

A Study on Forest Resources of Bangladesh

Mohammad Abdul Mazid
Retired BCS Forest Cadre
Bangladesh

Abstract: Forests provide essential ecosystem services beyond carbon storage and emissions offsetting – such as health (through disease regulation), livelihoods (providing jobs and local employment), water (watershed protection, water flow regulation, and rainfall generation), food, nutrient cycling and climate security. Forest is very important renewable resources which plays a crucial role for the livelihoods of local communities. In addition, forests provide valuable ecosystem service: they maintain local climate and strongly influence global fluxes of oxygen and carbon dioxide; protect top soil, prevent soil erosion and maintain food wave. However the present study has conducted to identify the land use system in Bangladesh and to find out the forest resources of Bangladesh. The study was documentary analysis type. Data and information were collected from secondary sources. From the result it was found that In terms of forest land under forestry use, the Hill forests contribute 508, 991 ha (45.4%) followed by the Littoral Mangrove Forests and Coastal Afforestation extending over 489,872 ha (43.7%), and Plain Sal Forest account for the rest 121, 884 ha (10.9%) of the forest area. During, 1999, the forest department has reported about 2213,600 ha of legal public forest land (Figure 3) and about 270,000 ha of private land (village forest/homesteads) having varying degree of tree cover, bringing total forest land in Bangladesh to about 2,483,600 ha. From the study it was revealed that within the public forest land only about 14.6 % percent is closed forest (more than 40% crown density), 19.1 percent is open forest (10 to 40% crown density), and 11.6 percent is plantation. Sunderbans are the largest patch of forests (about 43% of the total natural forest) in Bangladesh. In 1996, Sunderbans have been surveyed to provide latest information about its forest resources. Sunderbans have been earlier inventoried in 1933 by Curtis, 1959 by Forestal, and 1985 through ODA. Sunderbans falls under biogeographic zone (SFBZ) and has three wildlife sanctuaries (East, South, and West) that extend over 23,198 ha, 20094ha, and 41,250 ha. All the three sanctuaries have three main habitat types (High mangrove forests, Low mangrove forests, and grassland and blanks. Very small area (25 ha) is under plantations. Most dominant vegetation is Sundri-Gewa in East SWS, Gew-Goran in South SWS, and Goran-Gewa in West SWS. Rosario (1997a) provides information on species and crown cover density wise coverage in the three wildlife sanctuaries. The three Sanctuaries in the Sundarban Forests contain a considerably high floral diversity. About 74 plant species of more than 53 genera have already been identified. The three wildlife sanctuaries contain almost the same composition of floral species. The slight difference in floristic composition can be attributed primarily to the difference in the levels of salinity with "East" having least, South possessing moderate and West containing maximum salinity. The number of floral species is varying inversely with salinity. The East Sanctuary contains the number (35) of plant species, followed by the South Sanctuary with 22 species and the West Sanctuary with 17 species. The more prominent tree species include the Sundri, Gewa, Keora, Goran, Singra, Garjan, Dhundal, Amur, Passur and Kankra.

The extent, density, growing stock and share of important species in the forest of Bangladesh are declining day by day. So, more plants should be planted to increase the number of plant. Government should take immediate necessary steps for plantation of more plants. There is forests land in Bangladesh. Each and every year a lot of wood trees are being stolen by gang theft this stealing of trees should be stopped immediately. Master plan should be taken to improve the existing forest land situated in Bangladesh.

Key words: Forest, land use, resources, trees, Mangrove, swamp forest, Sunderbans, Afforestation, Biological diversity, Conservation of Biodiversity, Wildlife.

1. INTRODUCTION

The total forest area of Bangladesh is 2.6 million hectares, which is nearly 17.4% of the total land area of the country. The forestry sector accounts for about 3% of the country's gross domestic product (GDP) and 2% of the labour force. However, these figures do not reflect the real importance of the sector in terms of monetary value. The GDP figure does not count the large quantities of fuel wood, fodder, small timber and poles, thatching grass, medicinal herbs, and other forest produces extracted illegally. The low contribution of the forestry sector to the GDP is also explained by several other factors, e.g. value added from wood processing is counted under the industry sector, rather than the forestry sector. The benefits provided by forest ecosystems include: goods such as timber, food, fuel and bioproducts; ecological functions such as carbon storage, nutrient cycling, water and air purification, and maintenance of wildlife habitat; and social and cultural benefits such as recreation, traditional resource uses and spirituality. Services provided by forests cover a wide range of ecological, political, economic, social and cultural

considerations and processes. The contribution of forest resources in protecting watershed and irrigation structures, reclaiming land from the sea, protecting coastal areas from storm damage, and in maintaining and upgrading the environmental quality, has not been quantified. However, economic, social and environmental importance of ecosystem services provided by forests is increasingly recognized globally. The primary challenge for sustainable forest management is finding ways to continue to benefit from ecological services without compromising the forest's ability to provide those services. Owing to such factors as over exploitation, conversion of forestland into agriculture, fire and grazing, forest resources in Bangladesh have been continuously depleting in terms of both area and quality. Between 1990 and 2015, Bangladesh annually lost 2600 hectares of primary forest (FAO 2015). Primary forest land gradually decreased from 1.494 million hectares in 1990 to 1.429 million hectares in 2015. Thus annual rate of deforestation in Bangladesh was 0.2% during 1990-2015 (FAO, 2015).

Forests currently absorb billions of tons of CO₂ globally every year, an economic subsidy worth hundreds of billions of dollars if an equivalent sink had to be created in other ways. Concerns about the permanency of forest carbon stocks, difficulties in quantifying stock changes, and the threat of environmental and socioeconomic impacts of large-scale reforestation programs have limited the uptake of forestry activities in climate policies. With political will and the involvement of tropical regions, forests can contribute to climate change protection through carbon sequestration as well as offering economic, environmental, and sociocultural benefits. A key opportunity in tropical regions is the reduction of carbon emissions from deforestation and degradation (Canadell & Raupach, 2008).

