
Introduction and Context for Forest Co-Management in Bangladesh





Lawachara National Park
[Nishorgo Support Project]

Introduction

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Tagore's life and writings express a vision of humankind as an integral part of nature. For Tagore, humanity is not dwarfed by the awesome scope of the natural world, as in the writings of the Romantics or the epic nature paintings of the American Hudson River school. For him, humans are inextricably a part of nature. The rivers of Bengal cannot be separated from the fishers who work them. The wetlands and rice fields are one with the men and women who live from them. Nature inspires our art, language, and even – as Tagore attempted at Shantiniketan – our pursuit of science.

Tagore's vision of nature, and humankind as part of it, provides a helpful perspective for understanding the conservation challenge in Bangladesh, and the language used to talk about it. Although there are those in Bangladesh who dream of natural areas set aside in perpetuity for conservation as “wild nature” – in which people would not be allowed – most conservationists recognize that this vision could not apply to Bangladesh. It is inconceivable, to those who know Bangladesh's forests well, to think of them without humanity as a central feature, as much a part of the forests as any other form of life. This is certainly true for the rural communities – many of them minority communities – that have lived in or near the forests for hundreds of years. But it is also true for the full range of people who draw life – in one form or another – from these areas. Poor women from neighboring towns comb the forests to collect or cut twigs, stalks of bamboo, or saplings. Urban tourists visit forests as a place of respite from their daily routine. And the forest is criss-crossed by the many footpaths of those who live in its shadows.

Harmonizing people with conserved natural areas in Bangladesh – the central challenge of conservation – needs to start with the fundamental vision of Tagore: that humanity and nature are woven in a common fabric.

In Bangladesh, the fabric of nature is as rich and diverse as the finest silk weavings. Despite being marked by the one of the highest population densities in the world, Bangladesh remains a land of high biological diversity, a product of location and the richness of its extensive wetlands and remaining forests. In this small country, ornithologists have recorded 650 bird species, 176 of which are regular migrants and a further 143 are rare visitors or vagrants (Siddiqui et al. 2008). The Sundarbans, the world's largest contiguous mangrove forest, is home to one of the largest remaining Tiger populations, and buffers people living inland from the stormy waters of the Bay of Bengal. The Ganges and Brahmaputra Rivers flow through Bangladesh and provide a home for the Ganges River Dolphin and, where they flow into the Bay of Bengal, for the threatened Irrawaddy Dolphin and the Estuarine Crocodile. The hill forests of the east are home to the only ape of South Asia, the Hoolock Gibbon.

In spite of its biodiversity, conservation efforts in Bangladesh take place largely outside the framework of the predominant approaches and attention of the global conservation community. International conservation meetings highlight the importance of recognizing the

role of local communities in Protected Area (PA) use and management. In Bangladesh, there is no choice but to engage with such local communities, because they are already combing through the forest every day. Global conservation meetings tend to focus on dialogue between communities neighboring conservation areas, where those communities tend to be small, rural, and homogenous. In Bangladesh, the many communities living around conservation areas tend to be highly complex, both rural and semi-urban, ethnically diverse, highly stratified in income and power, and quite often divided by conflict. Most notably, the international meetings tend to focus on countries and regions where large tracts of land remain to conserve. But in Bangladesh, few large areas of high biodiversity value are left outside of the Sundarbans. This is not surprising, given the population density and the ratio of land to people. The amount of PA land per person is 32 times higher in India than in Bangladesh, 75 times higher in Sri Lanka, and 1,168 times higher in Bhutan (WRI: Earthtrends Database).

Bangladesh is, to use the expression coined by Kareiva and Marvier (2003), a biodiversity “coldspot.” As a result, the major global conservation organizations have not seen Bangladesh as a place to put their resources. At present, only one international conservation NGO is present in Bangladesh – the World Conservation Union (IUCN).

Kareiva and Marvier (2003) recognize the lack of attention given to many conservation initiatives outside the world’s “hotspots”¹ and argue that the global conservation community might benefit from paying more attention to these other conservation challenges rather than focusing exclusively on defined hotspots. These authors note that important lessons can be learned from institutional conservation arrangements outside hotspots. And it is precisely this desire to learn from the experiences of Bangladesh that has led to this book.

