



SIMPLIFIED MANAGEMENT GUIDELINES : SATCHARI NATIONAL PARK

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Simplified Management Guidelines : Satchari National Park

The simplified management guidelines are based on the first five year management plan for Satchari National Park (NP) as developed under Nishorgo Support (NSP). The Plan adopted a landscape approach of Park management by focusing on an appropriate spatial scale to integrate relevant habitat/forests system, ecosystem and social/institutional system. It addresses the needs of landscape households and co-management activities in the context of a broader economic, natural resource and socio-institutional environment of the Park. The Plan, to be implemented mainly by FD and the staff of NSP, provides for an overall five year framework for developing and managing the Park. Main focus of forest management under this Plan is :

- a) on the conservation of forests and constituent biodiversity,
- b) sustainable use of specified areas where this can help to achieve conservation on a broader scale, and
- c) involvement of local people and other key stakeholders in the Park management.

Main objectives of the Plan are as follows:

- To develop and implement a co-management approach that will ensure long-term protection and conservation of biodiversity within the Park, while permitting sustainable use in designated zones by local people as key stakeholders.
- To conserve the biodiversity of the Park by following a co-management approach based on building partnerships with all the stakeholders and sharing benefits with local communities and key stakeholders.
- To refine and strengthen the policy, operational, infrastructural and institutional capacity framework for Park management.
- To conserve and maintain viable wildlife population including endangered, threatened, endemic and rare species of plants and animals.
- To implement income generation activities for sustainable livelihood development and poverty reduction in identified landscape.
- To enhance skills of local stakeholders for availing self-employment opportunities.
- To restore and maintain as far as possible the floral, faunal, physical attributes and productivity of the forest eco-systems, and encourage private tree growing activities.
- To encourage eco-tourism in suitable zones and develop visitor amenities.

Main framework activities to be undertaken for achieving the above-stated objectives include amongst others:

- Survey, demarcate and mark the Park boundaries;
- Develop a co-management model and relevant policy guidelines, and establish co-management agreements linking Park conservation with benefits sharing arrangements with key stakeholders;
- Establish co-management organizations (co-management councils/committees);
- Survey biodiversity resources;
- Strengthen FD institutional capacity for Park management;
- Build conservation awareness, constituencies and extension activities on conservation issues;
- Train local stakeholders including participants and FD field staff in conservation management, raise awareness among stakeholders and develop Park facilities;
- Develop conservation and visitor facilities in and around the Park;
- Create tree resources in adjacent agricultural and village areas on participatory conservation and benefits sharing basis and implement alternative income generation activities for sustainable livelihoods through self-employment opportunities;

- Convert existing short-rotation plantations of exotic species to naturally regenerated areas by gradually opening the canopy, and enrichment plantations of indigenous species in identified gaps, if required; and
- Provide support for alternative income generation opportunities and small enterprise development for the key local stakeholders.

I. Assessment of the Present Situation

Satchari NP (in Chunarughat Upzila of Habiganj District) is located nearly 130 km east-northeast of Dhaka and approximately 60 km southwest from Srimongal (between Teliapara and Srimongal) on the erstwhile Dhaka-Sylhet highway (a recently constructed bypass road now serves as the main Dhaka-Sylhet highway). This road forms the northern Park boundary (nearly 1.8 km) starting from near Satchari Beat Office to the border of Chaklapunji Tea Estate. The Park comprises forests of Raghunandan Hill RF, covered under Satchari Beat of Satchari Range. The forests are composed of mixed tropical evergreen and semi-evergreen plant species, characterized by high rainfall and a multi-tier vegetation assemblage of rich biodiversity. Five broad types of habitats in the Park are identified as below :

- i) high forests represented by the remaining natural forests,
- ii) plantations including the monoculture of exotics,
- iii) grasslands and bamboos,
- iv) wetlands, and
- v) lemon gardens.

