use of solar energy.

### 8.3.5 Measures to improve community level resilience to hazards and climate change

Satchari NP, its buffer and impact zones are vulnerable to climatic stresses such as drought and flood. On the basis of recent Participatory Community Vulnerable Assessment (PCVA) conducted by CREL the following adaptive measures are recommended to improve community level resilience to hazards and climate change (Annex X):

- Tree plantation in the degraded land, stream bank, homestead etc. using deep rooted trees and creepers for controlling landslide.
- Grow drought tolerant trees and crops
- Excavation and re-excavation of new and existing ponds for supply of clean drinking water;

- Rainwater harvesting and conservation in community ponds, community reservoirs and household tanks and motki (earthen jar)
- Installation of deep tube wells for the supply of drinking water.
- Village based information center may be established to give warning about natural disasters
- Mass awareness, training and campaign about various natural calamities

#### **Summary of Main Prescriptions in Landscape Zone**

- 1) Social forestry particularly to produce fuelwood in private land, marginal and fallow land and public lands (slopes of roads, rails and embankments) to meet local demand and to reduce dependency on forest.
- 2) Promote livelihood activities that are environment friendly, will enhance income and do not depend on forest resources.
- 3) Promote technologies that meet cooking and energy needs without burning wood.
- 4) Promote and adopt adaptation measures based on (PCVA) report of CREL

### **8.4 Management Information System of PA**

Management Information System (MIS) should support the planning, implementation and monitoring of multi-objective management activities under this plan. An MIS can be used for strategic, tactical and operational planning and implementation, and operational control in and across administrative units and levels of the organizational hierarchy. Besides the databases and models required to support decision-making in the many programs of the Forest Department, the MIS also should maintain current forest inventories, and generate maps of , land cover types, plantations of various years, village locations, and adaptation activities. The MIS will facilitate tracking and updating:\

- Land records e.g. boundary demarcation, digital mapping etc.
- PA land cover classes, plantations by year and location, forest condition, landscape area zonation, co-management organizations and members, landscape villages with population statistics;
- Forest inventory data and analyses results;
- Planting and harvest records including nursery information (species wise stock details by beat and range), plantation journals and felling records.
- Human resources records of FD personnel including list of concerned officers and staffs with duration of each posting.
- project based intervention records, including list of projects with relevant project documents, lists of beneficiaries, members of various components of co-management institutions e.g. community patrol groups, eco-tour guides, local service providers etc.
- Socio-economic studies including CMO scorecard assessments, project beneficiaries, sample beneficiary surveys, gender scorecard analysis, value chain assessments etc.
- Forest offence records including encroachments, illicit harvests/removal of resources, poaching, human-wildlife conflicts etc.
- Technical studies conducted from projects, academic institutions and others.

#### **8.4.1 Archiving PA information**

- Protected Area Management Plan with associated data
- Land records with notifications
- Maps of PA landscape with land cover, plantations, zonation, forest administrative units, distribution of VCFs, and other line and point features;
- Spatial data of the protected area including boundary, habitat features, forest condition, remote sensing and Google Earth information
- Plantation and nursery records.
- CMC related information; profile, list of members in Council and Committee, list of VCFs, VCF member information, CPG information,
- CMC's project implementation information
- List of projects and relevant information on project activities including their beneficiaries;
- Survey data and results including forest inventory, resident forest bird surveys, household surveys, etc.
- Forest Offence Records.

# 9. Ecotourism

## 9.1 Eco-tourism

An environmentally sound level of nature based tourism and associated education and interpretation will be encouraged as a way to generate income for the CMC and alternative income for local community. The key tasks in SNP with regard to eco-tourism management and development are:

- (1) Zonation of tourism activities to reduce friction between general tourism, eco-tourism, economic activities and biodiversity conservation.
- (2) Quality management through infrastructure and garbage management;
- (3) Respect for ethnic communities and their culture, with the option for Tipra communities to involve in or opt out of tourism services, areas and incomes according to their preferences;
- (4) Information, awareness and education (including interpretive centre);
- (6) Monitoring and enforcement (e.g. tourist entries, revenues, impacts, exclusion zones).

## 9.2 Visitor levels

In the last three complete years visitor numbers and income from entry fees have declined: from 54,096 visitors and Tk 9,76,470 in fees in October 2012-September 2013 to 40,880 visitors and Tk 6,88,800 in October 2013-September 2014 and 34,361 visitors and Tk 5,99,125 in October 2014 to September 2015. While there was some decline in adult visits the main change was a halving in children and student entries within these three years. The reasons are unclear. Although Satchari is a small PA, and most visits are concentrated in the six drier and cooler months (October to March), the recent peak visitor numbers of up to 400 persons per day in the peak season should not have adverse impacts, since most visitors stay close to the road and the visitor facilities there.

The objective of visitor management is to promote the PA and encourage visit levels that can help pay towards CMC activities and maintain facilities while not adversely impacting the core area. To achieve this general visitors, picnic parties, and groups will be encouraged to visit the facilities along the road and to use trails in the buffer forest, while nature visitors will be encouraged to use the nature trails, preferably with guides.

## 9.3 Appropriate locations/zones in SNP

Satchari National Park attracts visitors because it is easily accessible from Sylhet and Dhaka with a road passing its northern edge. This Park is full of natural beauty based on a diverse patch of forest rich in wild fruiting tree species such as 'chupalish' (*Artocarpus chaplasha*), 'civit' (*Swintonia floribunda*), 'shimul' (*Bombax insignis*), figs (*Ficus* spp.), and bamboo. As noted earlier, patient and quiet visitors have good opportunities to see several notable mammal and bird species. Other visitors come mainly for a recreational experience in a green forested environment. The main ecotourism destinations within SNP are:

- Picnic spot at Satchari Beat (general visitors)
- Interpretation Center with a pond and observation tower (mix of general and nature visitors including any educational groups)

- Tipra Village (dependent on the extent the villagers here want visitors in their village either as a source of income and/or to promote their culture and concerns)
- Nature observation within the National Park ( Core zone)

## 9.4 Entry fees

The present entry fees fixed by the Government are shown in the Table 13, these have been unchanged in the last six or more years. Considering inflation and that the existing facilities will be maintained and upgraded, and the costs incurred by the CMC (not only in collecting entry fees but also in maintaining facilities and operating community patrol groups and community services), it is proposed to increase entry fees as shown. As few foreigners visit (under 50 per year) a large increase in fees for foreigners will have little benefit, whereas a modest increase for national visitors will bring the greatest benefit. At present 50% of the collected revenue is returned for use by the CMC for the conservation of biodiversity and development of local people, but it is hoped that Government will agree to all entry fees being retained for this purpose.

**Table 13: Existing rate of entry fees fixed by the Govt. in Satchari National Park**

Visitors Type		Present Fees(TK)	Proposed fees (TK)
1.	Adult (age above 15 years)	20	25
2.	Students (age below 15 years)	10	10
3.	Cinema filming	6000	8000
4.	Picnic additional fee (Per Person) for use of facilities	10	15
5.	Foreign tourist	5 \$ (equal of Bangladeshi Tk)	10 \$ (equal of Bangladeshi Tk – Tk 500)
6.	Vehicle		
	Bus	25	200
	Car/Microbus	25	100

## 9.5 Facilities and infrastructure developments

Tourism facilities that are sustainable, durable, environment friendly, moderately priced, clean and self-sufficient will be maintained and promoted in and around the Park. The key facilities and infrastructure for this are shown in Table 14. CREL has developed a trail map will be used for eco-tourism and monitoring of wildlife, biodiversity including overall management (Annex 8).



**Table 14: Facilities and Infrastructure development needed in Satchari National Park**

<b>Facilities and Infrastructures</b>	<b>Location and Development work</b>
Ticket kiosk	Entry ticket sales and visitor management will start where visitors park their vehicles or are dropped by public transport
Toilets	Existing toilets will be maintained and if found to be insufficient for visitor levels additional toilets constructed where visitors are concentrated (picnic area or car park)
Basic Picnic Facilities	Resting shed and outdoor tables, and litter bins, water facilities will be provided in the identified picnic spots (Satchari beat and near the pond by the Interpretation Center).
Sign-post and guidelines	Sign-posts with adequate information will be provided at main foot trail heads and insides.
Nature Trails	Three nature trails (30minute, 1hour and 3hour) inside the NP have been developed and will be maintained for the purpose of nature walks. An additional trail in the buffer area north of the NP will be developed where larger groups can explore without disturbing sensitive wildlife in the core area
Rest House and Dormitory	Local entrepreneurs will be encouraged to set up nature camps and cottages for tourists in the impact zone. Operation of the existing dormitory will be placed under the CMC or an enterprise sub-committee/group of the CMC with the aim of providing modest priced accommodation while generating a small surplus after all costs to contribute towards CMC activities
Nature Interpretation Center	Maintenance and enhancement of nterpretation center - this is presently non-functional but has space that wil be used to add displays and collections for example of seasonal forest produce, local exhibits, specimens of plants and wildlife, and locally taken photographs
Observation tower	This recently constructed facility will be maintained and linked by a trail to the Interpretation center, interpretive displays may also be displayed here (see above)
Water bodies	SNP is small and not suited to adding lakes or ponds which would change the forest character and compromise the reasons for its declaration as a NP. However the existingpond near the interpretation center will be maintained as a basic picnic site (see above).
Boundary barrier (hedge / fence )	To limit visitor and local people entry from the road a barrier will be developed along the road (both sides) with openings at trial heads and other agreed access points – in the short term this may use barbed wire, but in the long term can be a fence of cane plants to deter entry except at access points

The main priority for facilities will be regular maintenance of the above facilities that already exist, and completing those that are proposed. For example, signage is important to direct visitor movements and behavior and also to add to visitor experiences with interesting information. A list of do's and don'ts for visitors will be displayed in each visitor area.

## **9.6 Promoting visits (publicity etc.)**

Publicity on the National Park will be improved promoting it for its scenic beauty, wildlife and accessibility. FD and CMC will collaborate with the media and private sector to make use of electronic and print media (TV, Radio, newspapers, magazines, websites). Basic information about the National Park will be provided to visitors by means of fixed signs; and optional material made available to purchase in the form of brochures and printed guides for sale at the ticket kiosk and/or interpretive center.

## **9.7 Ecotourism services (guides, training)**

Guided tourism will be developed by involving unemployed youth members/naturalist relatives of co-management councils/committees or other interested CPG/VCF members as eco-guides. They will be trained as eco-guides focusing on communication and interpretation skills (what to say, how to speak, presentation skills, body language assessment, team building, etc.). They will also be trained on animal signs and calls, bird identification, plants, biotic influences, local culture, etc. and how to ensure visitors walk without disturbing nature.

## **9.8 Education and interpretation**

Schools and colleges will be targeted for conservation education. Conducting talks, essay writing and competitions will be included in neighboring schools for awareness development. Sabuj Vahinis (Green Brigades) will be formed and trained in nearby schools and madaras. The Nature Interpretation Centre is the main facility for these purposes within the NP. Existing displays will be enhanced to display the landscape, plants and wildlife, as well as items of historical and conservation significance, through specimens and photographs with proper labeling and description. This should be made interactive as far as possible and offer class activities for school and college/university visits. It will consist of walkthrough displays, complemented by explanatory printed materialsetc.

# 10. Funding and resource mobilization

## 10.1 Budget requirements/ costs

Funding and resource mobilization is very important for implementing the management plan. To implement the management plan activities over the first five years (which includes relatively more initial investments on habitat restoration and infrastructure) needs a total estimated budget of about Tk **151** million in addition to salaries of FD staff (Annex 6). This budget requirement cannot be fulfilled from the revenue budget of Government which is mainly confined for meeting the salaries of FD staff. Additional funding and/or a separate budget will need to be allocated to FD in ADP for implementing this plan under a development scheme.