Objectives of this Book

This book is grounded in the belief that there are important lessons to be drawn from Bangladesh’s conservation experiences. Conservation in Bangladesh takes place at the nexus of high levels of poverty and high population density. If, within coldspots, conservationists are to take on the challenge of conserving natural ecosystems before they are lost to the onslaught of man, then the experiences of conservation in Bangladesh may be useful to help guide future conservation efforts in areas increasingly challenged by poverty, high population density, and increasing economic demands.

But this book is also written for a more practical reason. During a visit to Bangladesh in 2006, conservationists Ashish Kothari from India and Sarath Kotagama from Sri Lanka remarked that few ongoing conservation management efforts are ever described in ways that capture both their successes and failures. The academic journals tend to distill and synthesize

¹ Hotspots, or places of priority for biodiversity investment, have been defined by different conservation organizations in different ways. The first to coin the term “hotspots” was Norman Myers (1988), and hotspots have become an organizational focus of the work of Conservation International (Myers *et al* 2000). The World Wide Fund for Nature (WWF) has identified its Global 200 priority ecosystems for conservation and has focused its resources on those areas. Although a small part of Conservation International’s Indo-Burma hotspot falls in the Hill Tracts and WWF includes the Sundarbans as part of one priority ecosystem, neither of these two major organizations has invested more than marginal time or effort in Bangladesh.

implications of field work to such an extent that it is difficult to know what actually happened in the field. Or authors draw from field experiences and interpret them in the context of ongoing academic debates which may be useful in their own right but again make it difficult for the reader to know what actually happened in the field – what worked and what didn't.

In organizing and writing this book, the authors have attempted to describe - for each component of one particular conservation effort in Bangladesh – its successes, failures, and lessons learned. We have attempted to describe the assumptions underlying the design of subcomponents or activities under this effort and then the mid-course corrections or adaptations that were pursued during implementation. We invite readers to refer to specific sections and chapters to explore specific themes or subjects of practical relevance. Researchers may find this experience useful when framing questions for future investigation. We hope that practitioners can learn from the mistakes and successes of conservation efforts that have preceded their efforts. The final chapter attempts to draw some possible implications for the global conservation community from what has transpired in Bangladesh.

To ensure that the book accurately reflects the experience and processes involved, the authors have been limited to those directly involved in implementation. Authors come from the Forest Department (FD), USAID, International Resources Group (IRG), and participating Bangladeshi NGO partners and in one case a professor at the Wildlife Institute of India.

The Nishorgo Experiment

The subject of this book is a specific participatory conservation initiative called “Nishorgo.” Nishorgo is a Bangla word meaning “serene nature” or “idyllic nature.” Conceived in 2002 and launched in 2003, the Nishorgo Support Project was a 5½ year effort focused on improving biodiversity conservation in the Protected Areas of Bangladesh through development of a collaborative management and governance framework and supporting activities.

Total financing for this effort was USD 9.7 million, including components for construction and habitat restoration of USD 2.5 million and “soft” components for creation of economic incentives, capacity building and training, and policy and communications of USD 7.2 million. Nishorgo was jointly financed by the Government of Bangladesh and USAID and implemented by the Bangladesh Forest Department, with technical support from IRG and Bangladeshi partners Community Development Centre Chittagong (CODEC), Rangpur Dinajpur Rural Service (RDRS), Nature Conservation Movement (NACOM), and the World Conservation Union (IUCN).

Orientation Underlying the Nishorgo Approach

The team implementing Nishorgo began with three fundamental beliefs about the nature of the challenge facing them, which can be summarized as follows:

Formal collaboration is a necessity, not an option, but the form and extent of that collaboration is to be determined: Exclusive fortress-style conservation by the Forest Department in Bangladesh had failed by the time Nishorgo was beginning. A form of collaborative management - including both government and non-government stakeholders - would be a

necessity at Protected Areas in general, and certainly at the Nishorgo pilot sites. The team implementing Nishorgo, including Forest Department partners, was not clear at the outset of the experiment about how much formal collaboration would be required in order to succeed, but was nevertheless certain that the model of the Forest Department acting as the only official decision-maker could not succeed.