The first two habitats are the largest in extent and also very important from Park management point of view. Large deciduous trees are mixed with evergreen trees and bamboos. The top canopy includes *Artocarpus chaplasha*, *Dipterocarpus turbinatus*, *Elaeocarpus floribundaas*, *Dillenia pentagyna*, *Castanopsis tribuloides*, etc. The shrub species comprise of *Adhatoda zeylanica*, *Carea arborea* and others, whereas bamboos species are *Bambusa tulda*, *Bambusa polymorpha*, *Bambusa longispiculata*, etc, and *Saccharum*, *Daemonorops*, *Thysanolaena* as main grass species. A number of fodder and fruit bearing plants occur naturally in the Park. Forest fires in summer have adversely affected the natural forest regeneration. Major parts of natural forests of Raghunandan RF were converted by raising long rotation plantations (of teak, mahogany, garjan, karai, sal, gamari, shiso, toon, pynkado, agar, jarul, cham, jam, etc) taken up since 1920s for production forestry. Park's conservation value currently stems from the remaining natural forests and the plantations, which over the period have developed a tall, multi-storied structure.

The water bodies and grasslands, which harbour some ground birds, fish and reptiles, get inundated during monsoon rains. A number of animal species (mammals, birds, reptiles and amphibians), both forest-dwelling and wetland-associated species, are found in the Park. It is home to avifauna of many species (representing a substantial portion of the country's known bird species). The Park supports herpetofauna, including frogs, toads, turtles, lizards, snakes and a rich diversity of other faunal groups such as invertebrates and fishes.

A number of villages and tea estates fall within the zone of influence of Satchari NP (Figure 1). Only one recognized Forest Village, Tiprapara inhabited by 24 households of Tripura tribe, is located inside the Park (near to the old Dhaka-Sylhet highway). The Park is bordered on the north by Dhaka-Sylhet Highway (a major part of the remainder Raghunandan Hill RF lies north of Dhaka-Sylhet Highway), on the west and west-east by Satchari Tea Estate, on the east by Chaklapunji Tea Estate, and on the south-east by Raghunandan RF lands under plantations of teak (raised during 1962-66) and the plantations of short rotation tree species (raised in 1988). Old teak plantations raised during 1953-63, 1948-52 and 1959-65 are located beyond the southern boundary of the Park up to the international border of the Indian state of Tripura. The remaining plantations/forests of Satchari Range are situated to the northern side of the Park's boundary along the Dhaka-Sylhet highway. Local population including ethnic minorities,

depend on nearby forests for meeting their consumption needs. Considering the forest habitat and existing socio-economic system, a 8 km wide interface landscape zone around the Park's boundary is adopted for effective management of the Park.

Except the Tiprapara Forest Village no other village is located in the immediate vicinity of the Park due mainly it being surrounded by Tea Estates. However, four villages (Bagharu, Enatabad, Kalishiri and Ghanashyampur), located on the eastern side of the Park, have stakes in the forests. These four villages along with Tea Estate workers are potential beneficiaries of income generation activities to be carried out by forming organized groups. Other villages located away from the Park but near to north-eastern and north-western parts of Raghunandan Hill RF covered under Satchari Beat are Gazipur, Halholia, Deogach, Promanandapur, Rasulpur, Ratanpur, Baghbari, Sahajahanpur, Teliapara and Goachnagar.

II. Recommendations for Strategic Programs

1. HABITAT PROTECTION PROGRAMS

Main objective of this program is to provide adequate protection to the Park for the conservation of its constituent biodiversity. Main activities to be carried out to achieve this objective include :