## 10.2 Internal resource mobilization

Internal financing/resourcing from the stakeholders in co-management- including FD, landscape communities and businesses, entry fees, Government revenue allocations and agencies working here, and resources from local communities can all be mobilized. At present the resources mobilized are FD allocations of budget and staff to SNP and its buffer, and some voluntary time contributed by CMC members and CPG members, and the return of 50% of entry fees to the CMC. FD allocation for SNP is less than needed to protect the forest. Generally the development budget is an important source of funding for implementing projects. There is no separate or specific allocation for the management of protected areas. Separate project can be taken for the management of SNP or as a package with one or more other PAs. All of locally generated revenue from visitors should be retained for use by the CMC for activities under its responsibility in this plan. Government shares of benefits from social forestry in the buffer plantations should be retained for use in conservation and protection activities in this landscape. In kind support for priorities in the impact area should be mobilized from relevant government agencies (e.g. agricultural extension), local government (Union Parishads), NGOs active in the area, and businesses active here (particularly tea estates)..

## 10.3 External fund raising strategy

Externally derived funds are required to implement the management prescriptions of this plan. This may involve donor funded projects taken up by FD and/or CMC for the management of the PA and support to sustaining the landscape communities. Potential agencies include: GEF, carbon funds, World Bank, Asian Development Bank, European Commission, Japan International Co-operation Agency, and international NGOs. Smaller projects may be taken up with trust funds or foundations. Charitable donations including conservation and private sector may be for specific tasks or for general conservation of species.

## 10.4 Potential for ecosystem services payment (carbon payments)

SNP has some opportunity to generate its required funding through its ecosystem services especially through carbon trade. There is potential for regular payments to protect the forest for the carbon stored there and for investments for reforestation in degraded parts of the buffer area, provided the criteria set by carbon trading organizations can be met..

# **11. Monitoring, adjustment of plans and research**

## **11.1 Monitoring, adjustment of plans and research**

Monitoring and research are tools for assessing the performance of conserving SNP and natural resource management in its buffer and landscape zones, as well as improving understanding of the functions of the SNP in order to sustainably manage constituent forests and biodiversity. A research, monitoring and capacity building program will be developed with main objectives:

- i) To better understand the Park's forest condition, biodiversity, ecosystem and landscape
- ii) To improve understanding of the flora and fauna here, trends in their abundance and distribution, and functional relationship among biotic communities
- iii) To develop and monitor quantitative population estimates for selected key species (Hoolock Gibbons, Capped Langurs, a set of indicator bird species), and develop detailed information on their current distribution and habitat use,
- iv) Identify and map key patches of remnant forests and other critical habitats,
- v) To gradually reduce the extent and degree of uncertainty while taking Park management decisions.

## **11.2 Monitoring forest protection**

One of the main indicators of effective forest protection is a "Declining incidence of illegal cutting". All the activities and information regarding this parameter will be properly monitored and documented jointly by the FD staff and CMC and reported to ACF and DFO. Indicators for forest monitoring are:

- 1) Patrolling by FD officials with CPGs
- 2) Arrests (date, place, offence, conviction)
- 3) Awareness events, training delivery (when, target group, message/skill)
- 4) Consultations (when, target group, purpose)
- 5) Services rendered (e.g. a forestation/reforestation support, wildlife-human conflict management).
- 6) Simplified periodic sample forest inventories

## **11.3 Monitoring changes in habitat/biodiversity/indicator species**

Changes of forest cover can be monitored by comparing remote sensing data of different years, or by recording vegetation class boundaries with a GPS. Monitoring of environmental threats is important and using modern technology environmental monitoring can be done with RS/GIS analysis by RIMS.

A well-developed technique in multi-species management scenario is to select one or more key species, and to ensure that habitat suitability for this species or group of species is retained. The main species considered for purposes of macro-level habitat management while implementing this Management Plan are the Western Hoolock Gibbon and Capped Langur, hence the focus on restoring a canopy of native trees preferred by these species. The long-term

assumption is that this will also ensure a forest ecosystem rich in a wider range of associated species. Success will require monitoring the populations of these two primate species.

Occurrence and abundance of animal species are important indicators for biological monitoring, particularly birds (Aziz et al. 2004) and mammals, but also other species may be used as indicator species. Fixed width transect surveys along forest trails have been used to monitor a set of representative indicator bird species, and may also be used or modified to monitor the primates. Bird monitoring has taken place since 2005, and has been conducted by Bangladesh bird club in 2014, 2015 and 2016 with funding by CREL project. The following monitor for changes in habitat and biodiversity is recommended in SNP (Table 15).

**Table 15: Monitoring changes in habitat/biodiversity/indicator species and review plan**

<b>Important task</b>	<b>Responsible officer</b>	<b>Time</b>	<b>Activities</b>	<b>Indicators</b>
Bird survey/ monitoring	WMCC	yearly	Field survey by BBC	Abundance/Density (number/sq.km) of indicator species.
Survey of key primates	WMCC	yearly	Field survey (link to Bbc or to eco-guides)	Abundance of Hoolock Gibbons and Capped Langurs
Forest cover survey	Beat officer, RIMS	5 year interval	Field survey Remote sensing	% increase of crown cover, density of mature trees, saplings, dead trees.
Forest protection monitoring	Beat officer to DFO	Half yearly	Log book keeping reporting	Patrolling, Arrests, Awareness events, Revenue collection
Review management plan	DFO,WMCC	Every 5 year		Updated management plans

## 11.4 Research

Research at SNP is the task of research institutes such as universities and institutes for fundamental and applied research. Prioritization of research topics will be decided in a Workshop of the CMC with key persons from FD and outside experts. A computerized data base and retrieval system will be established.

Relevant research themes for the conservation of the SNP include:

- (1) A study on connectivity of SNP in relation to other wildlife areas and land use planning;
- (2) Wildlife ecology especially for Hoolock Gibbon and Capped Langur;
- (4) Biodiversity and ecology of reptiles and amphibians;
- (5) Current hunting practices and impact on wildlife;
- (6) Socioeconomic and cultural life of ethnic communities;
- (7) Economic valuation of ecosystem services of SNP.

#### **11.4.1 Socio-economic research**

Socio-economic research is an integral part of proper management of resources and may be taken up on priority basis based on management objectives.. Possible topics of investigation may include the institutional development and financial sustainability of the CMC; impacts and dependence of local people including Tipra villagers and Tea Estate labourers on habitat; forward and backward linkages of eco-tourism,;sustainable collection, harvesting, storage and processing and marketing of NTFPs; impacts of NTFPs on local economy,. Many of these studies will be carried out through action research and by associating the stakeholders.

#### **11.4.2 Ecological and biological research**

Main topics of ecological research will include identification of fragile habitats and ecosystems, Environmental impact studies, water bodies studies, impacts of forest grazing and fires on natural regeneration and wildlife, impacts of habitat changes and eco-tourism on wildlife.

Some relevant topics of biological research may include wildlife-population viability analyses, population dynamics and feeding behavior, wildlife habitat/niche use, wildlife distribution patterns, wildlife seasonal variability and movements. Population viability analyses will be taken up to ensure that considerations of minimum population size and population dynamics are taken into account while formulating appropriate habitat management strategy. The needs of species that are dependent on specific habitats (e.g. streamside areas) or specific components (e.g. standing and fallen dead trees) will also be studied for site-specific habitat management. Poaching and illegal wildlife trade will be studied.

# **12. Gender, youth and ethnic community**

## **12.1 Gender, youth and ethnic communities**

There is a Tipra village at Satchari beat in Satchari range living within the Park, as discussed in earlier sections. The culture and tradition of this community will be respected under this plan and opportunities developed and assured for their continued active role in conserving the forest and to benefit (to the extent that they wish) from eco-tourism opportunities. Capacity building programs will be tailored to reducing gender inequality and helping this Tipra community to reduce their dependency on forest. Youth empowerment program may be taken through club or co-operatives formation.

For empowerment and lifestyle improvement of women, youth and ethnic community of SNP area the following step may be taken;

- Formal and informal education for youth, men, women and ethnic community
- Technical training for livelihood improvement in enterprises such as handicrafts, tailoring, horticulture, mushroom production, nursery or other skills agreed with these stakeholders and with market opportunities
- Special donation
- Awareness building for biodiversity conservation.
- Training to Youth Tourism
- Promoting Improved Cooking Stoves to women
- Job placement
- Fuel Wood plantation in Homesteads

# 13. Model structure for annual plans

Table 16: Model structure for annual plans

Program	Activities	Timing	Main output	Responsibilities
<b>Coordination</b>	Meeting	Monthly	<ul style="list-style-type: none"> <li>Resolution forest land tenure problem</li> <li>Increased administrative support</li> </ul>	DFO and Deputy commissioner, Habiganj
	Meeting with law enforcing Agency	Quarterly	<ul style="list-style-type: none"> <li>Reduced forest offence and crime</li> <li>Increased security support</li> <li>Increased forest protection support</li> </ul>	Police, Army with FD
	Co-management committee meeting (CMC)	Monthly	<ul style="list-style-type: none"> <li>preparation of monthly plan</li> <li>Improvement of forest protection</li> </ul>	CMO and FD
	Co-management committee meeting (CMC)	Quarterly	<ul style="list-style-type: none"> <li>Quarterly progress assessment</li> </ul>	CMO and FD
	council meeting (CMC)	Half-yearly	<ul style="list-style-type: none"> <li>Decision making and planning</li> <li>Strengthening CMO</li> </ul>	CMO and FD
<b>Habitat protection program</b>	Mapping	First year, second year and third year	<ul style="list-style-type: none"> <li>Zoning map</li> <li>Boundary map</li> </ul>	FD and CMO
	Boundary demarcation	First year, second year and third year	<ul style="list-style-type: none"> <li>Delineating boundaries</li> </ul>	FD and CMO
	Control of illicit felling through patrolling	Full planning period	<ul style="list-style-type: none"> <li>Reduced biotic interference</li> <li>Increased vegetation cover</li> <li>Increased regeneration</li> <li>Increased biodiversity</li> </ul>	FD/ CMC
	Control of forest grazing through patrolling	Full planning period	<ul style="list-style-type: none"> <li>Reduced biotic interference</li> <li>Increased vegetation cover</li> <li>Increased regeneration</li> <li>Increased biodiversity</li> </ul>	FD/CMC
	Control of encroachment through patrolling	Full planning period	<ul style="list-style-type: none"> <li>Prevent encroachment</li> <li>Recovery of forest land</li> </ul>	FD/CMC



Satchari National Park Management Plan 2016- 2025

	and motivation, law enforcement			
	Resolving forest conflicts	Full planning period	<ul style="list-style-type: none"> <li>Increased forest protection</li> </ul>	FD/ CMC
<b>Core zone management</b>	Enrichment plantation	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Increased vegetation cover</li> <li>Increased biodiversity</li> </ul>	FD
	Assisted natural regeneration	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Increased Vegetation cover</li> <li>Increased natural regeneration</li> <li>Increased biodiversity</li> </ul>	FD
	Biodiversity conservation through protection	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Increased biodiversity</li> </ul>	FD
	Maintenance of visitor facilities (e.g. toilets, interpretive center, tower)	Full planning period(yearly)	<ul style="list-style-type: none"> <li>enhance tourism</li> </ul>	FD
<b>Landscape zone/ Community services and actions</b>	Climate resilient activity described	Full planning period	Adaption to climate change impact	National and International NGOs, LGED, DPHE, DDM, Ministry of Agriculture, with close coordination of FD
	Homestead plantation	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Livelihood improvement</li> </ul>	CREL/FD/CMC
	Climate resilient cultivation	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Increased food security</li> </ul>	CMC/ CREL/ Department of Agriculture
	Alternative Income Generating Activities (AIGA)	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Improved livelihood</li> <li>Reduced dependency on forest resources</li> </ul>	CREL/ NGOs/ FD/CMC
<b>Infrastructure including visitor facilities</b>	Renovation and maintenance of Forest rest house	Full plan period (yearly)	<ul style="list-style-type: none"> <li>Improved visitor facilities</li> </ul>	FD/CMC
	Renovation and maintenance of staff quarter	Full plan period (yearly)	<ul style="list-style-type: none"> <li>Improved staff facilities</li> </ul>	FD/CMC
	Nature trail development (As specified in section 9.4	First Year and second year	<ul style="list-style-type: none"> <li>Improved ecotourism</li> </ul>	FD/CMC
	GolGhar (resting facilities)	Second year and third year	<ul style="list-style-type: none"> <li>Improved tourism facilities</li> </ul>	FD/CREL/CMC
	Construction and maintenance picnic site	second year and third year	<ul style="list-style-type: none"> <li>Improved tourism facilities</li> </ul>	FD/CMC
	Sign board	second year	<ul style="list-style-type: none"> <li>Improved ecotourism</li> </ul>	FD/CMC