The greatest threats to forest Protected Areas come not from the neighboring poor, but from powerful socio-political interests: The “default” position for many key policy-makers and conservationists in Bangladesh at the start of Nishorgo was this logic: “There are many thousands of poor that survive from the produce of the Protected Areas. In order to conserve the forest, you need to offer alternative incentives to those neighboring poor that enter the forest.” From early on, the Nishorgo team opposed this position – not because it is wrong, but because it is misdirected. It is indeed true that many thousands of poor survive from the forest Protected Areas in Bangladesh, but if the only extraction from the forest was for the immediate needs of the neighboring poor, the conservation challenge would be quite manageable. Although they are small, forests are generally highly productive in Bangladesh and can provide the necessary output to meet the immediate needs of the local poor, either from limited off-take from core forests or from buffer areas. The deeper and greater threat to the forests is not these neighboring poor acting to meet their immediate livelihood needs, but well-organized commercial demands placed on the forests. Through a network of powerful economic and political actors, the forests are stripped of timber and fuel wood at rates that cannot be sustained, for use in brick fields, timber mills, and commercial fuel wood sales in urban areas. Nishorgo would need to address this broader threat to be effective.

The central and primary challenge for Nishorgo has thus been – from its beginning – the need to alter the network of individuals and institutions with power over the Protected Areas. We aimed to diminish the power and control of the commercial and illicit interests that were resulting in rapid destruction of the forests and instead to raise the authority of a new constellation of actors that would replace the old. We would do this by modifying the policy and institutional instruments determining control over the Protected Areas as well as working to build the economic and social status of those newly included stakeholders in the conservation process.

Organization of the Book

This book is organized into five broad sections, each containing several chapters. This first section reviews the context for undertaking co-management under Nishorgo, including the institutional, policy, social, and economic aspects. The focus is in recording and analyzing how the Nishorgo effort was initiated and the context in which it began.

The second section covers the co-management approach and its implications for governance and PA management, and related policy initiatives undertaken by Nishorgo. Considerable attention is paid to the processes of change in power relations at the level of the communities and newly created Co-management Organizations (CMO) in the pilot PAs. Management planning and monitoring are also covered in this section. Special attention is paid to lessons learned from efforts to allow communities to benefit directly from revenue generated by the Protected Areas.

The third section focuses on attempts made to modify economic and livelihood incentives that might stimulate increased support for conservation. After presenting the overall livelihoods strategy adopted by the project, experiences are presented relating to community patrolling, nature tourism, product labelling and value chain development, carbon sink financing, improved energy technologies, and direct investment in community infrastructure.

The fourth section describes a range of supporting activities considered necessary to establish and sustain co-management and to serve the visitors to PAs. Lessons are drawn from Nishorgo's efforts in capacity building, modifying the image and perception of the Forest Department, supporting applied research and knowledge management, improving design of infrastructure, and presenting interpretive information. Nishorgo paid special attention to communication as a means of expanding and securing impact of the PA co-management approach, along with complementary efforts to engage the private sector in the pursuit of public goals. This section closes with a summary of lessons that have been learned in providing capable facilitation to improved governance.

The fifth and final section summarizes the highest priority lessons from Nishorgo, and places them in the context of global conservation challenges.

The Forest Protected Area System in Bangladesh

Throughout this book, the focus is limited to forest Protected Areas, as distinguished from the other Protected Areas found in Bangladesh, including RAMSAR sites, fish sanctuaries, ecologically critical areas (ECA), and community-conserved areas (CCA). Thus, where the term "Protected Area" (PA) is used, it is implied – unless noted otherwise – that it only refers to those forest Protected Areas designated as national parks, game reserves, wildlife sanctuaries, safari parks or eco-parks and under the statute.

The table below shows all the officially designated forest Protected Areas in Bangladesh today. The five PAs in which Nishorgo allocated its effort are highlighted in bold. Although in the closing months of the Nishorgo Project work also began in Modhupur National Park and in the three Sundarbans Wildlife Sanctuaries, this experience is at too early a stage to generate substantial lessons and is not discussed in this book.