- i) updating forest cover and interface landscape maps (detailed forest cover/landscape mapping for Raghunandan Hill RF is available with FD based on 1996 satellite imagery and relevant FD records),
- ii) peripheral boundaries of the NP will be identified, surveyed and marked on the ground.
- iii) boundaries of core and interface landscape zones will be defined, mapped and also be identified on the ground during the Plan implementation.
- iv) advantage of natural features (i.e. rivers, streams/*cheras*, ridge, roads, etc.) will be taken wherever possible while carrying out demarcation.
- v) posts or other markers (wooden or iron pillars, trenches, mounds, etc.) will be put in place at all important and/or turning points and will be labeled.
- vi) all the locations where primary access routes cross the Park's outer boundaries will be clearly marked with signs indicating the Park's name and summarizing key regulations in written text and symbols.
- vii) controlling illegal removals from the Park - illicit felling will be checked through extensive joint patrolling (FD staff and local stakeholders) inside the forests, particularly the core areas.
- viii) tribal villagers from Tiprapara Forest Village will particularly be helpful in forest protection - similarly local people from surrounding villages (e.g. Bagharu, Enatabad, Kalishri, Ghanashyampur, etc.) will be involved to help provide protection along with FD field staff.
- ix) effective checking of organized smuggling of timber and poaching will require concerted efforts from FD by using modern equipments and transport facilities (in case of organized smuggling by outsiders there may be need for sophisticated fire arms and ammunition and training to combat organized poachers and smugglers).
- x) checking encroachment of Park lands.

2. MANAGEMENT PROGRAMS

Main objectives of the Park management program are to :

- i) maintain ecological succession in constituent forests by providing effective protection against biotic interference,
- ii) develop and maintain natural forests as good habitat, favoring wildlife,
- iii) conserve the forest resources including the constituent biodiversity, and

Simplified Management Guidelines : Satchari National Park

- iv) establish co-management practices through stakeholders' consultations and active participation.

The gazetted forest area (243 ha), designated as core zone (Figure 2) having the highest conservation value, will be managed with the following main objectives :

- i) to protect and maintain remaining vegetation in good stocking and encourage natural regeneration to gradually bring back natural forests, and
- ii) to improve forest habitat for wildlife species including birds through selective management interventions while preserving and increasing the diversity and interspersed of habitat.

The core zone is constituted to preserve constituent forests in as near natural conditions as possible by providing an effective protection against all forms of biotic interference (illicit felling, forest land encroachment, forest fires and cattle grazing) and maintaining natural course of ecological succession. Forest management in this zone will focus on conserving remaining natural forests and bringing back natural vegetation (composition and structure) wherever possible. This will be achieved by :

- providing protection (against illicit removals of forest produce, encroachment, grazing and fire)
- encouraging natural processes for regeneration and rehabilitation of forests.
- subsidiary silvicultural operations will be carried out whenever necessary to encourage natural vegetation.
- effective protection against biotic pressure (illicit felling, forest fire and grazing) will allow natural processes of regeneration in degraded forest areas of the core zone.
- co-management practices will be implemented (through forest user groups and co-management councils/committees to be formed at different levels) for strengthening protection efforts against illicit felling, forest fires and grazing.
- in lieu of reduced removals (due to control of illicit felling) by the local communities from the core zone, they will be provided alternative means from interface landscape zones and other alternative income generation activities for sustainable livelihoods.
- protection efforts will be facilitated through communication outreach activities, public awareness, stakeholders' access to interface landscape zones in meeting their subsistence requirements
- enhanced enforcement by FD particularly in combating organized smuggling by outsiders.
- Gradual opening of top canopy through selective removal (leaving any indigenous tree) may be taken up in the areas having exotic plantations in order to create favorable conditions for natural regeneration to be established over a period.
- dead and hollow trees will not be removed as they provide shelter/nest to wildlife.
- subsistence use of forests by the resident villagers of Tiprapara Forest Village (24 households of Tipra indigenous community) within the Park will be limited to the recognized households situated within the Park. Their assigned areas will be delineated with permanent markers and shown on updated maps.
- existing indigenous inhabitants will be registered and further in-migration will be discouraged.
- villagers from Tiprapara as main stakeholders will actively be involved in co-management activities. Their existing use of forest and help in forest protection will be formalized by signing co-management agreements.