Forests are essential for achieving all 17 SDGs and understanding this requires a broader approach and a long-term perspective, along with a redefinition of 'forestry' to include all of the ways that forests and trees contribute to sustainable development (CIFOR, 2016). This chapter illustrates the status of forestry sector in Bangladesh and identifies constraints of sustainable management. Further, it outlines strategies and action plan for the conservation of forest resources of the country addressing growing number of forest management challenges both anthropogenic and natural disasters influenced by climate change. (Source: Bangladesh National Conservation Strategy).

Protecting tropical forests therefore not only has a double-cooling effect, by reducing carbon emissions and maintaining high levels of evaporation from the canopy (IPCC, 2013), but also is vital for the continued provision of essential life-sustaining services. These services are essential for the well-being of people and the planet, however they remain undervalued and therefore cannot compete with the more immediate gains delivered from converting forests into commodities (Mitchel et al., 2008, p. 17). Ecosystem services operate from local to global scales and are not confined within national borders; all people are therefore reliant on them and it is a collective interest to ensure their sustained provisioning into the future.

The information about changes in and sustainability of forest resources helps to understand the ecosystem dynamics and stability. This research attempts to describe the state and change in forest resources of Bangladesh. It presents information on type, land, cover, and content of the forests. Public forest lands account for about 14.9% and the village forests for another 1.8% of the area of the country. To mitigate the scarcity of forest resources and their fast deforestation, the government has decided to raise forest area to 20% of national area, and to increase extent of Protected Area network from 5% of total forest area to 10%. The 1989 moratorium on tree felling to conserve the health of forest is still operative. From late 1960, the Bangladesh Forest Department (FD) started coastal afforestation programmes on the newly accreted coastal chars and offshore islands. In coastal areas, foreshore afforestation is a proven cost-effective method to dissipate wave energy and reduce floods on embankments during storm surges. Effectively acting as a barrier against gusts and storm surges, forests can save lives and protect communities vulnerable to climate change.

OBJECTIVES OF THE STUDY

The objectives of the study are as follows:

1. To identify the land use system in Bangladesh
2. To find out the forest resources of Bangladesh.

METHODOLOGY OF THE STUDY

The study was conducted in Bangladesh. The study was documentary analysis type. Data and information were collected from secondary sources. Data were collected from Books, Research Reports, Journal, Thesis, Food and Agricultural Organization (FAO), United Nation Development Program (UNDP), Different Annual Reports, Forest Directorate of Ministry of Environment, Forest, and Climate Change Bangladesh.

RESULTS AND DISCUSSION

Land use

The share of forest land in total national area during 1970s remained around 15%, and fell to about 14% during 1980s, and slipped further to about 13% during 1990s (Figure 1). The government statistics (SYB, 1997) provides national level and sub national level information on land use in three major categories (Agriculture, Forest, and Area not available for cultivation).

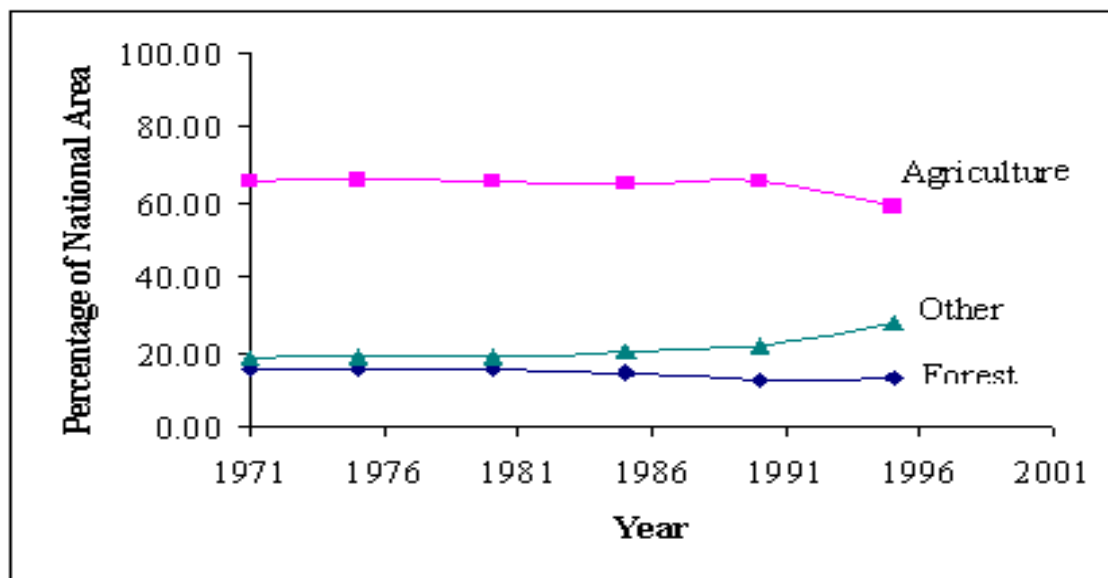


Figure 1: Percentage of alternative land use

The area under "Agriculture" is total of three sub-categories (Net cropped area, Current fallow, and Culturable waste (fallow for more than a year)). The "Agriculture" has been able to maintain its share at about 66% of total area of the country during 1970s and 1980s but its share has fallen to about 59% during 1990s. The share of land under "other uses" like settlements, homestead, and rivers etc. has consistently risen over the past period.

The information on "land use" differs even within the same reference available for Bangladesh like SYB, 1997. For example, the "forest land" reported above differs with details on legal status of forest land in SYB, 1997. Further both these figures of SYB, 1997 differ with figures reported by the forest department. SYB, 1997 does not provide a composite information on land use, therefore, an attempt has been made to develop a detailed composite picture (Figure 2) of land use in 1996 by pooling information available from different sources. The forest land figures for 1996 have been assumed same as forest department figures for the forest land in 1999. All adjustments have been made in the category "Other".