Sl. No.	Name of PA	Main Habitat	District in Which Located	Year Established (Extension) ²	Area (ha)
<i>National Park</i>					
1	Madhupur	Moist deciduous forest in hillocks	Tangail and Mymensingh	1962 (1982)	8,436
2	Bhawal	Moist deciduous forest in hillocks	Gazipur	1974 (1982)	5,022
3	Himchari	Mixed-evergreen forest in hills	Cox's Bazaar	1980	1,729

Sl. No.	Name of PA	Main Habitat	District in Which Located	Year Established (Extension) ²	Area (ha)
4	Lawachara	Mixed-evergreen forest in hills	Moulvibazaar	1996	1,250
5	Kaptai	Mixed-evergreen forest in hills	Rangamati	1999	5,464
6	Nijhum Dweep	Mangrove forest on coastal island	Noakhali	2001	16,352
7	Ramsagar	Large lake surrounded by plantation	Dinajpur	2001	27
8	Medha Kachhapia	Dipterocarp forest in hillocks	Cox's Bazaar	2004	395
9	Satchari	Mixed-evergreen forest in hills	Habiganj	2006	242
10	Khadimnagar	Mixed-evergreen forest in hills	Sylhet	2006	679
11	Barajadhala	Mixed-evergreen forest	Chittagong	2010	2,934

Wildlife Sanctuary

1	Sundarbans East	Mangrove forest in lowland coast	Bagerhat	1960 (1996)	31,226
2	Pablakhali	Mixed-evergreen forest in hills	Rangamati	1962 (1983)	42,087
3	Char Kukri-Mukri	Mangrove forest on coastal island	Bhola	1981	40
4	Chunati	Degraded bamboo and other vegetation in hills	Chittagong and Cox's Bazaar	1986	7,761
5	Sundarbans South	Mangrove forest in lowland coast	Khulna	1996	36,970
6	Sundarbans West	Mangrove forest in lowland coast	Satkhira	1996	71,502
7	Rema-Kalenga	Mixed-evergreen forest in hills	Habiganj	1996	1,795
8	Fashiakhali	Mixed-evergreen forest in hills	Cox's Bazaar	2007	1,302
9	Dudhpukuria-Dhopachari	Mixed-evergreen forest	Chittagong	2010	4,717
10	Sangu	Mixed-evergreen forest	Bandarban	2010	2,618
11	Hazarikhil	Mixed-evergreen forest	Chittagong	2010	1,322

Sl. No.	Name of PA	Main Habitat	District in Which Located	Year Established (Extension) ²	Area (ha)
<i>Game Reserve</i>					
1	Teknaf	Mixed-evergreen forest in hills	Cox's Bazaar	1983	11,615
<i>Eco-Park</i>					
1	Madhutilla	Moist deciduous forest in hillocks	Sherpur	1999	100
2	Madhabkunda	Mixed-evergreen forest in hills	Moulvibazaar	2000	253
3	Sitakunda	Mixed-evergreen forest in hills	Chittagong	2000	403
4	Banshkhali	Degraded bamboo and other vegetation in hills	Chittagong	2003	1,200
5	Kuakata	Mangrove forest in lowland coast	Patuakhali	2006	5,661
<i>Safari Park</i>					
1	Dulahazara	Dipterocarp forest in hillocks	Cox's Bazaar	1997	900
Total Protected Areas = 264,002 ha					

Background Data on Nishorgo and its Pilot Protected Areas

To help readers follow the course of the project and understand the situation in the pilot PAs when Nishorgo started, a timeline of key events in the project lifespan and brief profiles of the five pilot PAs is annexed to this chapter.

The designation of Teknaf Game Reserve was subsequently changed to Teknaf Wildlife Sanctuary on March 30, 2010.

PA profile: Lawachara National Park

Area: 1,250 ha

PA established 1996

Location: Moulvi Bazar District, northeast Bangladesh

Habitat: semi-evergreen forest on low sandstone hills up to about 50 m altitude

Access: 8 km east of Srimangal town, a road and railway pass through the PA



Female Hoolock Gibbon (*Hoolock hoolock*).
[Sirajul Hossain]

Biodiversity

About a third of the area is comprised of old plantations from the 1920s and 1930s that retain a high diversity of native forest trees and are mixed with small patches of original forest. This is contiguous with production plantations in 1,390 ha of West Bhanugach Reserve Forest. In the 19th century, this was part of much more extensive forests that were cleared for tea estates and cultivation. Lawachara National Park is probably one of the best known PAs in Bangladesh in terms of biodiversity. In addition to an exceptional 249 species of birds recorded within the PA, including such species as Kalij Pheasant (*Lophura leucomelanos*) and Red-headed Trogon (*Harpactes erythrocephalus*), it is notable for spectacular blooms of arboreal orchids in the early wet season, and a rich mammal fauna. Seven primate species occur here, including vulnerable Capped Langur (*Trachypithecus pileatus*), endangered Phayre's Leaf Monkey (*Trachypithecus phayrei*), and the largest population in Bangladesh of the globally endangered Hoolock Gibbon (*Hoolock hoolock*) – although with only 59 individuals in 16 families this flagship species is rare even here.