3. ENRICHMENT PLANTATIONS GUIDELINES:

Enrichment plantations will be taken up in identified gaps of the core zone and buffer reserves of the interface landscape zone as discussed below:

- Collection of seeds and development of nursery in advance

- Suitable gaps for enrichment planting will be identified (in December-January) and advance closure will be ensured against illicit removals, fire and grazing.
- On an average 360 seedlings per ha mainly of a mixture of indigenous species (multi-species plantations to optimize species and habitat heterogeneity) will be planted.
- Pits of size 45m x 45m x 45m will be dug in the month of Feb. – March (1 kg of cowdung/fertilizer will be applied; application of fertilizer – 50 gms per seedling : 20 gms TSP, 20 gms MP and 10 gms Urea) in identified gaps (of more than 0.5 ha).
- No burning and clear cutting of existing vegetation will be taken up. In case of weeds a circular area around the pit can be cleared before taking up planting on the onset of monsoon rains (in the month of June-July). The dead and hollow trees will not be salvaged.
- Subsidiary silvicultural operations such as cleaning, climber cutting and freeing of natural regeneration from suppression will be taken up as a part of encouraging natural regeneration. Priority will be given to clean those saplings and seedlings firstly that have shown manifestations of diseased/dead/crooked growth, damage, and infestation. In coppice species, stump dressing, stool thinning (singling of coppice shoots, leaving 2-3 shoots per stool) and cleaning will be taken up. Bamboo clumps will be decongested.
- Half-moon trenches around the planted seedlings are suggested in the slopes as an integral part to conserve and trap soil and retain soil moisture.
- Weeding, beating up and cleaning will be taken up as and when required. Normally 3 weeding are taken up in the 2nd financial year and 2 weeding in the 3rd financial year. Vacancy filling will be done along with weeding.
- Suitable species for enrichment plantations are mainly a mixture of indigenous species that may include siris, sisoo, simul, chikrasi, jarul, gamar, garjan, telsur, koroi, champa, mahogany, kadam, arjun, haritoki, pitali, chapalish, boilam, agar, hargoja, padauk, jam, dhakijam, toon, bazna, jalpai, chalta, amla, bahera, ficus species, jackfruit, bamboo, etc. Monoculture and cane planting will be avoided.
- Exotic species such as acacia, eucalyptus and mangium will not be planted inside the core zone.
- Palatable grasses for fodder plantations may include *Typha angustifolia*, *Alpimia nigra*, *Themeda arundinacea*, *Saccharum arundinaceum*, *Sacharum longisetosum*, *Sacharum narenga*, *Sacharum hookeri*, *Phragmites karka*, *Arundo donax*, *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 and run off.
- Plantation of shrubs and vegetables may be taken up around waterbodies by involving local stakeholders.
- Forest fire control measures will be taken up in fore prone areas.

Interface landscape zones will focus on the surrounding landscape helpful in protecting and conserving the core zone and creating congenial habitat for wildlife. As opportunities for receiving tangible benefits from the conservation-oriented management of core zone are very less, appropriate livelihood opportunities will be provided to the local stakeholders in the surrounding landscape. Interface landscape zone is further categorized into four zones (support sub-zone, intensive use sub-zone, transport corridor sub-zone and Tea Estate sub-zone) depending upon the uses to which different areas are managed. Possible livelihood activities to be implemented in the interface landscape are listed in the next section.

In areas having large blank patches buffer plantations can be taken by following the guidelines as described in the next section.

4. BUFFER PLANTATIONS GUIDELINES:

The following guidelines will be adopted while raising buffer plantations in buffer reserves of interface landscape zone:

- Block plantations of both indigenous (list as in case of enrichment plantations) and fast growing species such as acacia will be taken in mixture at 2m x 2m (2500 seedlings/ha) by associating local stakeholders (e.g. members of community patrolling groups and user groups).
- The rotation age for the fast growing species would be 10 years (two thinning at 4th and 7th year) and 30 years (two thinning at 10th and 20th year) for long rotation species. The fruit bearing trees suitable for wildlife will be retained at the time of felling.
- The usufructury benefits from 2nd thinning and final felling will be shared by following the FSP guidelines (45% of the total proceeds to FD, 45% to participants and 10% to co-management committee - as in case of Tree Farming Fund under FSP).
- Other guidelines will be as described above for enrichment plantations.