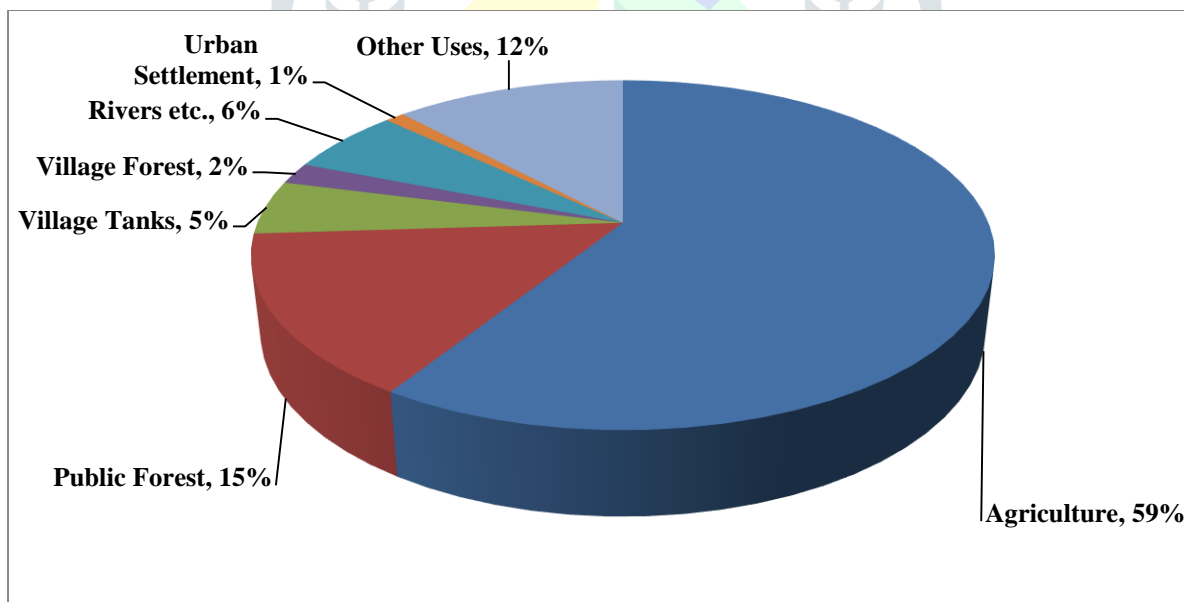


Figure2: National Land use in 1996

Forests

The forests of Bangladesh are broadly classified into three categories based on the topographic conditions (a) Hill forests, (b) Plain Sal forests, and (c) Mangrove Littoral forests. The hill forests contain most of the productive forest areas and plain Sal forests the least. In terms of forest land under forestry use, the Hill forests contribute 508, 991 ha (45.4%) followed by the Littoral Mangrove Forests and Coastal Afforestation extending over 489,872 ha (43.7%), and Plain Sal Forest account for the rest 121, 884 ha (10.9%) of the forest area.

Hill Forests

The Hill Forests are ecologically more important and constitute more than half of the forests of the country. Ecologically, these hill forests constitute a transition between the Indian subcontinent floristic region and the Indo-China floristic region. They consist of moist tropical evergreen and semi-evergreen forests, which extend from Teknaf Peninsula, north along Myanmar border to the Chittagong Hills and Hill Tracts and the low hills in Sylhet district. The "Forest Types of Pakistan" by Champion, Seth and Khatak provides detailed information on these hill forests. The forests are generally uneven-aged and multistoried. Pure stands of single species do not occur. The majority of smaller understory trees are evergreen and most of the dominant trees are deciduous. Choudhury, 1990 and de Milde et al, 1985 categorize these forests into following seven general forest sub-types (Tropical wet evergreen, Tropical mixed evergreen, Tropical moist deciduous, Tropical open deciduous, Bamboo, Lowland fresh water swamp, and Savanna).

(i) Tropical Wet Evergreen Forests

This subtype occurs in deep valleys with abundant moisture and shaded aspects. *Artocarpus chaplasha* (Chaplish), *Tetramefes nudiflora* (Chundal), *Pterygota alata* (Narikeli) are common and reach a height of about 30 meters. The fern, orchids, climbers, creepers, shrubs form the understory.

(ii) Tropical Mixed Evergreen

These are tall multistoried forests on hilly and alluvial flats. The dominant trees are about 60-65 meters high and consist of *Depterocarpus* species (Garjan), *Swintonia floribunda* (Civit), Chundal and Narikeli. Middle and lower story of trees is present with diverse understory.

(iii) Tropical Moist Deciduous

Such forests occur on the edge of rivers and in low lying areas. Trees are interspersed with large open patches of grasses, reeds and bananas. The main tree species are deciduous like *Anthocephalus chinensis* (Kadam), *Trewia nudiflora* (Pitali) and *Duabanga grandiflora* (Bandarhola).

(iv) Tropical Open Deciduous

The dry exposed slopes with a southern aspect sustain such type of forests. Large trees occur as scattered individuals and main species are *Albizia* species (Karoi), pitali, bandarhola and *Michelia champaca* (Champa). The understory consists of dense undergrowth of stunted evergreen tree species and impenetrable tangle of stems of *Eupatorium odoratum* (Assam).

(v) Bamboo

Bamboo is a very important non-wood forest resource in Bangladesh. About 70% of bamboo resources are on private lands in the villages. The rest of the bamboo is in forest areas but it accounts for only about 20% of annual national supply of bamboo. Forests in Chittagong Hill Districts are the richest in bamboo, followed by Sylhet district. The bamboo in forest areas of Bangladesh is managed on a 3 to 4 year cutting cycle. Bamboo is present either as single or mixture of different bamboo species in almost all the forests in the Chittagong Hill Tracts or in Sylhet Division. Eight species are indigenous and four (Muli, Mitenga, Daloo and Orah) of them are commercially important. The *Melocanna baccifera* (Muli) bamboo is most predominant and occurs either as a pure stand or in association with other species over extensive areas. Muli prefers well drained sites while the other species prefer shaded moist sites. Bamboo also occurs as understory species in many of the other forest types.