*Satchari National Park Management Plan 2016- 2025*

	Tube well	Full planning period	<ul style="list-style-type: none"> <li>Improved quality of ecotourism</li> </ul>	FD/CMC
	Toilet	First year and second year	<ul style="list-style-type: none"> <li>Improved ecotourism</li> </ul>	FD/CMC
	Park gate	First year and second year	<ul style="list-style-type: none"> <li>Improved management</li> </ul>	FD/CMC
	Ticket counter	First year	<ul style="list-style-type: none"> <li>Improved tourism management</li> </ul>	FD/CMC
	Waste bin	First year and fourth year	<ul style="list-style-type: none"> <li>Improve waste management</li> <li>Less pollution</li> </ul>	FD/CMC
	Student dormitory	second year, third year and fourth year	<ul style="list-style-type: none"> <li>Increase learning</li> </ul>	FD/CMC
<b>Visitor management</b>	Park gate	First year and second year	<ul style="list-style-type: none"> <li>Increase protection</li> </ul>	FD/CMC
	Parking place	First year and second year	<ul style="list-style-type: none"> <li>Sustainable traffic management</li> </ul>	FD/CMC
	Tourist shop and cafeteria	First year, second year and third year	<ul style="list-style-type: none"> <li>Increase tourism facilities</li> <li>Local Livelihood</li> </ul>	FD/CMC
	Development code of conduct	First year and second year	<ul style="list-style-type: none"> <li>Increased ecotourism management</li> </ul>	FD/CMC
	Monitoring and recoding visitors entry	Full planning period	<ul style="list-style-type: none"> <li>enhanced ecotourism management</li> </ul>	FD/CMC
	Training eco-guides	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Trained eco-guide for nature conservation</li> </ul>	FD/CMC
	Publicity materials	Full planning period(yearly)	<ul style="list-style-type: none"> <li>Awareness about nature based tourism</li> </ul>	FD/CMC
	Entry fee collection	Full planning period	<ul style="list-style-type: none"> <li>revenue earning</li> </ul>	
<b>Capacity building and research</b>	PA archive development	Full Planning period	<ul style="list-style-type: none"> <li>Knowledge management</li> <li>help effective decision making</li> </ul>	FD /CMC
	Training assessment for participatory PA management	Full Planning period	<ul style="list-style-type: none"> <li>Training identified</li> </ul>	FD
	Training of staffs and stakeholders on conservation	Full planning period	<ul style="list-style-type: none"> <li>Trained personnel</li> </ul>	FD
	Meeting and workshop	Full planning period	<ul style="list-style-type: none"> <li>Capacity building</li> </ul>	FD/CMC
	Conservation research studies	Full planning period	<ul style="list-style-type: none"> <li>Develop Guidelines for conservation</li> </ul>	FD/CMC
	Biological research	Full planning period	<ul style="list-style-type: none"> <li>Develop Guidelines</li> </ul>	FD/CMC
	Research on utilization	Full planning period	<ul style="list-style-type: none"> <li>Develop Guidelines</li> </ul>	FD/CMC

Satchari National Park Management Plan 2016- 2025

	Ecological research	Full planning period	<ul style="list-style-type: none"> <li>Develop Guidelines</li> </ul>	FD/CMC
	Silvicultural research	Full planning period	<ul style="list-style-type: none"> <li>Develop Guidelines</li> </ul>	FD/CMC
	Human- wildlife conflict management	Full Planning period	<ul style="list-style-type: none"> <li>Biodiversity conservation</li> <li>Reduce property damage</li> </ul>	FD
<b>Capacity building for Livelihood program</b>	Selecting priority production technologies (reconnaissance surveys)	First year and second year	<ul style="list-style-type: none"> <li>Assessed Demand – supply</li> </ul>	FD
	Identifying a list of feasible production Technologies	First year and second year	<ul style="list-style-type: none"> <li>Feasible production technologies identified</li> </ul>	FD/CMC
	Stakeholders' Consultations on the proposed production technologies	First year and second year	<ul style="list-style-type: none"> <li>Locally accepted Effective approach identified</li> </ul>	FD/CMC
	Developing skills and loan for alternative income generation (poultry, fisheries, nursery, sewing etc.)	First year and second year	<ul style="list-style-type: none"> <li>Livelihood development</li> </ul>	FD/CMC
<b>Staffing and resource need</b>	Staff recruitment and equipment as described in <b>table 10 and annex 7</b>	First year and second year	<ul style="list-style-type: none"> <li>effective management</li> </ul>	FD
<b>Fund raising Plan</b>	Potential financial sources and As described in chapter 10;	Full planning period	<ul style="list-style-type: none"> <li>Financial efficiency</li> </ul>	FD, CMO

## REFERENCES

- Aziz N., Haque E., Thompson P., DeCosse P.J., Collis W.J., 2004. Using Participatory Bird Counts to Assess Protected Area (PA) Management Impacts: A Proposal and Design for Bangladesh. Nishorgo Support Project, IRG.
- BMD. 2012. Weather report for Moulavibazar.
- Bangladesh forest department 2010, <http://www.bforest.gov.bd>
- Bangladesh Bird Club. 2014. Preliminary report on Resident Forest bird Survey.
- Choudhury, J.K., Biswas, S.R., Islam, S.M., Rahman, O. and Uddin, S.N. 2004. Biodiversity of Satchari Reserved Forest, Habiganj. IUCN Bangladesh Country Office: Dhaka, Bangladesh.
- Chemonics. 2002. Site Selection, Inventory and Monitoring Report. Strengthening the Arannayak Foundation (Bangladesh Tropical Forest Conservation Foundation: Phase I. Task Order under the Biodiversity and Sustainable Forestry IQC (BIOFOR). Chemonics International Inc., Washington DC. (Available: [www.biofor.com](http://www.biofor.com)).
- FD (Forest Department). 2006. Management Plan for Chunati Wildlife Sanctuary. FD, Government of Bangladesh, Nishorgo Support Project: Dhaka.
- Khan, M.S., Rahman, M.M. and Ali, M.A. 2001. Red Data Book of Vascular Plants of Bangladesh. Bangladesh National Herbarium, Dhaka.
- Latif et al. 2015: Summary of Carbon Inventory in SNP source.
- Management Plans for Satchari National Park. 2006. Nishorgo Support Project, Bangladesh.
- Mukul, S.A. 2007. Biodiversity Conservation Strategies in Bangladesh: The State of Protected Areas. *Tigerpaper* 34(3): 28-32.
- Mollah, A.R., Kundu, D.K. and Rahman, M.M. 2004. Site-Level Field Appraisal for Protected Area Co-Management: Satchari Reserve Forest. Nature Conservation Management (NACOM), Bangladesh.
- Nishorgo support management plan for SNP 2010-2015.
- Site Information Brochure: Satchari National Park. NSP. 2006. Nishorgo Support Project: Dhaka, Bangladesh.

## Annex

### Annex 1: Gazette notification of Satchari National Park

The following is an unofficial translation of the original notification in Bangla.

**Government of the People's Republic of Bangladesh**  
**Ministry of Environment and Forests**  
**Section – III**

**No. PBM (S-3)/31/2004/1125**

**Dates:** October 10, 2005 A.D.

#### Notification

In exercise of the powers conferred by Article 23(3) of the Bangladesh Wildlife (Preservation) Order, 1973

(President's Order No. 23 of 1973) the Government is hereby declare 600 acres (242.91 hectares) of notified Reserved Forests of the 10,000 (4048.58 hectares) acres Raghunandan Hill Reserve on the basis of Notification No. 4238R on October 1914 under the Section 17 of The Assam Forest Regulation (VII of 1891) as National Park as described in the schedule below:

#### Schedule

600 acres (242.91 hectares) of bearing Reserved Forestland (Satchari National Park) of Raghunandan Hill Reserve Forests under Satchari Beat included in Satchari Range of District-Habiganj, Upazila-Chunarughat as in the schedule below:

#### North:

A RCC pillar, situated at the Northwest corner of Chaklapunji Tea Estate at the southern side of Madhabpur – Chunarughat Road (old Dhaka – Sylhet Road) has been deemed to be the No. S4 station, North: - from No. S4 Station to No. B2 Station the following bearings and distances line reaches Satchari Tea Estate.

Bearing	Distance
279 <sup>0</sup> – 0'	181' – 0"
297 <sup>0</sup> – 15'	197' – 0"
314 <sup>0</sup> – 15'	331' – 0"
283 <sup>0</sup> – 15'	203' – 0"
303 <sup>0</sup> – 15'	181' – 0"
294 <sup>0</sup> – 45'	61' – 0"
259 <sup>0</sup> – 30'	180' – 0"
243 <sup>0</sup> – 30'	197' – 0"
235 <sup>0</sup> – 0'	303' – 0"
274 <sup>0</sup> – 0'	177' – 0"
242 <sup>0</sup> – 0'	284' – 0"
238 <sup>0</sup> – 0'	105' – 0"
227 <sup>0</sup> – 15'	302' – 0"
242 <sup>0</sup> – 30'	111' – 0"

Satchari National Park Management Plan 2016- 2025

260 <sup>0</sup> – 15'	187' – 0"
284 <sup>0</sup> – 0'	121' – 0"
337 <sup>0</sup> – 0'	292' – 0"
323 <sup>0</sup> – 0'	142' – 0"
305 <sup>0</sup> – 15'	203' – 0"
289 <sup>0</sup> – 0'	131' – 0"
274 <sup>0</sup> – 0'	175' – 0"
264 <sup>0</sup> – 15'	199' – 0"
253 <sup>0</sup> – 30'	302' – 0"
245 <sup>0</sup> – 30'	291' – 0"
256 <sup>0</sup> – 30'	100' – 0"
275 <sup>0</sup> – 15'	153' – 0"
275 <sup>0</sup> – 0'	200' – 0"
270 <sup>0</sup> – 0'	101' – 0"
264 <sup>0</sup> – 15'	216' – 0"
283 <sup>0</sup> – 30'	103' – 0"
296 <sup>0</sup> – 45'	151' – 0"
278 <sup>0</sup> – 45'	100' – 0"
264 <sup>0</sup> – 30'	142' – 0"
263 <sup>0</sup> – 30'	156' – 0"
258 <sup>0</sup> – 0'	120' – 0"

**West:**

The following bearings and distances line reaches the No. U2 Station from the aforementioned No. B2

Station to Satchari Tea Estate and Reserve Forests.

<b>Bearing</b>	<b>Distance</b>
127 <sup>0</sup> – 30'	150' – 0"
148 <sup>0</sup> – 0'	272' – 0"
159 <sup>0</sup> – 0'	1570' – 0"
152 <sup>0</sup> – 45'	100' – 0"
156 <sup>0</sup> – 0'	575' – 0"
155 <sup>0</sup> – 0'	200' – 0"
155 <sup>0</sup> – 0'	175' – 0"
156 <sup>0</sup> – 0'	183' – 0"
154 <sup>0</sup> – 0'	700' – 0"
154 <sup>0</sup> – 0'	620' – 0"
160 <sup>0</sup> – 0'	58' – 0"
145 <sup>0</sup> – 30'	550' – 0"
148 <sup>0</sup> – 30'	245' – 0"
139 <sup>0</sup> – 0'	200' – 0"
145 <sup>0</sup> – 30'	850' – 0"
142 <sup>0</sup> – 0'	380' – 0"
146 <sup>0</sup> – 0'	215' – 0"
143 <sup>0</sup> – 0'	240' – 0"
144 <sup>0</sup> – 0'	480' – 0"

**South:**

The following bearings and distances line reaches the No. J3 Station via West side of teak garden of 1962 and 1966, from the aforesaid No. U2 Station

<b>Bearing</b>	<b>Distance</b>
43 <sup>0</sup> - 45'	100' - 0"
63 <sup>0</sup> - 30'	100' - 0"
48 <sup>0</sup> - 30'	100' - 0"
92 <sup>0</sup> - 0'	145' - 0"
74 <sup>0</sup> - 0'	70' - 0"
41 <sup>0</sup> - 15'	260' - 0"
62 <sup>0</sup> - 0'	235' - 0"
9 <sup>0</sup> - 0'	100' - 0"
352 <sup>0</sup> - 0'	100' - 0"
66 <sup>0</sup> - 0'	132' - 0"
67 <sup>0</sup> - 0'	100' - 0"
82 <sup>0</sup> - 0'	140' - 0"
81 <sup>0</sup> - 30'	150' - 0"
104 <sup>0</sup> - 0'	100' - 0"
19 <sup>0</sup> - 0'	200' - 0"

Thereafter the boundary line reaches the following bearings and distances No. T3 Station to north side of

No. J3 Station of via west side of forest garden 1988 A.D.