5. STRIP PLANTATIONS GUIDELINES

Main objective of raising strip plantations is to produce more wood, improve local environment and alleviate poverty locally. Strip planting offers an optimum use of marginal and unutilized land along roads (maintained by Union Parishads and other Government agencies such as Roads and Highways Department) by associating local poor households (formed into user groups with benefit sharing as per the FSP guidelines). A 2 m spacing accommodates 500 seedlings/km (1000 seedlings planted on both sides of 1 km strip) of timber/fuelwood yielding and fruit bearing species planted on either side of a road. Each participating household will be assigned 100 m of road for the protection and management of strip plantations.

Suitable species for strip plantations should have some special characteristics some of which may include few branches, disease resistant, tolerant to hacking, deep root system, fast growth, straight bole, low impact on yield of agriculture crop, wind resistance, wound healing capacity. In addition tree species should include a mixture of indigenous and exotic species (sissoo, koroi, mahogany, kadam, arjun, babla, akashmoni, etc.) depending on climatic and edaphic factors. Fruit bearing species may include *Artocarpus integrifolia*, *Syzygium cumini*, *Mangifera indica*, etc.

About 35% of the tree species will be of long rotation (timber species such as sissoo and mahogany with rotation as 20-30 years), and the remaining 65% will be fast growing timber and fuelwood species (both indigenous and exotic depending on the preference of participants). The fruit bearing species will make 10% of the total species and will be planted every 20m. The first thinning in short rotation (10 years) species will be at year 4 followed by second thing in year 7. The remaining short rotation species will be harvested in year 10, and the fruit and timber species will left up to 20-30 years.

6. LIVELIHOOD PROGRAMS

Main objective of livelihood program is to develop appropriate linkages with relevant livelihood options and other projects/initiatives that will reduce biotic pressure on the forests. This will be achieved by :

- providing alternative livelihood opportunities to poor stakeholders in identified landscapes.
- Up-scaling of skills for generating value additions through capacity building of local people.
- Landscape Development Fund (LDF) will be made available for the members of user groups and co-management committees.
- benefits from eco-tourism (e.g. entry fees) will be shared by investing part of the proceeds for the development of local communities and the Park.

Appropriate production technologies, which may be implemented as a part of off-PA development interventions are as below:

Agricultural and Horticultural Crops:

- Integrated homestead farming
- Cultivation of high value crops

- Village tree nursery
- Food processing and marketing

Livestock Rearing:

- Beef fattening
- Milch cow rearing
- Broiler/Layer rearing

Fisheries:

- Rice fish farming
- Fingerling rearing
- Carp polyculture
- Fish culture

Small Enterprise Development:

- Primary sectors for potential development around the Park include handicrafts (clothes, cane, bamboo, etc.), nursery development, food processing (pickle, jam, jelly), weaving and natural dye processing, bee keeping, etc.
- Secondary sectors include herbal tea (basak, chamomile, shefali) cultivation and processing, medicinal plantations and processing, essential oil processing, buffer plantations, orchid cultivation and floriculture, eco-tourism and nature-based healing homes development.
- Priority sectors such as bamboo and canes, nursery and natural dye processing may initially be taken up for small enterprise development.

7. FACILITIES DEVELOPMENT AND MAINTENANCE PROGRAMS

The development of Park facilities will be undertaken based on sound environmental standards to support the long-term administration. Main objective of this program is to develop necessary facilities including accommodation and field equipments for FD field staff responsible for the management of Park. This will be achieved by:

- existing FD facilities will be fully utilized and incorporated in Park management where these can be renovated on a cost-effective basis.
- Built facilities will be concentrated in four areas:
 - i) Park Headquarters (incorporating the existing Satchari Beat Office);
 - ii) eco-tourism facilities at the Park HQ, on the old Dhaka-Sylhet road; and
 - iii) a Guard Camp located on the old Dhaka-Sylhet road, near the eastern Park border.