(vi) Low land Fresh water Swamp

The characteristic tree species is *Barringtonia acutangula* (Hijal), and the characteristic grasses and reed are *Phragmites karka* (which predominates near water), *Erianthus revenea* (Ekhra) and *Saccharum spontaneum*. (Khagra). A variety of grassland and wetland ecosystems are found in such areas like wetland areas of Sylhet District. The tree cover is greatly reduced but the grassland and wetlands remain very important for many species of birds and fish. Some small patches of freshwater swamp forest can also be seen in Sunamganj district and at Pasua Haor in Gurmar Beel. Although the fresh water swamp forests described above have nearly disappeared, a vast area of fresh water wetlands exists in the country. The wetlands include lakes, the Ganges-Brahmaputra flood plain, river estuaries and at least 47 major haors and 6,300 beels. They occupy about half the land area of the country in the monsoon season. These fresh water wetlands support a wide variety of species of fauna and flora, both terrestrial and aquatic. For example, Haor Basin of Sylhet and eastern Mymensingh have special biological significance. This area is described as "a wetland ecosystem of outstanding international significance" especially as waterfowl habitats. These wetlands provide habitat for about 125 species of resident and migratory water birds as well as a diversity of aquatic and terrestrial plants, aquatic invertebrates, fish, mammals, amphibians and reptiles. In the winter they support 100,000-150,000 ducks and provide refuge for many species rare elsewhere in the country. At present, no fresh water wetlands are protected and there is no management plan for such wetlands.

(vii) Savanna

Many ecologists do not consider the Savanna as a natural ecosystem. It is dominated by thick *Impretta* species (Sungrass). It is more common in Unclassified State Forest (USF) areas in the Chittagong Hill Tracts.

Plain Sal Forest Types

Plain Sal forests are Tropical Moist Deciduous type of forests. Such forests are normally present in most of the lowlands and floodplains in the central and western parts of the country. Plain Sal forests have been dramatically reduced in area and now exist only in a number of widely scattered and degraded patches. The forests consist of patches of Sal coppice occasionally with other tree species. These forests lie in the districts of Dhaka, Tangail, Mymensingh, Rangpur, Dinajpur and Rajshahi. The district of Comilla also has a small patch of Sal Forest. A large proportion of land under plain Sal forest is under the possession of encroachers. These forests are generally categorized in following two subtypes (Pure Sal, and Mixed Sal) on the basis of soil and tree canopy.

(i) Pure Sal

In past, these forests, even under natural conditions, had a canopy that was nearly 100 percent Sal and grew on shallow, dry and less productive soils in the region to the north of Dhaka and was frequently burned. Such pure Sal forests now exist only in coppice form with sparse understory and the relatively few number of species.

(ii) Mixed Sal

These forests are dominated by Sal in the canopy but include many other associated species like *Terminalia bellerica*, *Albizia procera*, *Lagerstroemia* spp and *Ficus* species. They grow on the deeper, moister and more productive soils of the Madhupur and Barind tract. The understory is more complex and includes a variety of deciduous and evergreen species. The flora of the Barind Tract in this Sal forest type includes about 271 species out of which 41 are tree species. Champion, Seth and Khatak (1955) classify these forests as Tropical Moist Deciduous Forests and subdivide the same into two sub-types; (a) Moist Sal forests and (b) Sal Scrub Forests. The Moist Sal forests are severely depleted leaving some sporadic intact patches of natural and coppiced Sal forests. The Sal scrub forests are the result of extreme human interference. The Sal has been coppiced many times and many stumps have lost their coppicing power, creating small and big blanks.

Littoral Mangrove Forest Types

These forest areas are normally divided into following three groups (Sunderbans, Coastal Char forests, Coastal Area from Chokoria to Teknaf) to describe the vegetation at the southern boundary of Bangladesh.

(i) Sunderbans

The Sunderbans are the mangrove forests of Bangladesh, lying at the southern extremity of the Ganges River Delta bordering the Bay of Bengal. The forests extend to about 80 km north of the sea. The forests stretch from the Baleswar River on the east to the Hoogly River. The littoral forests normally form three distinct belts. The outer fringe near the sea consists of pure mangroves, which in the Sunderbans, is very limited, though Goran forms nearly forest on the higher grounds. The intermediate belt has various trees mixed with mangroves, with or without Sundri. The inner belt is of pure or nearly pure Sundri. The Sunderbans is normally divided into three zones fresh water (slightly saline), moderately salt water (moderately saline) and the salt water (strongly saline) zones. The slightly saline zone includes north-east part of the forest, which receives fresh water supply from the Ganges and supports the best stand growing upto a height of 20 meters. The dominant specie is *Heritiera fomes* with varying proportion of *Excoecaria agallocha* (Gewa). The proportion of Gewa increases and of *Heritiera* decreases, as one proceeds to the west and south. The species next in importance is *Xylocarpus mekongensis* (Passur), which frequently grows with *Bruguiera gymnorrhiza* (Kankra). Beneath Sundri are *Cynometra ramiflora* (Singra) on comparatively dry soils, and *Amoora cucullata* (Amur) on moist soils. *Ceriops decandra* (Goran) becomes the principal understory in more saline areas. *Nypa fruticans* (Golpatta) is plentiful on the banks of channels and creeks.

The moderately saline zone is in the middle portion of the forest. The predominant crop consists of *Heritiera fomes* and Gewa. Sundri decreases towards west and south. Passur, Kankra and *Avicennia officinalis* (Baen) are unevenly distributed over the entire area and Golpatta is plentiful. The south and western part of the forest has the strongly saline zone. With increase in salinity the quality of the forest deteriorates and height hardly exceeds 7 meters. The forest consists mainly of sparsely spaced Gewa and over dense Goran interspersed with dense patches of *Phoenix paludosa* (Hantal) on the drier soils. *Xylocarpus granatum* (Dhundal), Passur and Kankra occur sporadically throughout the area. Golpatta is scarce.

(ii) Coastal Char Lands

The coastal area of Bangladesh west of the Sunderbans from the Haringhata River to Sandwip Island is characterized by rapidly accreting sand and mudflats and low lying offshore islands in the mouth of the Ganges River. These newly accreted lands are in early successional stage of mangrove forest following deposition of the silt and sand washed down by the rivers. *Sonneratia apetala* (Keora) is the common pioneer tree species. As these stands decline, Gewa, Sundri, Baen and other species take over the sites.

The rich intertidal mudflats are extremely important as wintering areas for migratory waterfowl. Surveys have counted over 100,000 birds of 61 species. The area gains international significance because at least three globally threatened species use the area in significant numbers. About 300 *Tringa guttifer* (Nordmann's Greenshank) live on mudflats near Jiryiradwip. This number accounts for an estimated 30 percent of the world population of the species. This area supports about 257 of the very rare and globally threatened *Eurynorhynchus pygmaeus* (Spoonbilled Sandpipers) the largest concentration of this specie, away from its breeding ground. Two more threatened species *Limnodromus semipalmatus* (Asian Dowitcher) and *Rynchops albicollis* (Indian Skimmer) have been located in this area.