<b>Bearing</b>	<b>Distance</b>
290 <sup>0</sup> - 0'	150' - 0"
313 <sup>0</sup> - 0'	315' - 0"
327 <sup>0</sup> - 0'	116' - 0"
339 <sup>0</sup> - 30'	90' - 0"
360 <sup>0</sup> - 0'	110' - 0"
18 <sup>0</sup> - 30'	212' - 0"
344 <sup>0</sup> - 0'	118' - 0"
318 <sup>0</sup> - 0'	250' - 0"
351 <sup>0</sup> - 0'	259' - 0"
9 <sup>0</sup> - 0'	255' - 0"

From the aforementioned No. T3 Station up to the distances 90 bearings at U3, 1600 feet reaches the boundary of Chaklapunji Tea Estate, thereafter the bearings distances from U3 Station as in the following.

**East:**

From No. U3 Station to Chaklapunji Tea Estate and Reserve boundary line via No. S4 Station, south side of Dhaka – Sylhet road at the following bearings.

*Satchari National Park Management Plan 2016- 2025*

<b>Bearing</b>	<b>Distance</b>
28 <sup>0</sup> – 0'	280' – 0"
359 <sup>0</sup> – 0'	92' – 0"
302 <sup>0</sup> – 0'	90' – 0"
348 <sup>0</sup> – 30'	185' – 0"
31 <sup>0</sup> – 0'	240' – 0"
229 <sup>0</sup> – 0'	180' – 0"
35 <sup>0</sup> – 30'	320' – 0"
315 <sup>0</sup> – 0'	370' – 0"
353 <sup>0</sup> – 0'	165' – 0"
8 <sup>0</sup> – 0'	180' – 0"
7 <sup>0</sup> – 30'	162' – 0"
337 <sup>0</sup> – 0'	225' – 0"
347 <sup>0</sup> – 0'	135' – 0"
17 <sup>0</sup> – 0'	150' – 0"
328 <sup>0</sup> – 30'	90' – 0"
25 <sup>0</sup> – 0'	33' – 0"
332 <sup>0</sup> – 0'	135' – 0"
350 <sup>0</sup> – 30'	125' – 0"
338 <sup>0</sup> – 0'	150' – 0"
3 <sup>0</sup> – 0'	180' – 0"
324 <sup>0</sup> – 30'	240' – 0"
2 <sup>0</sup> – 30'	239' – 0"
323 <sup>0</sup> – 0'	168' – 0"
50 – 0'	170' – 0"

By order of the President

**No. PBM (S-3)/31/2004/1125 /1(7)**

Date: October 10, 2005 A.D.

Copy circulated for information and necessary action:

1. Secretary, Ministry of Lands, Bangladesh Secretariat, Dhaka.
2. Divisional Commissioner, Sylhet, Dhaka.
3. Chief Conservator of Forests, Directorate of Forest, Dhaka (Requested to take necessary actions for distribution to all concerned).
4. Deputy Commissioner, Sylhet/Moulvibazar/Habiganj/Sunamganj.
5. Deputy Controller, Bangladesh Government Printing Press, Tejgaon, Dhaka (Notification to be published in the next issue and 100 (one hundred) copies to be sent to the Ministry (Section – 3).
6. Conservator of Forests, Central Circle, Directorate of Forests, Mohakhali, Dhaka.
7. Divisional Forests Officer, Sylhet Forest Division, Sylhet.



Kazi Liakat Ali  
Senior Assistant Secretary  
Phone: 7164539

**No. PBS (Wildlife) 2M-122/05/1802**

Date: November 08, 2005 A.D.

Copy circulated for information and necessary action to the following officials:

1. Deputy Chief Conservator of Forests, .....
2. Conservator of Forests, .....
3. Divisional Forests Officer, Wildlife Management and Nature Conservation Division, Sylhet

**Md. Shamsur Rahman**  
**Conservator of Forests**  
**Wildlife and Nature Conservation Circle**  
**For, Chief Conservator of Forests**

## **Annex 2: Usefull Glossary**

**Biodiversity:** The variety of life and its processes including complexity of species, communities, genepools and ecological functions (USDA Forest Service 1993).

**Den tree:** A standing live tree with cavity in branches or in the bole in use or having potential for use by wildlife.

**Keystone species:** Animals or plants which by virtue of their presence or absence alter the structure of a community.

**Limiting factor:** The environmental influence through which the toleration limit of an organism is first reached, which acts as the immediate restriction in one or more of its functions or activities or in its geographic distribution.

**Pinch period:** A season during which either food or water or both are minimal in their quantity, quality or distribution, causing stress in animal populations.

**Riparian zone:** An area identified by the presence of vegetation that requires free or unbound water or conditions more moist than normally found in the area.

**Sensitive site:** A site vulnerable to rapid change in its biological attributes or physical character in the face of management activity or resource uses either due to its small size or due to existing species/communities, which are tolerant to change or are exacting in their habitat requirements or fragile rock/soil formation.

**Stand:** Plant communities, particularly of trees, sufficiently uniform in composition, constitution, age, spatial arrangement or condition to be distinguishable from adjacent communities.

**Succession stage:** A stage or recognizable condition of a plant community which occurs during its Development from bare ground to climax.

**Influence zone:** The extent of area outside the legal boundaries over which local villagers have a traditional PA based forests based dependency and/or over which significant wildlife damage occurs.

**ANNEX 3: Flora of Satchari Forest (Choudhury et. al. 2004)**

SL. No	Scientific name	Habit	Family	
1	<i>Acacia auriculiformis</i>	Tree	Mimosaceae	
2	<i>Acacia mangium</i>	Tree	Mimosaceae	
3	<i>Actinodaphne angustifolia</i>	Tree	Lauraceae	
4	<i>Abrus precatorius</i>	climber	Papilionaceae	
5	<i>Ageratum conyzoides</i>	Herb	Asteraceae	
6	<i>Aglaonema hookerianuin</i>	Herb	Araceae	
7	<i>Albizia chinensis</i>	Tree	Mimosaceae	
8	<i>A. lebbeck</i>	Tree	Mimosaceae	
9	<i>A. odoratissima</i>	Tree	Mimosaceae	
10	<i>A. procera</i>	Tree	Mimosaceae	
11	<i>Allophylus cobbe</i>	Shrub	Sapindaceae	
12	<i>Alpinia galanga</i>	herb	ingiberaceae	
13	<i>A. nigra</i>	herb	Zingiberaceae	
14	<i>Alstonia scholaris</i>	Tree	Apocynaceae	
15	<i>Amoora wallichii</i>	Tree	Eliaceae	
16	<i>Anisomeies ovata</i>	Herb	Amiaceae	
17	<i>Anona reticulata</i>	Tree	Amiaceae	
18	<i>Anthocephalus chinensis</i>	Tree	Rubiaceae	
19	<i>Antidesma bunius</i>	Tree	Euphorbiaceae	
20	<i>A. ghaesembilla</i>	Tree	Euphorbiaceae	
21	<i>Aphania danura</i>	Shrub	Sapindaceae	
22	<i>Aphanomixis polystachya</i>	Tree	Meliaceae	
23	<i>Aporusa dioica</i>	Tree	Euphorbiaceae	
24	<i>Aquillaria agallocha</i>	Tree	Thymeliaceae	
25	<i>Ardisia solanacea</i>	Tree	Myrsinaceae	
26	<i>Aristolochiatagal</i>	Climber	Aristolochiaceae	
27	<i>Artocarpus chaplasha</i>	Tree	Moraceae	
28	<i>Artocarpus heterophyllus</i>	Tree	Moraceae	
30	<i>Artocarpus lacucha</i>	Tree	Moraceae	
31	<i>Atalantia monophylla</i>	Shrub	Rutaceae	
32	<i>Bauhinia purpurea</i>	Tree	Caesalpinaceae	
33	<i>B. variegata</i>	Tree	Caesalpinaceae	
34	<i>Bixa orellena</i>	Tree	Bixaceae	
35	<i>Blumea lacera</i>	Tree	steraceae	
36	<i>Bombax insigne</i>	Tree	Bombacaceae	
37	<i>Bridelia stipularis</i>	Shrub	Bombacaceae	
38	<i>Buettneria pilosa</i>	Tree	Sterculiaceae	
39	<i>Butea monosperma</i>	Climber	Papilionaceae	
40	<i>Caesalpinia crista</i>	Shrub	Caesalpinaceae	
41	<i>Calamus viminalis</i>	Climber	Arecaceae	
42	<i>Callicarpa longifolia</i>	Shrub	Verbenaceae	
43	<i>Cornelia sinensis</i>	Shrub	Theaceae	
44	<i>Canarium benghalense</i>	Tree	Burseraceae	
45	<i>Carallia brachiata</i>	Tree	Rhizophoraceae	
46	<i>Careya arborea</i>	Tree	Lecythidaceae	
47	<i>Caryota urens</i>	Tree	Palmae	
48	<i>Cassia siamea</i>	Tree	Caesalpinaceae	
49	<i>Costanopsis tributoides</i>	Tree	Fagaceae	

Satchari National Park Management Plan 2016- 2025

50	<i>Cayratia japonica</i>	Climber	Vitaceae	
51	<i>Centella asiatica</i>	Herb	Hydrocotylidaceae	
52	<i>Centotheca lappacea</i>	Herb	Poaceae	
53	<i>Chaetocarpus castanocarpus</i>	Tree	Euphorbiaceae	
54	<i>Chickrassia tabularis</i>	Tree	Meliaceae	
55	<i>Chrysopogon adculatus</i>	Herb	Poaceae	
56	<i>Cassus adnata</i>	Climber	Vitaceae	
57	<i>C. repanda</i>	Climber	Vitaceae	
58	<i>Clausena heptaphylla</i>	Shrub	Rutaceae	
59	<i>Clerodendrum viscosum</i>	Shrub	erbenaceae	
60	<i>Cocculus hirsutus</i>	Shrub	Menispermaceae	
61	<i>Commelina benghalensis</i>	Herb	Commelinaceae	
62	<i>Costus spodosus</i>	Herb	Costaceae	
63	<i>Crotalaria pallida</i>	Shrub	Fabaceae	
64	<i>Curcuma amada</i>	Herb	Zingiberaceae	
65	<i>Dalbergia stipulacea</i>	Tree	Fabaceae	
66	<i>D. tomarandifolia</i>	Tree	Fabaceae	
67	<i>Delima sarmentosa</i>	Climber	Dilleniaceae	
68	<i>Dendrothoe falcata</i>	Parasite	Loranthaceae	
69	<i>Derris elliptica</i>	Climber	Fabaceae	
70	<i>D. robusta</i>	Tree	Fabaceae	
71	<i>Desmos chinensis</i>	Shrub	Annonaceae	
72	<i>Digittaria sangutnais</i>	Herb	Poaceae	
73	<i>Ditlenia indica</i>	Tree	Dilleniaceae	
74	<i>Dillenia pentagyna</i>	Tree	Dilleniaceae	
75	<i>Dioscorea glabra</i>	Climber	Dioscoreaceae	
76	<i>Diospyros lancaefolia</i>	Tree	Ebenaceae	
77	<i>Dipterocarpus turbinalus</i>	Tree	Dipterocarpaceae	
78	<i>Dracaena spicata</i>	Herb	Liliaceae	
79	<i>Duabanga grandiflora</i>	Tree	onneratiaceae	
80	<i>Elaeocarpus floribundus</i>	Tree	Elaeocarpaceae	
81	<i>Elaeocarpus robusta</i>	Tree	Elaeocarpaceae	
82	<i>Eteusine indtca</i>	Herb	Poaceae	
83	<i>Engelhardtia spicata</i>	Tree	Juglandaceae	
84	<i>Entada phaseoloides</i>	Climber	Mimosaceae	
85	<i>Erythrina orientalis</i>	Tree	Fabaceae	
86	<i>E.variegata</i>	Tree	Fabaceae	
87	<i>Eucalyptus camaldulensis</i>	Tree	Myrtaceae	
88	<i>Eupatorium odoratum</i>	Shrub	Asteraceae	
89	<i>Euphorbia hirta</i>	Herb	Euphorbiaceae	
90	<i>Ficus benghalensis</i>	Tree	Moraceae	
91	<i>F. benjamina</i>	Tree	Moraceae	
92	<i>F.geniculata</i>	Tree	Moraceae	
93	<i>F. hirsuta</i>	Tree	Moraceae	
94	<i>F. hispida</i>	Tree	Moraceae	
95	<i>F. obtusi folia</i>	Tree	Moraceae	
96	<i>F. racemosa</i>	Tree	Moraceae	
97	<i>F.semicordata</i>	Tree	Moraceae	
98	<i>Flacourtia jangomas</i>	Tree	Moraceae	
99	<i>Garcinia cowa</i>	Tree	Cluceaceae	
100	<i>Gardenia coronaria</i>	Tree	Rubiaceae	
101	<i>Garuga pinnata</i>	Tree	Burseraceae	