Local communities

Two forest villages, Lawachara and Magurchara, inhabited by 63 households of the Khasia ethnic minority and established in the 1940s and 1950s, are located inside the PA where they cultivate betel leaves in 130 ha. A further 16 villages are located within 5 km of the PA boundary; many are inhabited by migrants who moved here in the 1950s. A Tipra ethnic minority village abuts the PA to the south. Over 2,200 households (over two-thirds of them considered poor) inhabit these villages, and most make use of the PA to obtain fire wood, timber, fruits, and food, including occasional hunting. They are joined in these uses by many of the workers from six tea estates that border the PA as well as the poor living around Srimangal and Komolganj towns. Timber theft is sometimes organized and linked with over 20 traders and sawmill owners from the adjacent markets.

Past management

Although the FD has for many years protected the old plantations in the center of the PA, as recently as 1987 similar forest was clear-felled and replanted with fast growing exotic trees (*Albizia* and *Eucalyptus*) which now cover 187 ha in the southern part of the PA. Since its declaration as a national park the main management focus has been prevention of logging, but theft of trees, particularly high value non-native teak, remained common. Also, from the mid-1990s until 2006, some areas of undergrowth were cleared by the FD to plant bamboo and cane, affecting natural forest regeneration.

Other threats and pressures

A gas well blowout near Magurchara village in 1997 burned some adjacent forest, and in 2006 a gas pipeline was laid through the NP, posing a potential hazard. Further gas exploration may pose a threat, as does the area's increasing popularity with visitors expecting a mass recreation experience and unaware of appropriate behavior in a PA.

PA profile: Rema Kalenga Wildlife Sanctuary

Area: 1,795 ha

PA established 1981, expanded to present area in 1996

Location: Hobiganj District, northeast Bangladesh

Habitat: semi-evergreen forest on low sandstone hills up to about 50 m altitude

Access: about 40 km southwest of Srimangal town, accessible only along earth tracks through tea estates and forests.



Phayre's Leaf Monkey (Trachypithecus phayrei). [Monirul H. Khan]

Biodiversity

About three quarters of the area comprises natural mixed evergreen forest, although many of the larger trees have been felled over the years. The rest of the area is more open and is mostly cultivated land used by villagers to grow rice, with some plantations and one artificial lake. The area is contiguous with production plantations in Tarap Hills Reserve Forest. This PA used to be part of much more extensive natural forests that were cleared for tea estates and converted to plantations from the 19th century up to the 1980s. It is bordered by tea and rubber plantations to the west, and to the east by the international border. It is relatively understudied as it is difficult to access. Over 100 species of birds have been recorded within the PA, although this list is based on a limited amount of field work; it includes notable species such as Spot-bellied Eagle-Owl (*Bubo nipalensis*). Six primate species occur here, including vulnerable Capped Langur (*Trachypithecus pileatus*), endangered Phayre's Leaf Monkey (*Trachypithecus phayrei*), and vulnerable Bengal Slow Loris (*Nycticebus bengalensis*).

Local communities

One Tipra forest village is located inside the PA, and a further nine forest villages border the PA – in total, 286 households inhabit these villages and 58% belong to ethnic minorities. The forest villages were established up to a century ago; each village has to plant 1,200 saplings per year and is obliged to protect the forest in return for use rights to forest lands that they cultivate. Households from a further 12 villages located within 5 km of the PA boundary make use of the forest resources. The many households from these villages make use of the PA in several ways. Cattle graze in and move through the PA, affecting natural regeneration, and the PA is also used for hunting and collecting bamboo and fire wood. Timber theft is sometimes organized and linked with about 15 sawmill owners and associated timber traders and furniture shops located in nearby markets.

Past management

Although the FD has for many years protected this area, as recently as the 1980s, natural forest along the western side of the PA was clear-felled to be replaced with short duration plantations. In the 1990s a Government of Bangladesh project built a watchtower at the lake, a wide track, and visitor buildings. At this time the practice of clearing undergrowth to make bamboo and cane plantations started within the PA, damaging its biodiversity value.

Other threats and pressures

The forest is somewhat drier than other hill forests in the northeast and some parts are vulnerable to fire. However, the main threat comes from illegal logging, which includes smuggling of valuable teak logs out of the PA.