(iii) Coastal Forest Area from Chokoria to Teknaf

The coastline of Bangladesh to the south of Chittagong includes several estuaries and the offshore islands of Kutubdia, Sonadia and Moheshkhali. In the past, this area was covered with mangrove forest and provided habitat for a rich variety of invertebrates, resident and migratory waterfowl and shore birds, gulls and terns. Most of this forest has been cleared and is used either as shrimp farms or for other aquaculture projects. Many of them have failed economically or were destroyed or badly damaged by the 1991 cyclone.

Forest Land and Cover

The public forest land (classified and unclassified forest land) merely represents an administrative or legal land use category of government-owned land, once covered by forests, and currently it may not have tree cover. During, 1999, the forest department has reported about 2213,600 ha of legal public forest land (Figure 3) and about 270,000 ha of private land (village forest/homesteads) having varying degree of tree cover, bringing total forest land in Bangladesh to about 2,483,600 ha.

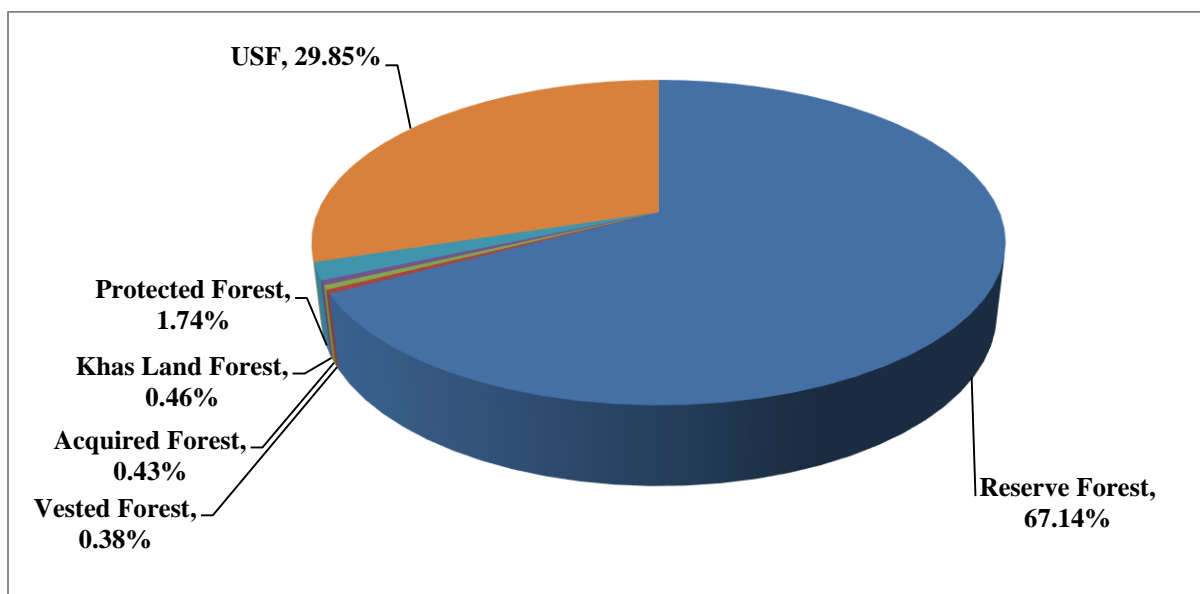


Figure 3: Constituents of public forest land in 1999

There is no complete and detailed forest land use information of the entire country for any particular year or period because the land use within "forest land" has been assessed for parts of the forests at different time periods. FMP, 1992 compiled such earlier assessments and updated some of them for the period 1985 to 1988 with local information and presented forest land use for the reference year 1986. During 1999, the FRA, 2000 program of FAO has similarly compiled the latest information available for 1996 for national land use in Bangladesh. The research provides same information at forest unit level. It indicates (Figure 4) that within the public forest land only about 14.6 % percent is closed forest (more than 40% crown density), 19.1 percent is open forest (10 to 40% crown density), and 11.6 percent is plantation.

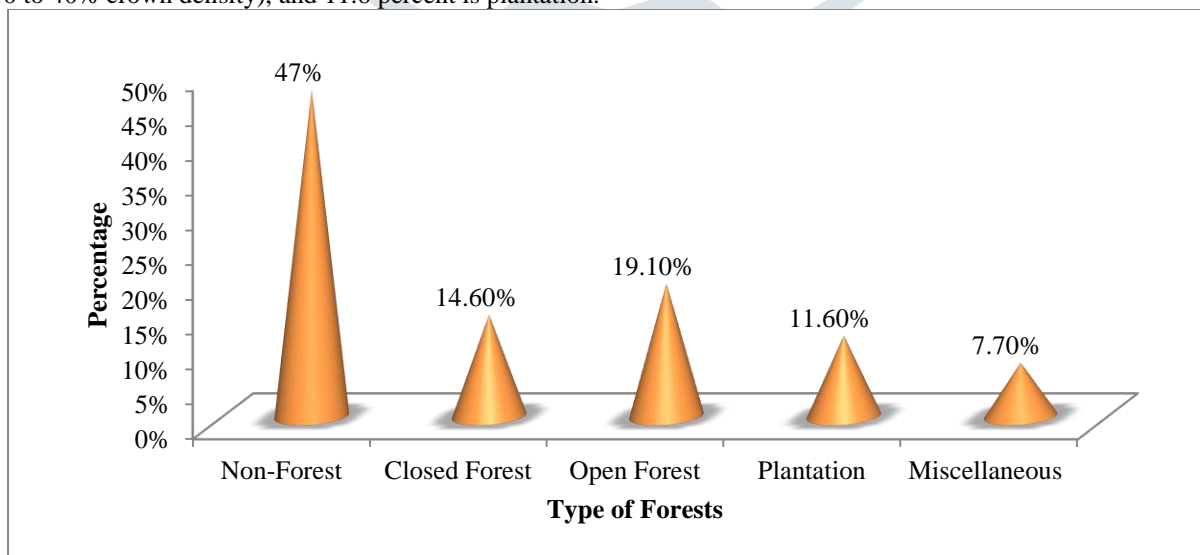


Figure 4: Land use in public forests

The rest (54.7 percent) of the forest land is either under miscellaneous (7.7%) uses like shrub (1.7%), fallow (1.2%), blank and encroached (3.5%), and water-bodies etc. (1.3%) or under non-forestry uses (47%).