Satchari National Park Management Plan 2016- 2025

102	<i>Gelonium multiflorum</i>	Tree	Euphorbiaceae	
103	<i>Glochidion lanceolarium</i>	Tree	Euphorbiaceae	
104	<i>G. multiloculare</i>	Tree	Euphorbiaceae	
105	<i>Glycosmis arborea</i>	Shrub	Rutaceae	
106	<i>Gmelina arborea</i>	Tree	Verbenaceae	
107	<i>Gnaphalium luteoalbum</i>	Herb	Asteraceae	
108	<i>Gomphostemma parviflora</i>	Shrub	Lamiaceae	
109	<i>Goniothalamus sesquipedalis</i>	Shrub	Lamiaceae	
110	<i>Gouania tiliaefolia</i>	Shrub	Rhamnaceae	
111	<i>Grewia denticulata</i>	Shrub	Tiliaceae	
112	<i>G.serrulata</i>	Shrub	Tiliaceae	
113	<i>Habenaria sp.</i>	Shrub	Orchidaceae	
114	<i>Haplophragma adenophyllum</i>	Tree	Bignoniaceae	
115	<i>Hedyotis scandens</i>	Climber	Rubiaceae	
116	<i>Hemidesmus indicus</i>	Shrub	Asclepiadaceae	
117	<i>Heteropanax fragrans</i>	Tree	Araliaceae	
118	<i>Hevea brasiliensis</i>	Tree	Euphorbiaceae	
119	<i>Holarrhena antidysenterica</i>	Shrub	Asclepiadaceae	
120	<i>Hoiigarna longifolia</i>	Tree	Anacardiaceae	
121	<i>Homalonema ammatica</i>	Herb	Araceae	
122	<i>Hoya parasitica</i>	Climber	Asclepiadaceae	
123	<i>Hydnocarpus kurzii</i>	Herb	Flacourtiaceae	
124	<i>Ichnocarpus frutescens</i>	Climber	Apocynaceae	
125	<i>Ixora parviflora</i>	Shrub	Rubiaceae	
126	<i>Ixora spectabilis</i>	Shrub	Rubiaceae	
127	<i>Ixora undulata</i>	Shrub	Rubiaceae	
128	<i>Jasminum subtriplinerve</i>	Climber	Oleaceae	
129	<i>Lagerstroemia speciosa</i>	Tree	Lythraceae	
130	<i>Lannea coromandelica</i>	Tree	Anacardiaceae	
131	<i>Lantana camara</i>	Shrub	Verbenaceae	
132	<i>Lantana Indica</i>	Shrub	Verbenaceae	
133	<i>Leea acuminata</i>	Shrub	Leaceae	
134	<i>Leea mbusta</i>	Shrub	Leaceae	
135	<i>Leea sambusina</i>	Shrub	Leaceae	
136	<i>Lophatherum gracile</i>	Poaceae	Herb	
137	<i>Lepidagathis hyalina</i>	Acanthaceae	Herb	
138	<i>Lepisanthes rubiginosa</i>	Sapindaceae	Tree	
139	<i>Utsea glutinosa</i>	Tree	Lauraceae	
140	<i>L. tandfolia</i>	Tree	Lauraceae	
141	<i>L. monopetala</i>	Tree	Lauraceae	
142	<i>Lycopodiella cernua</i>	Herb	Lycopodiaceae	
143	<i>Macaranga denticulate</i>	Tree	Euphorbiaceae	
144	<i>Macropanax undulatus</i>	Tree	Araliaceae	
145	<i>Maesa indica</i>	Tree	Myrsinaceae	
146	<i>Mallotus albus</i>	Tree	Euphorbiaceae	
147	<i>M. philippinensis</i>	Tree	Euphorbiaceae	
148	<i>Mangifera indica</i>	Tree	Anacardiaceae	
149	<i>M.sylvatica</i>	Tree	Anacardiaceae	
150	<i>Melastoma malabathrium</i>	Shrub	Melastomaceae	
151	<i>Melocanna bacifera</i>	Tree	Poaceae	
152	<i>Melodorum rubiginosum</i>	Climber	Annonaceae	
153	<i>Merremia umbellata</i>	Climber	Convolvulaceae	

Satchari National Park Management Plan 2016- 2025

154	<i>Microcos paniculate</i>	Tree	Tiliaceae	
155	<i>Micromelum minutum</i>	Tree	Rutaceae	
156	<i>Microsolen cochinchinensis</i>	Climber	Loranthaceae	
157	<i>Mikania scandens</i>	Herb	Asteraceae	
158	<i>Mimosa pudica</i>	Herb	Mimosaceae	
159	<i>Moghania congesta</i>	Shrub	Fabaceae	
160	<i>Morinda angustifolia</i>	Shrub	Rubiaceae	
161	<i>Mucuna imbricata</i>	Climber	Fabaceae	
162	<i>M. monosperma</i>	Climber	Fabaceae	
163	<i>Murdannio nudiflora</i>	Herb	Commelinaceae	
164	<i>Musa ornata</i>	Herb	Musaceae	
165	<i>Myrioneuron nutans</i>	Shrub	Rubiaceae	
166	<i>Nelsonia canescens</i>	Herb	Acanthaceae	
167	<i>Ophlorrhizamungos</i>	Herb	Rubiaceae	
168	<i>Oroxylum indicum</i>	Tree	Bignoniaceae	
169	<i>Oxalis corniculata</i>	Herb	Oxalidaceae	
170	<i>Pandanus odoratissimus</i>	Shrub	Pandanaceae	

#### ANNEX 4: Fauna of Satchari Forest

##### List of Amphibian of Satchari Forest

SL. No.	Common Name	Scientific Name	Relative Abundance	Family
1	Common Toad	<i>Bufo melanostictus</i>	VC	Bufonidae
2	Ornate Microhylid	<i>Microhyla ornata</i>	F	Bufonidae
3	Skipper Frog	<i>Euphyctis cyanophyllyctis</i>	F	Ranidae
4	Bull Frog/Indian Bull Frog	<i>Haplobatrachus tigrinus</i>	C	Ranidae
5	--	<i>Philautus sp.</i>	R	Rhacophoridae
6	Maculated Tree Frog	<i>Polypedates maculatus</i>	F	Rhacophoridae

Note: VC – Very Common; C – Common; F – Few; and R – Rare.

(Choudhury et. al. 2004)

##### List of Reptiles of Satchari Forest

SL. No	Common name	Scientific Name	Family
1	Wall Lizard	<i>Gekko gekko</i>	Gekkonidae
2	House Lizard	<i>Hemidactylus brookii</i>	Gekkonidae
3	Common Houses Lizard	<i>Hemidactylus flaviviridis</i>	Gekkonidae
4	Garden Lizard	<i>Calotes jerdoni</i>	Agamidae
5	Common Garden Lizard	<i>Calotes versicolor</i>	Agamidae
6	Common Skink	<i>Mabuya carinata</i>	Scincidae
7	Bengal Monitor	<i>Varanus Bengalensis</i>	Varanidae
8	Common Vine Snake	<i>Ahaetulla nasutus</i>	Colubridae
9	Stripped Keelback	<i>Amphiesma stolata</i>	Colubridae
10	Olive Keelback	<i>Atretium schistosum</i>	Colubridae
11	EasternCat Snake	<i>Boiga gakkool</i>	Colubridae
12	Ornate Flying Snake	<i>Chrysopelea ornata</i>	Colubridae
13	Rat Snake / Dhaman	<i>Coluber mucosus</i>	Colubridae

14	Common Smooth Water Snake	<i>Enhydryis enhydryis</i>	Colubridae
15	Green Keelback Snake	<i>Macropisthodon plumbicolor</i>	Colubridae
16	Checkered Keelback	<i>Xenochrophis piscator</i>	Colubridae
17	Spectaled Cobra	<i>Naja naja</i>	Elapidae
18	King Cobra	<i>Ophiophagus hannah</i>	Elapidae

(Choudhury *et. al.* 2004)

### List of Mammals of Satchari Forest

SL. No	Local Name	Scientific Name	Relative Abundance	Family
1	Gechho chhucho	<i>Tupaia glis</i>	R	Tupaiaidae
2	Bocha Kola Badur	<i>Cynopterus sphinx</i>	R	Tupaiaidae
3	Badur	<i>Pteropus giganteus</i>	C	Pteropodidae
4	Kola Badur	<i>Rousettus leschenaulti</i>	C	Pteropodidae
5	-----	<i>Pipistrellus coromandra</i>	F	Pteropodidae
6	Lojjawati Banor	<i>Nycticebus coucang</i>	R	Loridae
7	Banor	<i>Nycticebus coucang</i>	C	Colobidae
8	Mukhpora Hanuman	<i>Trachypithecus pileatus</i>	F	Colobidae
9	Ulluk	<i>Hylobates hoolock</i>	R	Hylobatidae
10	Pati Shial	<i>Ccanis aureus</i>	R	Canidae
11	Khek Shial	<i>Vulpes bengalensis</i>	F	Canidae
12	Ban Biral	<i>Felis chaus</i>	R	Felidae
13	Chita Biral	<i>Prionailurus bengalensis</i>	R	Felidae
14	Mechho Biral	<i>Prionailurus viverrinus</i>	R	Felidae
15	Venji	<i>Herpestes aurouinctatus</i>	C	Herpestidae
16	Bara Beji	<i>Herpestes edwardsi</i>	F	Herpestidae
17	Khatash	<i>Viverricula</i>	F	Viverridae
18	Bhalluk	<i>Melursus ursinus</i>	R	Ursidae
19	Maya Harin	<i>Muntiacus muntjak</i>	R	Cervidae
20	Badami Kathbirali	<i>Callosciurus pygerythrus</i>	F	Sciuridae
21	-----	<i>Dremomys lokriah</i>	F	Sciuridae
22	Indur	<i>Bandicota bengalensis</i>	F	Muridae
23	Indur	<i>Rattus rattus</i>	C	Muridae
24	Shojaru	<i>Hystrix indica</i>	R	Hystricidae

Note: VC – Very Common; C – Common; F – Few; and R – Rare.

Source missing (Choudhury *et. al.* 2004)

### List Bird species recorded in Satchari NP

Out of 203 species recorded up to early 2016, 47 are considered common, 57 uncommon, and 56 rare, while the remaining 43 species have been recorded five or less times. The following globally threatened and near-threatened species have been recorded: White-cheeked Partridge (near-threatened) is an uncommon and secretive resident, Lesser Adjutant (Vulnerable) – one sighting flying over, White-rumped Vulture (Critically Endangered) rare past sightings although numbers in the region have now crashed, Slender-billed Vulture (Critically Endangered) – one older sighting before the crash in vulture numbers.