PA profile: Satchari National Park

Area: 243 ha

PA established 2005

Location: Hobiganj District, northeast Bangladesh

Habitat: mixed evergreen and semi-evergreen forest on low sandstone hills

Access: 130 km northeast of Dhaka, 60 km southwest of Srimangal town, the old Dhaka-Srimangal road borders the PA



Capped Langur (Trachypithecus pileatus).
[Sirajul Hossain]

Biodiversity

About half of the area comprises remnant natural forest which retains a high density of fruiting trees but has lost many of the larger trees. The remainder comprises recent plantations, mainly of fast growing trees, with also some teak. This is contiguous with a larger area of production plantations in Raghunandan Hills Reserve Forest to the north. This was once part of much more extensive forests that were cleared for tea estates and cultivation in the 19th century, and to the east and west there are tea estates around the PA. It is one of the better studied PAs in Bangladesh in terms of biodiversity. Considering the small area of this PA, the list of 173 species of birds recorded within it is notable and includes attractive species such as Hooded Pitta (*Pitta sordida*). Among 24 species of mammals, vulnerable Capped Langur (*Trachypithecus pileatus*) and the globally endangered Hoolock Gibbon (Hoolock hoolock) occur here.

Local communities

There is one Tipra forest village located within the PA and inhabited by 24 households which make regular use of forest resources. A further 14 villages are located 6-8 km from the PA boundary. About 2,200 households (about three-quarters of them considered poor) inhabit these villages, and many make use of the PA to obtain firewood, timber, fruits, and food, including occasional hunting. However, they are joined in these uses by many people from the tea estates that border the PA, of whom about a quarter are actually unemployed. Timber theft is sometimes organized and linked with 18 sawmill owners and associated timber traders. Fire wood traders from the adjacent markets organize extraction by poor people.

Past management

From the mid-1990s onwards, some areas of undergrowth have been cleared by the FD to plant cane; this adversely affected natural forest regeneration, and encouraged grazing of cattle within the forest. Since its declaration as a National Park, the main management focus has been protection and prevention of logging, but theft of trees, particularly high value teak, remained common in and around the PA.

Other threats and pressures

There has been extensive extraction of sand from the seasonal river beds found in the PA close to the road. Publicity of this easily accessible and small PA may pose a threat if it attracts large numbers of visitors who are expecting a mass recreation experience and unaware of appropriate behavior in a PA. Visitor management, including provision of suitable recreation areas outside of the natural forest of the PA, therefore, requires careful handling.

PA profile: Chunati Wildlife Sanctuary

Area: 7,764 ha

PA established 1986

Location: Chittagong and Cox's Bazar Districts, southeast Bangladesh

Habitat: secondary growth, scrub, grasses and cultivation on low hills

Access: 70 km south of Chittagong city adjacent to the Cox's Bazar road



Northern Pig-tailed Macaque (Marcaca leonine). [Monirul H. Khan]

Biodiversity

About a quarter of the area is under rice cultivation, and only about 1% is reported to be remnant native forest. The vast majority of the PA comprises secondary growth, scrub, and extensive areas of sun grass, including some areas where plantations of exotic trees were attempted. Until the mid-1980s, when the PA was declared, much of this area still comprised evergreen forests, but there has been extensive logging and encroachment since that time. This accelerated when settlers moved into the area after the 1991 cyclone. It is probably the most degraded PA in Bangladesh in terms of habitat and biodiversity. Wildlife has not been well studied, but recent species lists do not note the presence of key forest species, which is consistent with the loss of forest. Despite the severe loss of biodiversity, Asian Elephants (*Elephas maximus*) still visit the area, where they come into conflict with villagers.

Local communities

About half of the many villages and neighborhoods (*paras*) using the PA are located within the PA. While it is clear that many people live within the PA boundary, the actual number is uncertain with estimates of 15,000 people living within the PA, or of 7,800 households (over 40,000 people) living in or adjacent to the PA and heavily dependent on it. Over 60% of these households are considered to be very poor; most make use of the PA to collect bamboo, fire wood and sun grass, but they also collect fruits and hunt. Many households adjacent to the PA are involved in betel leaf cultivation and this has encroached into the PA. However, rice cultivation is a major use and some households have documents indicating that they were given rights to land in the PA as part of settlement of landless people by the district administration.