Change in Forest Cover

A comparison of 1986 (FMP, 1992) and 1996 (FRA, 2000) information provides a picture of decadal changes (Fig. 7) that are taking place on the forest land. To present the information in a meaningful and comparative framework, all forest land other than that under closed forest, plantation, protected areas, blank and encroachment have been grouped as "Other Forests" in Figure 5.

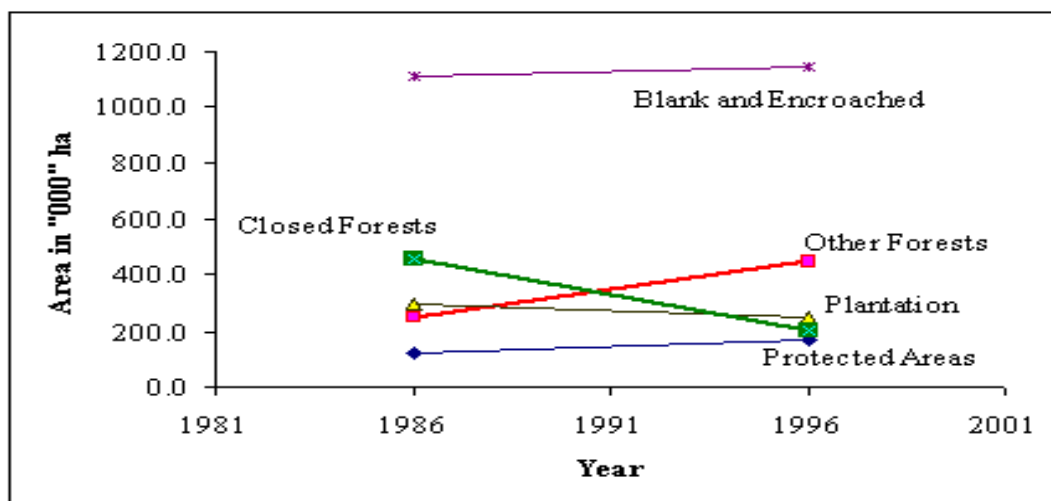


Figure 5: Changes on the Forest land during last decade

During the period of ten years ending 1996, the forest cover in Bangladesh has declined. More than half of the close (medium to good density) forests have either degraded to poor density forests (other forests) or deforested and encroached. Some of the "other forests" have also been deforested and encroached. Area under plantations in Coastal Afforestation divisions has declined by more than 25%. The protected area in two of the three wildlife sanctuaries in Sunderbans has also gone down by 10 to 30 percent while the total area under PAs has increased. Forest cover losses in Bangladesh remain unsurveyed or unmapped and their exact sizes and locations are not conclusively determined, except for periodic visual observations (FMP, 1992).

Forest Growing Stock

Different forest units of Bangladesh have been surveyed and inventoried in different years and under different designs. This creates problem in aggregating the information over space and time. Following provides information on the latest surveys and inventories for different forests of Bangladesh.

Kassalong and Rankhiang Reserves

Forestal carried out an inventory of the Kassalong (including Maitani Headwater) and Rankhiang Reserves of the Chittagong Hill Tracts in 1961. Twenty years later in 1983, the areas were reinventoried under Project BGD/79/017, "Assistance to the Forestry Sector of Bangladesh". The project took aerial photographs of the same areas but carried out the survey without any ground truthing due to the abnormal law and order situation. All volume figures were compiled on the basis of earlier volume figures collected by Forestal. This provides information on the last assessment for this forest and no other information is available to assess changes during the last ten years. Forestal estimated the volumes for timber type forests as 136.6 m³/ha for Kassalong and 171.5 m³/ha for Rankhiang. The FMP (1992) team revised this figure to 100 m³/ha for purposes of the yield calculation based on the figure of past extraction.

Sitapahar Reserves

The Forestal excluded the Sitapahar Reserve from their 1961 inventory of the forests of Rankhiang and Kassalong. This area was last surveyed in 1983/85 under FAO/UNDP Project BGD/79/017. This provides information on the last assessment of this forest and no other information is available to assess changes during the last ten years. The FMP (1992) team reviewed the position in 1990.

Sangu and Matamuhuri Reserves

Sangu and Matamuhuri reserves were inventoried before 1961 and again in 1984-85 under FAO/UNDP Project BGD/79/017. This provides information on the last assessment for this forest and no other information is available to assess changes during last ten years. The FMP (1992) team reviewed the figures in 1990.

Chittagong Forests

FAO supported inventory of Chittagong Forest in 1985 and FMP (1992) team reviewed this information in 1992. The division was re-inventoried in 1996. A comparison with the 1985 inventory indicates that closed forest has decreased from 30,003 in 1985 to 22,223 ha in 1996 and the total volume has gone down from 2.27 million m³ in 1985 to 0.648 million m³ in 1996.

Cox's Bazar Forest

FAO project (FAO/BGD/85/085) supported inventory of these forests in 1985. FMP (1992) team reviewed and revised the figures on the basis of area under different forest types in concerning working plans. The division was re-inventoried in 1996. A comparison with the 1985 inventory indicates that closed forests have decreased from 31,295 ha in 1985 to 26,867 ha in 1996 and the total volume has gone down from 3.70 million m³ in 1985 to 2.2 million m³ in 1996.

Sylhet Forest Division

FAP project (FAO/BGD/85/085) completed the inventory of the Sylhet forests in 1988. FMP (1992) team reviewed the figures in 1990s and the forest division was inventoried in 1997. A comparison with the 1988 inventory indicates that closed forest have roughly remained the same at about 2,749 ha in 1988 and 2,782 ha in 1996. However, area under scattered trees has decreased from 23, 239 in 1988 to 20,911ha in 1996 and the total volume has gone down to 1.26 million m³ in 1996. In Sylhet the bamboo (muli) resources have decreased from about 17,000 stems to 11,000 stems per hectare over the last eight to ten years.