Satchari National Park Management Plan 2016- 2025

Key to status in Satchari	
common	c
uncommon	uc
rare	r
1-5 records	number

General status in Bangladesh	St.
resident	r
winter	w
passage	p
summer (monsoon)	s
extirpated	ex

Preferred Habitat	Ha
Forest (all)	F
Deciduous forest (sal)	Fd
Evergreen forest	Fe
Mangroves	Fm
Wetland	W
Haors	Wh
Rivers	Wr
Villages	V
Bushes	B
Coast	C
Grassland	G

English Name	Genus	Species	Th	St.	Ha	Status in Satchari NP
White-cheeked Partridge	<i>Arborophila</i>	<i>atroregularis</i>	NT	r	Fe	uc
Red Junglefowl	<i>Gallus</i>	<i>gallus</i>		r	F	c
Kalij Pheasant	<i>Lophura</i>	<i>leucomelanos</i>		r	Fe	uc
Oriental Turtle-Dove	<i>Streptopelia</i>	<i>orientalis</i>		r	Fe	c
Eurasian Collared Dove	<i>Streptopelia</i>	<i>decaocto</i>		R	V	uc
Red Turtle-Dove	<i>Streptopelia</i>	<i>tranquebarica</i>		R	V	1
Western Spotted Dove	<i>Spilopelia</i>	<i>suratensis</i>		R	V	c
Grey-capped Emerald Dove	<i>Chalcophaps</i>	<i>indica</i>		R	F	c
Orange-breasted Green Pigeon	<i>Treron</i>	<i>bicinctus</i>		r	Fe	uc
Grey-fronted Green Pigeon	<i>Treron</i>	<i>affinis</i>		r	Fe	c
Yellow-footed Green Pigeon	<i>Treron</i>	<i>phoenicopterus</i>		R	F	r
Pin-tailed Green Pigeon	<i>Treron</i>	<i>apicauda</i>		v	Fe	3
Wedge-tailed Green Pigeon	<i>Treron</i>	<i>sphenurus</i>		v	Fe	5
Green Imperial Pigeon	<i>Ducula</i>	<i>aenea</i>		w	Fe	uc
Grey Nightjar	<i>Caprimulgus</i>	<i>jotaka</i>		r	F	r
Large-tailed Nightjar	<i>Caprimulgus</i>	<i>macrurus</i>		R	F	c
Asian Palm-Swift	<i>Cypsiurus</i>	<i>balasiensis</i>		R	V	uc
Greater Coucal	<i>Centropus</i>	<i>sinensis</i>		R	V	uc
Lesser Coucal	<i>Centropus</i>	<i>bengalensis</i>		R	B	r
Green-billed Malkoha	<i>Phaenicophaeus</i>	<i>tristis</i>		R	F	uc
Jacobin (Pied) Cuckoo	<i>Clamator</i>	<i>jacobinus</i>		S	V	1
Chestnut-winged Cuckoo	<i>Clamator</i>	<i>coromandus</i>		s	Fe	r



Satchari National Park Management Plan 2016- 2025

English Name	Genus	Species	Th	St.	Ha	Status in Satchari NP
Western Koel	<i>Eudynamys</i>	<i>scolopacea</i>		R	V	r
Asian Emerald Cuckoo	<i>Chrysococcyx</i>	<i>maculatus</i>		s	Fe	r
Violet Cuckoo	<i>Chrysococcyx</i>	<i>xanthorhynchus</i>		r	Fe	r
Plaintive Cuckoo	<i>Cacomantis</i>	<i>merulinus</i>		R	V	r
Square-tailed Drongo-Cuckoo	<i>Surniculus</i>	<i>lugubris</i>		R	Fe	uc
Common Hawk Cuckoo	<i>Hierococcyx</i>	<i>varius</i>		R	V	r
Indian Cuckoo	<i>Cuculus</i>	<i>micropterus</i>		R	V	2
Lesser Adjutant	<i>Leptoptilos</i>	<i>javanicus</i>	VU	r	Fm	1
Indian Pond Heron	<i>Ardeola</i>	<i>grayii</i>		R	W	r
Brown Boobook (Hawk Owl)	<i>Ninox</i>	<i>scutulata</i>		R	V	c
Asian Barred Owlet	<i>Glaucidium</i>	<i>cuculoides</i>		R	Fe	c
Spotted Owlet	<i>Athene</i>	<i>brama</i>		R	V	c
Oriental Scops Owl	<i>Otus</i>	<i>sunia</i>		R	F	c
Brown Wood Owl	<i>Strix</i>	<i>leptogrammica</i>		r	Fd	r
Spot-bellied Eagle-Owl	<i>Bubo</i>	<i>nipalensis</i>		r	F	1
Oriental Honey-buzzard	<i>Pernis</i>	<i>ptilorhynchus</i>		r	F	4
Jerdon's Baza	<i>Aviceda</i>	<i>jerdoni</i>		r	Fe	r
Black Baza	<i>Aviceda</i>	<i>leuphotes</i>		w	Fe	uc
Crested Serpent Eagle	<i>Spilornis</i>	<i>cheela</i>		R	FV	uc
White-rumped Vulture	<i>Gyps</i>	<i>bengalensis</i>	CR	r	V	r
Slender-billed Vulture	<i>Gyps</i>	<i>tenuirostris</i>	CR	r	V	1
Changeable Hawk Eagle	<i>Nisaetus</i>	<i>cirrhatius</i>		r	F	r
Bonelli's Eagle	<i>Aquila</i>	<i>fasciata</i>		v	Fe	1
Crested Goshawk	<i>Accipiter</i>	<i>trivirgatus</i>		r	Fe	r
Shikra	<i>Accipiter</i>	<i>badius</i>		R	V	r
Besra	<i>Accipiter</i>	<i>virgatus</i>		r	Fe	r
Brahminy Kite	<i>Haliastur</i>	<i>indus</i>		R	V	r
Black Kite	<i>Milvus</i>	<i>migrans</i>		R	V	r
Red-headed Trogon	<i>Harpactes</i>	<i>erythrocephalus</i>		r	Fe	r
Oriental Pied Hornbill	<i>Anthracoceros</i>	<i>albirostris</i>		r	Fe	r
Blue-bearded Bee-eater	<i>Nyctyornis</i>	<i>athertoni</i>		r	Fe	uc
Asian Green Bee-eater	<i>Merops</i>	<i>orientalis</i>		R	V	r
Chestnut-headed Bee-eater	<i>Merops</i>	<i>leschenaulti</i>		r	Fe	c
Blue-tailed Bee-eater	<i>Merops</i>	<i>philippinus</i>		r	V	r
Indian Roller	<i>Coracias</i>	<i>benghalensis</i>		R	V	1
(Oriental) Dollarbird	<i>Eurystomus</i>	<i>orientalis</i>		ps	Fe	2
Oriental Dwarf Kingfisher	<i>Ceyx</i>	<i>erithaca</i>		v	Fe	r
Common Kingfisher	<i>Alcedo</i>	<i>atthis</i>		R	W	r
White-breasted Kingfisher	<i>Halcyon</i>	<i>smyrnensis</i>		R	V	uc
Coppersmith Barbet	<i>Psilopogon</i>	<i>haemacephalus</i>		R	VFd	r
Blue-eared Barbet	<i>Psilopogon</i>	<i>cyanothis</i>		r	Fe	uc
Lineated Barbet	<i>Psilopogon</i>	<i>lineatus</i>		R	F	c
Blue-throated Barbet	<i>Psilopogon</i>	<i>asiaticus</i>		R	Fe	c
White-browed Piculet	<i>Sasia</i>	<i>ochracea</i>		r	Fe	r
Speckled Piculet	<i>Picumnus</i>	<i>innominatus</i>		r	Fe	r
Greater Flameback (Goldenback)	<i>Chrysocolaptes</i>	<i>guttacristatus</i>		R	F	c
Pale-headed Woodpecker	<i>Gecinulus</i>	<i>grantia</i>		r	Fe	1
Rufous Woodpecker	<i>Microptemus</i>	<i>brachyurus</i>		R	Fe	uc

Satchari National Park Management Plan 2016- 2025

English Name	Genus	Species	Th	St.	Ha	Status in Satchari NP
Greater Yellownape	<i>Chrysophlegma</i>	<i>flavinucha</i>		R	Fe	uc
Lesser Yellownape	<i>Picus</i>	<i>chlorolophus</i>		R	Fe	uc
Black-naped (Grey-headed) Woodpecker	<i>Picus</i>	<i>guerini</i>		R	Fe	uc
Great Slaty Woodpecker	<i>Mulleripicus</i>	<i>pulverulentus</i>		r	Fe	2
Grey-capped Pygmy Woodpecker	<i>Picoides</i>	<i>canicapillus</i>		r	Fd	r
Vernal Hanging Parrot	<i>Loriculus</i>	<i>vernalis</i>		r	FeB	uc
Blossom-headed Parakeet	<i>Psittacula</i>	<i>roseata</i>		r	F	r
Red-breasted Parakeet	<i>Psittacula</i>	<i>alexandri</i>		R	FeB	c
Rose-ringed Parakeet	<i>Psittacula</i>	<i>krameri</i>		R	V	2
Silver-breasted Broadbill	<i>Serilophus</i>	<i>lunatus</i>		r	Fe	r
Blue-naped Pitta	<i>Pitta</i>	<i>nipalensis</i>		r	Fe	r
Hooded Pitta	<i>Pitta</i>	<i>sordida</i>		s	Fe	uc
Ashy Woodswallow	<i>Artamus</i>	<i>fuscus</i>		R	V	uc
Common Iora	<i>Aegithina</i>	<i>tiphia</i>		R	FV	c
Large Woodshrike	<i>Tephrodornis</i>	<i>gularis</i>		R	Fe	uc
Common Woodshrike	<i>Tephrodornis</i>	<i>pondicerianus</i>		R	Fd	uc
Large Cuckooshrike	<i>Coracina</i>	<i>macei</i>		R	F	uc
Black-winged Cuckooshrike	<i>Coracina</i>	<i>melaschistos</i>		w	F	uc
Rosy Minivet	<i>Pericrocotus</i>	<i>roseus</i>		w	Fe	uc
Brown-rumped Minivet	<i>Pericrocotus</i>	<i>cantonensis</i>		v	Fe	4
Small Minivet	<i>Pericrocotus</i>	<i>cinnamomeus</i>		r	Fd	r
Scarlet Minivet	<i>Pericrocotus</i>	<i>flammeus</i>		R	Fe	c
Bar-winged Flycatcher-shrike	<i>Hemipus</i>	<i>picatus</i>		r	Fe	uc
Brown Shrike	<i>Lanius</i>	<i>cristatus</i>		W	V	r
Long-tailed Shrike	<i>Lanius</i>	<i>schach</i>		R	V	r
Grey-backed Shrike	<i>Lanius</i>	<i>tephronotus</i>		w	B	uc
Black-naped Oriole	<i>Oriolus</i>	<i>chinensis</i>		r	F	uc
Black-hooded Oriole	<i>Oriolus</i>	<i>xanthornus</i>		R	V	c
Maroon Oriole	<i>Oriolus</i>	<i>trillii</i>		w	Fe	r
Black Drongo	<i>Dicrurus</i>	<i>macrocerus</i>		R	V	uc
Ashy Drongo	<i>Dicrurus</i>	<i>leucophaeus</i>		W	F	uc
Bronzed Drongo	<i>Dicrurus</i>	<i>aeneus</i>		R	F	c
Lesser Racket-tailed Drongo	<i>Dicrurus</i>	<i>remifer</i>		w	F	uc
Hair-crested Drongo	<i>Dicrurus</i>	<i>hottentotus</i>		R	F	uc
Greater Racket-tailed Drongo	<i>Dicrurus</i>	<i>paradiseus</i>		R	Fe	c
White-throated Fantail	<i>Rhipidura</i>	<i>albicollis</i>		r	V	1
Black-naped Monarch	<i>Hypothymis</i>	<i>azurea</i>		R	F	c
Asian Paradise-flycatcher	<i>Terpsiphone</i>	<i>paradisi</i>		r	F	r
(Common) Green Magpie	<i>Cissa</i>	<i>chinensis</i>		r	Fe	uc
Grey Treepie	<i>Dendrocitta</i>	<i>formosae</i>		R	Fe	uc
House Crow	<i>Corvus</i>	<i>splendens</i>		R	V	r
Jungle (Large-billed) Crow	<i>Corvus</i>	<i>macrorhynchos</i>		R	V	uc
Great Tit	<i>Parus</i>	<i>major</i>		r	Fd	uc
Barn Swallow	<i>Hirundo</i>	<i>rustica</i>		Wr	V	c
Red-rumped Swallow	<i>Hirundo</i>	<i>daurica</i>		w	V	r
Rufescent Prinia	<i>Prinia</i>	<i>rufescens</i>		r	GB	1
Grey-breasted Prinia	<i>Prinia</i>	<i>hodgsonii</i>		R	B	r