Past management

Unrestricted tree cutting has adversely affected the growing stock of trees and scope for regeneration. Shifting cultivation and encroachment for agriculture are practiced on a wide scale and have further depleted the forests. Constrained by political support for the many people who have encroached and settled in the PA, FD management focused on establishing plantations in a reported 28% of the PA. However, most of the plantations have not been established and have been lost to cutting for betel cultivation, firewood, and fires.

Other threats and pressures

In addition to widespread encroachment and cutting of remaining natural vegetation, fires are regularly set by settlers; regenerating trees are cut for use in betel cultivation; livestock are grazed, preventing natural regeneration; and any remaining mammals, including elephants, are hunted. Industrial development is also affecting the PA – there are four brickfields within the PA and five more nearby, all using biomass from the PA for fuel.

PA profile: Teknaf Wildlife Sanctuary

Area: 11,615 ha

PA established 1983

Location: Cox's Bazar District, southeast Bangladesh

Habitat: evergreen and semi-evergreen forest and scrub on low hills between the sea and Naf River

Access: flanked by the Cox's Bazar-Teknaf road, the southern end is close to Teknaf town and the northern end is 48 km from Cox's Bazar



Asian Elephant (*Elephas maximus*). [Monirul H. Khan]

Biodiversity

Although land cover within the PA has not been inventoried, the area of natural forest and old plantations of native trees – which, together, once covered most of the PA – is thought to have declined by 80%. Most of the PA is now covered in degraded secondary growth, bamboo, scrub, and sun grasses, with extensive encroachment for settlements and cultivation in some areas. Although there had been gradual degradation and encroachment earlier, this accelerated alarmingly from 1991 onwards when there was a massive influx of some 250,000 Rohingya refugees from Myanmar. The Teknaf area as a whole has been well studied in the past and is one of the most bio-diverse areas of Bangladesh. An exceptional 262 species of birds have been recorded from the Teknaf peninsula, including coastal and wetland habitats. The PA still supports the largest population of Asian Elephants (*Elephas maximus*) in Bangladesh, but other large mammals that the PA was established to protect have now been lost, including Sambar (*Rusa unicolor*) and Leopard (*Panthera pardus*).

Local communities

Some 113 villages make use of the PA, of which 52 are located within the PA boundary, where five are inhabited by ethnic minorities, the rest are inhabited by local Bangali people, and an estimated 25,000 Rohingya refugees who have remained in Bangladesh have now intermarried with local people. Almost 20,000 households (about 90% of them considered poor) inhabit these villages, and most make use of the PA to obtain firewood, timber, fruits, and food, including occasional hunting, while some cultivate betel leaves and other crops within the PA. Timber theft is organized and linked with about 20 sawmills located in nearby markets. There are four brickfields within the PA and another four just outside, all of which use large amounts of fuel wood collected from the PA.

Past management

The forest has been subjected to heavy exploitation, shifting cultivation, grazing, and forest fires. Management since 1923 was based on clear-felling of natural forest, followed by planting commercially important tree species such as teak and garjan. In 1963, some blocks of reserved forest were declared as Elephant Reserves to protect elephants. During the War of Independence in 1971, considerable forest areas were encroached and plantations were felled. In the last two decades effective protection proved impossible in the face of the influx of Rohingya refugees.

Other threats and pressures

Land continues to be encroached and settled illegally by a mixture of refugees, local people, and even people from ethnic minorities settled in forest villages since 1920 within the area. Regular burning, extensive livestock grazing and intensive collection of fuel wood prevent natural regeneration. Hunting is also a threat for the remaining mammals in the PA.