Dhaka, Tangail, Mymensingh, Dinajpur, Rangpur, Rajshahi and Comila

Dhaka, Tangail and Mymensingh divisions in the Central Zone, and Dinajpur, Rangpur and Rajshahi in the northern zone are the major Sal areas in Bangladesh. In addition, small patches of such forests occur in Comilla district. There is no complete and accurate inventory of these Sal coppice forests varying from 10 to 50 years in age. A few older stands are exist in small patches near offices. An inventory of 1989 has assessed the stock volume/hectare according to age groups. These estimates vary from 20 m³/ha to more than 100 m³/ha, depending on the age, density and site quality (FAO, 1990). These figures represent the last assessment and no other information is available to assess the changes during last ten years. The FMP (1992) team reviewed these estimates in 1990s.

Littoral Mangrove (Sunderbans) Forests

Sunderbans are the largest patch of forests (about 43% of the total natural forest) in Bangladesh. In 1996, Sunderbans have been surveyed to provide latest information about its forest resources. Sunderbans have been earlier inventoried in 1933 by Curtis, 1959 by Forestal, and 1985 through ODA. Figure 6 indicates the deterioration in the growing stock (volume) of its tree resources during last four decades.

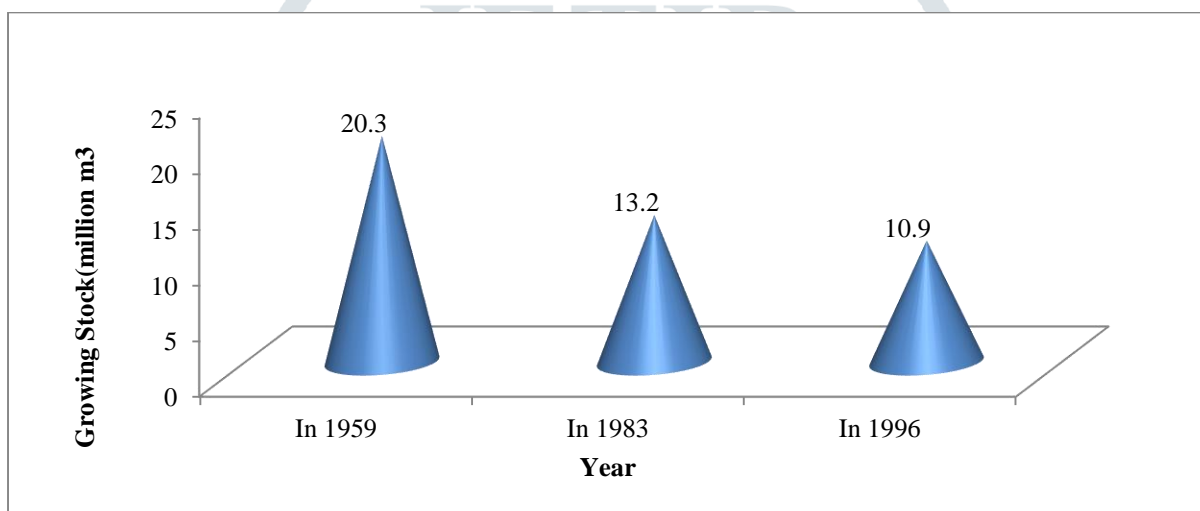


Figure 6: Growing stock in Sunderbans

Following Figure 7 attempts to present the above deterioration in forest resources of Sunderbans through number of trees per hectare. It highlights the decline in trees of two main tree species (Sundri and Gewa) of Sunderbans.

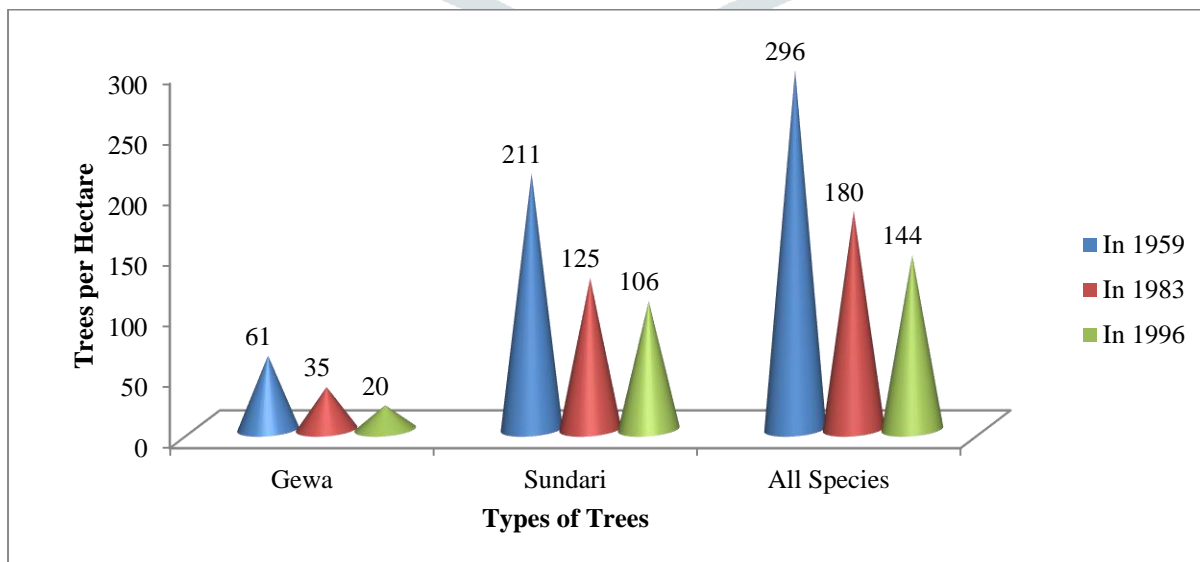


Figure 7: Number of trees in Sunderbans

Coastal Afforestation (CA) Areas

The 1996 inventory indicates that the area under CA has decreased substantially from the last assessment (FMP, 1992) in all the four (Chittagong, Noakhali, Patuakhali, and Bhola) CA divisions (Figure 8).