Satchari National Park Management Plan 2016- 2025

English Name	Genus	Species	Th	St.	Ha	Status in Satchari NP
Black-headed Bulbul	<i>Pycnonotus</i>	<i>atriceps</i>		R	Fe	uc
Black-crested Bulbul	<i>Pycnonotus</i>	<i>melanicterus</i>		R	F	c
Red-whiskered Bulbul	<i>Pycnonotus</i>	<i>jocosus</i>		R	FB	c
Red-vented Bulbul	<i>Pycnonotus</i>	<i>cafer</i>		R	VB	c
Olive Bulbul	<i>Iole</i>	<i>virescens</i>		r	Fe	uc
White-throated Bulbul	<i>Alophoixus</i>	<i>flaveolus</i>		R	Fe	c
Ashy Bulbul	<i>Hemixos</i>	<i>flavala</i>		R	Fe	uc
Asian Black Bulbul	<i>Hypsipetes</i>	<i>leucocephalus</i>		v	Fe	1
Common Tailorbird	<i>Orthotomus</i>	<i>sutorius</i>		R	VB	c
Dark-necked Tailorbird	<i>Orthotomus</i>	<i>atrogularis</i>		R	Fe	uc
Grey-bellied Tesia	<i>Tesia</i>	<i>cyaniventer</i>		W	Fe	r
Asian Stubtail	<i>Urosphena</i>	<i>squameiceps</i>		v	Fe	1
Blyth's Reed Warbler	<i>Acrocephalus</i>	<i>dumetorum</i>		W	VB	c
Dusky Warbler	<i>Phylloscopus</i>	<i>fuscatus</i>		W	BW	r
Tickell's Leaf Warbler	<i>Phylloscopus</i>	<i>affinis</i>		W	B	r
Inornate (Yellow-browed) Warbler	<i>Phylloscopus</i>	<i>inornatus</i>		W	F	c
Greenish Warbler	<i>Phylloscopus</i>	<i>trochiloides</i>		W	F	c
Large-billed Leaf Warbler	<i>Phylloscopus</i>	<i>magnirostris</i>		W	F	1
Western Crowned Warbler	<i>Phylloscopus</i>	<i>occipitalis</i>		W	F	1
Southern Blyth's Leaf Warbler	<i>Phylloscopus</i>	<i>reguloides</i>		W	F	c
Yellow-vented Warbler	<i>Phylloscopus</i>	<i>cantator</i>		W	F	uc
Green-crowned Warbler	<i>Seicercus</i>	<i>burki</i>		W	F	r
Golden-spectacled Warbler sp	<i>Seicercus</i>	<i>sp</i>				c
Yellow-bellied Warbler	<i>Abroscopus</i>	<i>superciliaris</i>		r	Fe	1
Puff-throated Babbler	<i>Pellorneum</i>	<i>ruficeps</i>		R	F	c
Buff-breasted Babbler	<i>Trichastoma</i>	<i>tickelli</i>		r	Fe	1
Abbott's Babbler	<i>Malacocincla</i>	<i>abbotti</i>		R	Fe	c
Large Scimitar Babbler	<i>Pomatorhinus</i>	<i>hypoleucos</i>		r	Fe	2
White-browed Scimitar Babbler	<i>Pomatorhinus</i>	<i>schisticeps</i>		r	Fe	uc
Rufous-fronted Babbler	<i>Stachyris</i>	<i>ruffrons</i>		r	Fe	r
Grey-throated Babbler	<i>Stachyris</i>	<i>nigriceps</i>		r	Fe	1
Pin-striped Tit Babbler	<i>Macronous</i>	<i>gularis</i>		R	Fe	c
Lesser Necklaced Laughingthrush	<i>Garrulax</i>	<i>monileger</i>		r	Fe	c
Greater Necklaced Laughingthrush	<i>Garrulax</i>	<i>pectoralis</i>		R	Fe	c
Brown-cheeked Fulvetta	<i>Alcippe</i>	<i>poioicephala</i>		r	Fe	r
Nepal Fulvetta	<i>Alcippe</i>	<i>nipalensis</i>		R	Fe	r
White-bellied Yuhina	<i>Erpornis</i>	<i>zantholeuca</i>		r	Fe	uc
Oriental White-eye	<i>Zosterops</i>	<i>palpebrosus</i>		R	F	c
Asian Fairy Bluebird	<i>Irena</i>	<i>puella</i>		R	Fe	uc
Velvet-fronted Nuthatch	<i>Sitta</i>	<i>frontalis</i>		r	F	uc
(Common) Hill Myna	<i>Gracula</i>	<i>religiosa</i>		R	Fe	uc
Common Myna	<i>Acridotheres</i>	<i>tristis</i>		R	V	uc
Jungle Myna	<i>Acridotheres</i>	<i>fuscus</i>		R	V	c
Chestnut-tailed Starling	<i>Sturnus</i>	<i>malabaricus</i>		R	V	uc

Satchari National Park Management Plan 2016- 2025

English Name	Genus	Species	Th	St.	Ha	Status in Satchari NP
Asian Pied Starling	<i>Sturnus</i>	<i>contra</i>		R	V	uc
Blue Whistling Thrush	<i>Myophonus</i>	<i>caeruleus</i>		w	F	1
Orange-headed Thrush	<i>Zoothera</i>	<i>citrina</i>		r	F	uc
Eurasian Scaly Thrush	<i>Zoothera</i>	<i>dauma</i>		v	F	1
Tickell's Thrush	<i>Turdus</i>	<i>unicolor</i>		v	F	1
Black-breasted Thrush	<i>Turdus</i>	<i>dissimilis</i>		w	F	r
Siberian Blue Robin	<i>Luscinia</i>	<i>cyane</i>		v	F	1
White-browed Bush Robin	<i>Tarsiger</i>	<i>indicus</i>		v	Fe	1
Oriental Magpie-Robin	<i>Copsychus</i>	<i>saularis</i>		R	V	c
White-rumped Shama	<i>Copsychus</i>	<i>malabaricus</i>		R	F	c
White-tailed Robin	<i>Myiomela</i>	<i>leucurum</i>		r	Fe	r
Black-backed Forktail	<i>Enicurus</i>	<i>immaculatus</i>		r	Fe	r
Blue Rock Thrush	<i>Monticola</i>	<i>solitarius</i>		w	V	1
Dark-sided Flycatcher	<i>Muscicapa</i>	<i>sibirica</i>		v	F	1
Brown-breasted Flycatcher	<i>Muscicapa</i>	<i>muttui</i>		v	Fe	1
Rufous-gorgeted Flycatcher	<i>Ficedula</i>	<i>strophciata</i>		v	F	3
Taiga Flycatcher	<i>Ficedula</i>	<i>albicilla</i>		W	FV	uc
Snowy-browed Flycatcher	<i>Ficedula</i>	<i>hyperythra</i>		w	F	r
Little Pied Flycatcher	<i>Ficedula</i>	<i>westermanni</i>		w	F	uc
Verditer Flycatcher	<i>Eumyias</i>	<i>thalassinus</i>		w	F	uc
Pale-chinned Blue Flycatcher	<i>Cyornis</i>	<i>poliogenys</i>		r	Fe	c
Pale Blue Flycatcher	<i>Cyornis</i>	<i>unicolor</i>		v	Fe	2
Hill Blue Flycatcher	<i>Cyornis</i>	<i>banyumas</i>		w	F	1
Large Niltava	<i>Niltava</i>	<i>grandis</i>		v	Fe	1
Rufous-bellied Niltava	<i>Niltava</i>	<i>sundara</i>		v	Fe	1
Grey-headed Canary-Flycatcher	<i>Culicicapa</i>	<i>ceylonensis</i>		W	F	c
Blue-winged Leafbird	<i>Chloropsis</i>	<i>cochinchinensis</i>		r	Fe	uc
Golden-fronted Leafbird	<i>Chloropsis</i>	<i>aurifrons</i>		R	F	c
Thick-billed Flowerpecker	<i>Dicaeum</i>	<i>agile</i>		r	F	1
Yellow-vented Flowerpecker	<i>Dicaeum</i>	<i>chrysorrheum</i>		r	Fe	r
Pale-billed Flowerpecker	<i>Dicaeum</i>	<i>erythrorhynchus</i>		R	VF	r
Scarlet-backed Flowerpecker	<i>Dicaeum</i>	<i>cruentatum</i>		R	Fe	c
Ruby-cheeked Sunbird	<i>Anthreptes</i>	<i>singalensis</i>		R	F	c
Purple-throated Sunbird	<i>Nectarinia</i>	<i>sperata</i>		R	Fe	r
Purple Sunbird	<i>Nectarinia</i>	<i>asiatica</i>		R	VB	uc
Crimson Sunbird	<i>Aethopyga</i>	<i>siparaja</i>		R	F	c
Little Spiderhunter	<i>Arachnothera</i>	<i>longirostra</i>		R	Fe	c
Streaked Spiderhunter	<i>Arachnothera</i>	<i>magna</i>		r	Fe	1
Baya Weaver	<i>Ploceus</i>	<i>philippinus</i>		R	V	1
White-rumped Munia	<i>Lonchura</i>	<i>striata</i>		r	Fe	uc
Scaly-breasted Munia	<i>Lonchura</i>	<i>punctulata</i>		R	V	r
Olive-backed Pipit	<i>Anthus</i>	<i>hodgsoni</i>		W	FB	r
Tristram's Bunting	<i>Emberiza</i>	<i>tristrami</i>		v	F	1
<b>No of species recorded</b>						<b>203</b>

**Note:**

The entry above for Golden spectacled warbler complex refers to records of the three species preceding it when they were treated as one species (up to 1999).

**Sources:**

Bird monitoring surveys for Nishorgo Support Project, IPAC and CREL, and personal records of several observers compiled by Paul Thompson (in. litt.) most notably: Enam UI Haque, Munir Ahmed, M. Monirul H Khan, Paul Thompson, Ronald Halder, Samiul Mohsanin, Sayam Chowdhury, Tania Khan.

**Annex 5: Plantation information of Satchari NP (Source respective beat range office)**

<b>Year</b>	<b>Plantaion type</b>	<b>Satchari Beat (ha)</b>	<b>Total (ha)</b>
2007-2008	Buffer Plantaion	42	57
	Agar Plantaion	15	
2009-2010	Agar palntaion	30	30
2013-2014	Fodder Plantation	15	20
	Foods and Production	2	
	Beth Palntaion	3	

**Annex 6: Five years indicative budget input for ten years management plan in SNP**

Program	Activity-	Unit	Quantity/year					Total	Unit cost (000 Tk)	Total cost (000 Tk)	Remarks
			Y1	Y2	Y3	Y4	Y5				
<b>Institutions, boundaries</b>	Updating maps	LS								500	
	Boundary demarcation (Pillars)	km	8						100	800	
	Boundary fencing	km	2					2	500	1000	
	Control of illicit felling, forest grazing, encroachment	LS								500	
	CM council and CM committee meeting	LS								1050	
	PF, VCF, CPG meetings	LS								500	
	Remuneration of CPG	LS								500	
	Rewards for biodiversity protection efforts	Tk								500	
<b>Core zone management</b>	Enrichment planting (indigenous key tree species)	ha	20	20	20	20	20	100	150	15000	In 100 ha of exotics
	ANR	ha	9	9				18	150	2700	In 18 ha degraded
	Chara bank maintenance and erosion checking	LS								4000	
	Roadkill prevention (speedbreakers, walkways etc)	LS								5000	
<b>Buffer zone management</b>	Enrichment planting (indigenous key tree species)	ha	60	60	60	60	60	300	150	45000	
	ANR (degraded areas)	ha						100	150	15000	
	Social forestry in degraded areas	ha	60	60	60	60	60	300		5300	Out of just over 600 ha degraded half for social forestry and half for restoration by ANR (see above)
	NTFP regeneration	LS								300	