The following access roads and trails will be maintained:

- Access to the Park Headquarters is currently provided by all-weather access road, which does not require upgrading.
- Access roads between sites at Park Headquarters (*i.e.*, between the main office/accommodation complex, the Resthouse and proposed Nature Information Centre) will require periodic manual maintenance, but are currently built to sufficient standards for anticipated traffic loads.
- All other roads within the Park will be permanently closed to 4-wheeled vehicles.
- Unsurfaced forest trails (former logging tracks) link Park Headquarters/Satchari Beat Office with the interior areas of Park. But these trails have not been maintained and some culverts would need to be placed to restore easy access.
- Restoration and signage of these trails would provide quick and easy access to the Park.
- Numerous other foot trails have been developed throughout the Park mainly at the time of plantation establishment. Some of these, particularly those that tie in with the main road and trail access system described above, could also be used as nature trails.

Vehicles, field equipments and office equipments will be needed to support the management and administration programs.

8. VISITOR USE PROGRAMS

The potential of eco-tourism is high in Satchari due to the Park's easy accessibility from Dhaka and good natural forests that are home to different species of birds. So a number of eco-tourism facilities can be developed (keeping in view the carrying capacity) for future visitor use as enumerated below:

- Basic information about the Park will be made available to visitors at Information Kiosks in the form of information handouts and annotated brochures.
- Existing hiking trails will be marked with proper signage and bill boards.
- Local youths/naturalists preferably from nearby schools/colleges and Nishorgo Clubs will be encouraged to act as eco-guides and nature interpreters. They will be trained as eco-guides by organizing a series of training workshops on communication and interpretation skills (including on what to speak, how to speak, presentation skills, body language assessment, team building exercises, etc.). Main message in these workshop will be on spreading conservation awareness among the visitors.
- Nature camps (of 1-2 days duration) may be organized at places of interest within the Park for students and youths for learning by experience and discussions on biodiversity conservation issues.
- Camp accommodation will be provided in temporary tents to be established near sites of interest.
- Local NGOs and naturalists may help in establishing nature camps.
- An Environmental Education Centre to be established at the Park's office will serve as Nature Interpretation Centre (NIC) with update information.
- Suitably trained staff will be posted at all of these locations with adequate information and publicity material about the Park's importance and facilities.
- Additional training on public relations and visitors management will be provided to the Park staff.
- A network of nature trails will be developed for visitors movement on foot and bicycle, traversing key natural and cultural features of interest (e.g. patches of high forests, betel leaf gardens, cultural remnants, natural streams/*cheras*, religious places).
- The existing Satchari FRH and Park office will be connected with nature trails.
- Priority will be given to develop existing foot paths and vehicle tracks as far as possible in order to minimize creation of new paths and consequent vegetation clearances and soil erosion. The Environmental Education Centre will be connected by such trails for visitor access.
- Self-guided trails with adequate information/interpretation will help bring visitors close to nature and provide aesthetic sense.
- Basic facilities such as sheltered and outdoor tables, simple toilets and litter disposal buckets/boxes will be provided (for visitors in small groups) at the Park's HQ.
- Awareness campaign for visitors on their expected behavior (e.g. litter disposal, vehicle use, etc.).

9. CONSERVATION MONITORING AND CAPACITY BUILDING PROGRAMS

A detailed methodology for establishing benchmark data, measuring the volume of timber loss (cubic meter/ha) and biodiversity health has been developed under NSP. A survey of natural regeneration (density of seedlings and saplings per ha) in the forests of Park will be taken up as part of biodiversity monitoring. This will be complemented by photo monitoring technique, focusing on changes in plant height as a visual evidence of success of NSP interventions.

Forest dwelling bird species will be used for assessing biodiversity status. A simple procedure of sighting and counting (either population or nests) the indicator bird species using the forests as their habitat will be employed by associating local stakeholders in identified transect walks. Benchmark measurements will

Simplified Management Guidelines : Satchari National Park

be taken to establish initial set of values, which will act as reference for future comparison with subsequent measurements taken periodically for assessing socio-economic impacts of FD interventions.

There is great necessity of imparting conservation training to the FD field staff responsible for managing the Park. Other stakeholders including the beneficiaries and NGO staff also need conservation training. An exhaustive conservation training plan, covering both in-country and overseas training, will be developed under NSP and implemented over the project period.