Nishorgo in Brief: A Timeline

Jan '03	Bilateral agreement concerning PA co-management signed between Government of Bangladesh and USAID
Jun '03	Technical Team (including IRG and Bangladeshi NGOs CODEC, NACOM, and RDRS) selected
Jul '03	Steering Committee formed by Ministry of Environment and Forests
Aug '03	Elements of <i>Nishorgo: Vision 2010</i> proposed by Forest Department
Oct-Nov '03	National student competition organized to propose name for new PA co-management program
Dec '03	Secondary data review studies completed for all five pilot areas
Feb '04	Public inauguration and launch of Nishorgo Program of the Forest Department
Mar '04	Initial draft of the Nishorgo Project Concept Paper (PCP) Completed
Apr-Jul '04	Detailed site appraisals for all five sites completed
May '04	FD team shares experiences of co-management in West Bengal State
Aug '04	"Comprehensive Assessment of Capacity for PA Management by FD and Key Stakeholders" completed
Nov-Dec '04	Site level orientation meetings with key stakeholders completed for all five sites under leadership of the FD
Oct '04	Pre-ECNEC approval obtained for Nishorgo Support Project
Apr '04	Medha Kachopia National Park created
Apr '05	1st cross visit by Co-Management Committee members to West Bengal
Apr '05	ECNEC approval obtained for Nishorgo Support Project
Aug '05	1st Community Patrol Groups form at Lawachara National Park to complement FD patrolling
Aug '05	Government Order issued formally recognizing all Nishorgo pilot site Co-Management Committees and Councils;
Oct '05	Satchuri National Park created
Feb '06	2nd cross visit by Co-Management Committee members to West Bengal
Jun '06	1st Submission to Ministry of Finance of proposal to share of 50% PA entry fees with Co-Management Committees
Jan '07	Government approves Participatory Management Plans for all Nishorgo sites
May '07	1st PA-level Annual Development Planning sessions including Co-Management Committees and Forest Department
Jun '07	Bilateral agreement signed for expansion of co-management approach in forests and wetlands.
Sep-Oct '07	3rd cross visit by Co-Management Committee members to West Bengal State in India
Nov '07	Cyclone SIDR hits Sundarbans, Nishorgo is requested to provide support to Sundarbans Wildlife Sanctuaries
Jun '08	Opening of follow on support project: Integrated Protected Area Co-Management (IPAC) Project
Jul '08	2nd PA-level Annual Development Planning sessions, including Co-Management Committees and Forest Department
Jul '08	1st Visitor Interpretation Center is inaugurated at Mochoni Nature Center of Teknaf Wildlife Sanctuary
Nov '09	New Government Order allowing Co-Management Organizations at all forest Protected Area
Oct '08	Closing of Nishorgo Support Project
Oct '09	Shared entry fee collection at Nishorgo pilot modalities approved

References

- Borrini-Feyerabend, Grazia, M. Taghi Farvar, Jean Claude Nguingui and Vincent Awa Ndangang. 2000. *Co-Management of Natural Resources: Organising, Negotiating and Learning-by-Doing*. Heidelberg: Kasperek Verlag.
- Conservation International. 2008. www.biodiversityhotspots.org/xp/hotspots/
- Myers, Norman, Russell A. Mittermeier, Cristina G. Mittermeier, Gustavo A. B. da Fonseca and Jennifer Kent. 2000. Biodiversity Hotspots for Conservation Priorities. *Nature* 403: 853-858.
- Myers, Norman. 1988. Threatened Biotas: "Hot Spots" in Tropical Forests. 1988. *The Environmentalist*. 8(3): 187-208.
- Kareiva, Peter and Michelle Marvier. 2003. Conserving Biodiversity Coldspots. *American Scientist*, 91(4): 344-351.
- Quazi, Shimona A., Bryan R. Bushley and Wendy B. Miles. 2008. Introduction: Participation and the Collaborative Management of Protected Areas in Bangladesh. In *Connecting Communities and Conservation: Collaborative Management of Protected Areas in Bangladesh*, Jefferson Fox, Bryan R. Bushley, Wendy B. Miles and Shimona A. Quazi, 1-24. Hawaii: East West Center of Honolulu and Dhaka: Nishorgo Program of Bangladesh Forest Department.
- Siddiqui, K.U., M.A. Islam, S.M.H. Kabir, M. Ahmed, A.T.A. Ahmed, A.K.A. Rahman, E.U. Haque, , Z.U. Ahmed, , Z.N.T. Begum, M.A. Hassan, M. Khondker, and M.M. Rahman, eds. 2008. *Encyclopedia of Flora and Fauna of Bangladesh*. Vol. 26 Birds. Dhaka: Asiatic Society of Bangladesh.
- USAID. 2004. Nature, Wealth, and Power: Emerging Best Practice for Revitalizing Rural Africa. Report produced under the Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ) Contract No. PCE-I-00-96-00002-00. In collaboration with CIFOR, Winrock, WRI and IRG. Washington: US Agency for International Development.
- World Resources Institute (WRI). 2008. EarthTrends Environmental Information. <http://earthtrends.wri.org/>