Satchari National Park Management Plan 2016- 2025

Program	Activity-	Unit	Quantity/year					Total	Unit cost (000 Tk)	Total cost (000 Tk)	Remarks
			Y1	Y2	Y3	Y4	Y5				
Influence zone/ Impact zone	Social forestry (seedlings)	No. (000)	10	10	10	10	10	50	0.05	2500	
	Strip plantation	Km	10	10	10	10	10	50	0.05	2500	
	Subsidized homestead trees	No.(000)						50	0.10	2500	Buy one get one free
	Extension of climate resilient cultivation	LS								10000	DAE/NGOs/Tea Estates
Livelihood development program	Identifying feasible production Technologies and stakeholder consultations	LS								500	NGOs/other agencies
	Developing skills for alternative income generation (poultry, fisheries, nursery, sewing) and link with micro-credit sources	LS								2000	
Tourism and visitor management	Maintenance and enhancement of facilities (interpretive center, observation tower, toilets etc)	No.	1	1						1000	CMC
	Dormitory renovation/maintenance/operation	No.						1	1000	1000	CMC
	Maintenance and enhancement of picnic Area including shelters, tubewell and trash cans	LS						2	250	1000	
	Nature trail construction and maintenance	No.						1 + 3		1500	
	Identifying suitable sites for Nature Camps and other enterprises	No.						2			Facilitate local entrepreneurs
	Signage and interpretive signs including maintenance	No.								400	
	Identifying & training a pool of 20 eco-guides	LS								400	
	Preparing publicity and interpretive materials	LS								1000	
	Ticket counter	LS							500	500	

Satchari National Park Management Plan 2016- 2025

Program	Activity-	Unit	Quantity/year					Total	Unit cost (000 Tk)	Total cost (000 Tk)	Remarks
			Y1	Y2	Y3	Y4	Y5				
<b>Training, monitoring and research</b>	Training of staff and stakeholders on conservation	LS							500		
	Workshops	LS							1000		
	Floral and faunal monitoring	LS							1000		
	Research studies (conservation, ecology, etc)	LS							2000		
<b>Administrative staff</b>	ACF (1)	m-m								As per national scale	
	Forest Ranger(1)	m-m									
	Office assistant cum computer operator (1)										
	Deputy Ranger (1)										
	Forester/ Beat Officer (2)										
	FG (5)	m-m									
	Plantation Mali (2)	m-m									
	JWS(2)	m-m									
Care Taker (1)	m-m										



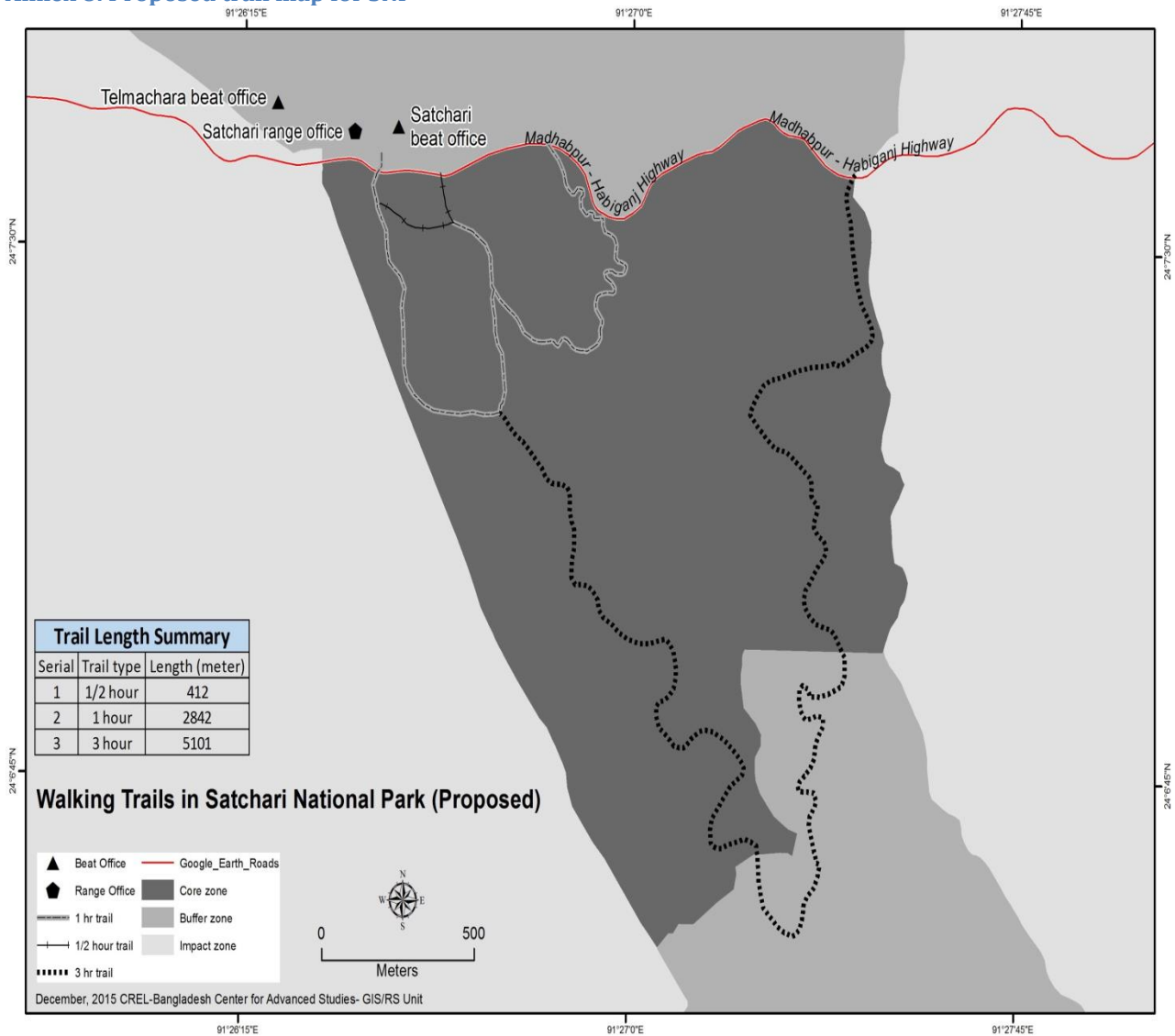
Satchari National Park Management Plan 2016- 2025

<b>Facility Programs</b>	<b>Development</b>	Renovation and Maintenance of FRH	No.							1	1000	1000		
		Renovation and maintenance of Range officers quarters	No.								1	500	500	
		Renovation and maintenance of Beat Officers' quarters	No.								1	500	500	
		Renovations and maintenance of FGs barrack	No.								2	800	1600	
		Construction and maintenance of ACF's Quarters	No.								1	2000	2000	
		Maintenance of CMC office	No								1	20 pa	100	
		Double-cab pickups	No.								1	3000	3000	
		100 cc motorcycles	No.								4	200	800	
		Computer (2), Laptop for ACF (1) , Printer (1)	LS								1	300	300	
		Field equipment (survey ins.+GPS+fire protection+ binocular + camera+ Rifles)	LS											10000
<b>Total</b>												<b>151210</b>		

**Annex 7: Proposed equipment for KHNP**

<b>Name</b>	<b>No. unit</b>
Digital Camera	2
Binocular	2
GPS	2
Torches	20
Desktop computer	2
Printer	1
Laptop computer (For ACF)	1
Rifle ( 1 for each FG)	7
Double cab Pick up (SNP office)	1
Motor bike 100 cc	4
Rain coat	20

**Annex 8: Proposed trail map for SNP**



**Description of the identified trails**

**Short trail (half an hour walk trail)**

**Specific information on short trail**

**Location:** Starting point 24.12671 N and 91.44347 E (on the main metallic road, adjacent to the entrance road of Range Office).

**Length:** About 1 km

**Width:** At starting point 2-3 m but after a while it becomes 0.5 to 1 meter  
**Path type:** The earthy trail begins with grass cover, crosses a wide dry stream twice and the rest of the path is earthy with bare soil or grass.

**Soil type:** Sandy clay to sandy loamy sometimes brown in colour with slight elevated *tila* near Tipra Para village.

**Topography:** The trail is almost flat in general but near Tipra Para it passes through the valley of the elevated *tila* on which the Tipra Para Forest village is situated. The trail slopes down while nearing the stream which it crosses twice.

**Flora:** Natural vegetation is worth enjoying on both sides of the trail. The main plant species are *Chapalish*, *Shimul*, *Dumur*, *Sada Belpui*, Bamboo, *Sheora* and Teak plantations on the left side of the trail can be noticed after 100 meter walk. Bamboo and cane are present as under-storey at many places.

**Fauna:** While starting the trail hiking from main road, chirping of birds may welcome you to the forest. Macaques and Langur are seen around on the tree branches and Mongoose may appear near to you walking the trail.

## Medium Trail (one hour walk trail)

### Specific information on medium trail

**Location:** Starting from the eastern side of road (about 30 meter southeast from of Satchari Range office, GPS location 24.12676 N and 91.44343 E) and ending after reaching the main road to the west of the starting point (GPS location 24.12683 N and 91.44183 E).

**Length:** About 2 km

**Width:** At starting point about 2 meter wide; the width varies from 0.5 to 1 meter subsequently.

**Type of Path:** The entire path is earthy with bare soil, sometimes sandy with little grass cover

**Type of soil:** Sandy clay to sandy loamy forest soil

**Topography:** Undulating with easy walk

**Flora:** Main plant vegetation includes *Chapalish*, Teak, *Shimul*, *Dumur*, *Sada Belpui*, Bamboo, *Sheora* and *Nowri*. Bamboo and cane are found as undergrowth of the main tree species. There are some private lemon gardens and homestead fruit trees especially near to Tiprapara Forest Village.

**Fauna:** Many types of birds, macaques and langur, squirrels mongoose, frogs and some of the snakes are common in the park.

## Long Trail (three hour walk trail)

### Specific information on long trail

**Location:** Start from the main road (about 100 meter east from Satchari Beat Office) near the signboard "Wilderness Area" (GPS location 24.12668 N and 91.44347 E). End after reaching the main road to the east of the starting point near to Chaklapunji Tea garden (GPS location 24.12676 N and 91.45703 E: a big *Dumur* tree adjacent to the road and a signboard of Agar plantation).

**Length:** About 6 km

**Width:** At starting point about 2 meter wide, varying subsequently from 0.5 meter to 3 meter

**Type of Path:** The entire path is earthy with sandy and grass cover at places. The trail sometimes follows the stream particularly near the end.

**Type of soil:** Sandy clay to sandy loamy forest soil.

**Topography:** Undulating but easy for walking.

**Vegetation:** Main plant species are *Chapalish*, *Dewa*, Teak, *Shimul*, *Dumur*, *Sada Belpui*, *Rangi*, *Jarul*, *Malacana*, Eucalyptus, *Acacia*, *Mehegony*, *Rangi*, *Bahera*, *Amloki*, *Jalpai*, *Agar*, *Chikrassi* *Sheora* and *Nowri*, There are some lemon gardens around the trail.

**Wildlife:** Main fauna includes birds (*Myna, Tia, Shalik, Ghugu, Vimraj, Bon Morog and Mothura*), Macaques, Langur (*Honuman and Chasma Honuman*), squirrels (including Himalayan giant squirrel), Hollok, Bear, Fox, Civet, Hair, Deer, *Mecho bag*, frogs and snakes (*Cobra, Dudhraj, Darash, Kalantar*).

**What to do in the NP**

- Wear comfortable and field compatible clothes and shoes
- Use sunglasses and sunscreen
- Take necessary repellents for leeches and skin worms
- Walk silently to observe the wildlife
- Take sufficient drinking water and dry food specially for the long trail
- Take a compass to know the various directions
- Take a camera and a binocular to catch some of the rare scenery of the Satchari National Park (proposed)
- Take necessary permission to enter into Tipra Forest Village

**What not to do in the NP**

- Never throw litters on to the ground of the NP
- Do not make noise that disturbs the wildlife
- Do not agitate wildlife
- Do not tear or collect any parts of plants
- Do not walk alone and try to form a group to visit the NP
- Do not disturb lifestyle and culture of Tipra people