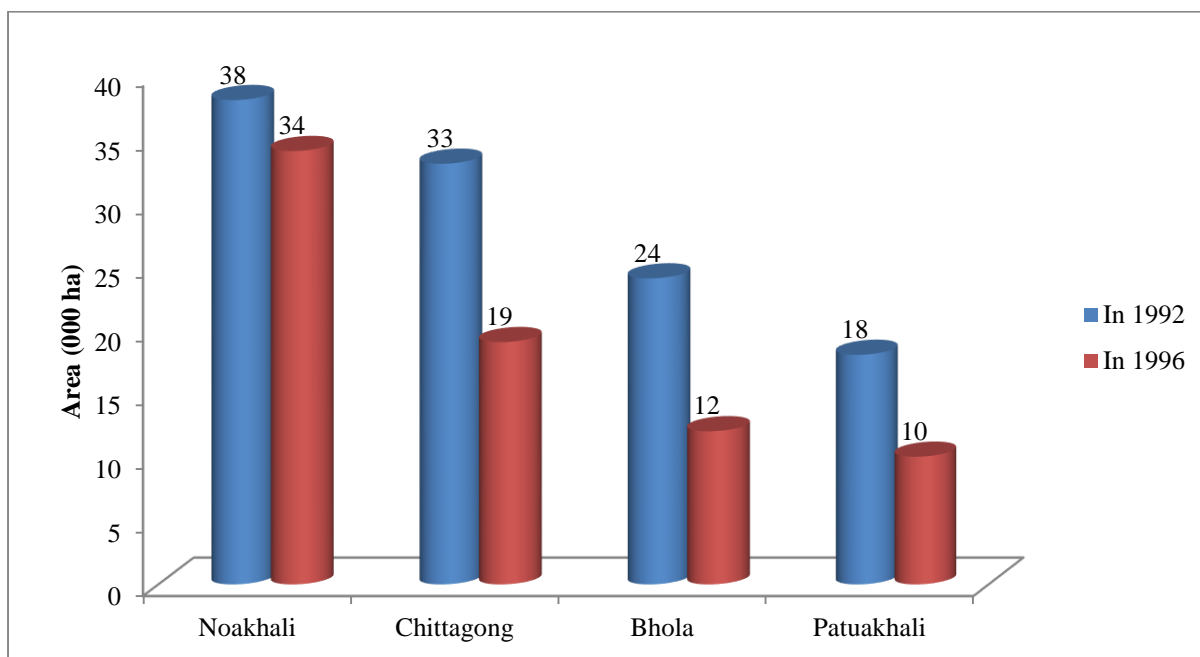


Figure 8: Decline in area of Coastal Afforestation Divisions

Village forests

Village forests are very important suppliers of forest products in Bangladesh. Some studies like Douglas, 1981 indicate that these forests contribute about 80 to 82% of forest products. Hammermaster (1981) surveyed the village forests in 1981, and the FMP, 1992 resurveyed them in 1991. Figure 9 presents the broad composition of these forests.

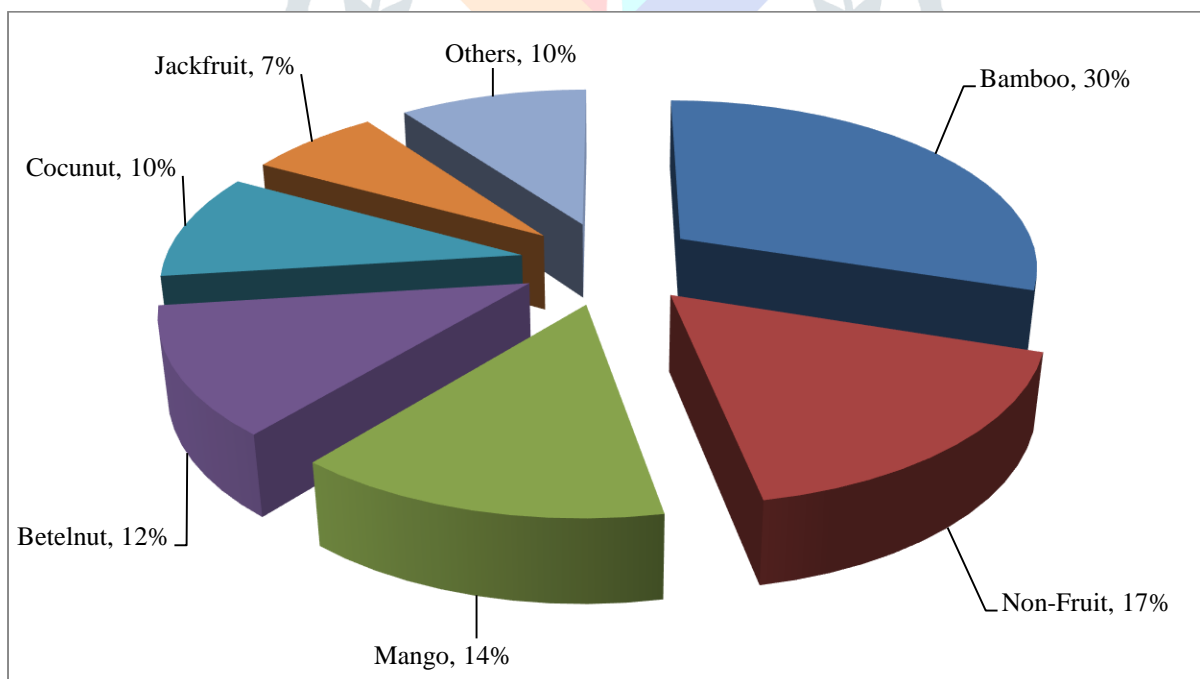


Figure 9: Composition of village forests

The FMP, 1992 provides the latest information on bamboo and trees including palms in the village forests. It assesses that the village forests cover about 270,000 ha and contain about 444 million mature and about 611 million immature culms of bamboo, and about 198 million trees (fruit, fuelwood, shade, and other multipurpose trees) with 0.54 million M³ volume. Further that these forests have about 469 million (mature and immature) palms of four main varieties (Tal, Khejor, Cocunut, and Betelnut) and contain about 4.6 million clumps of canes. FMP, 1992 also found large number of less valued horticultural plants like Banana (368 million), Lebu (14.6 million) and Peara (14.19 million). Figure 10 presents changes in stock of bamboo during 1981 and 1992.

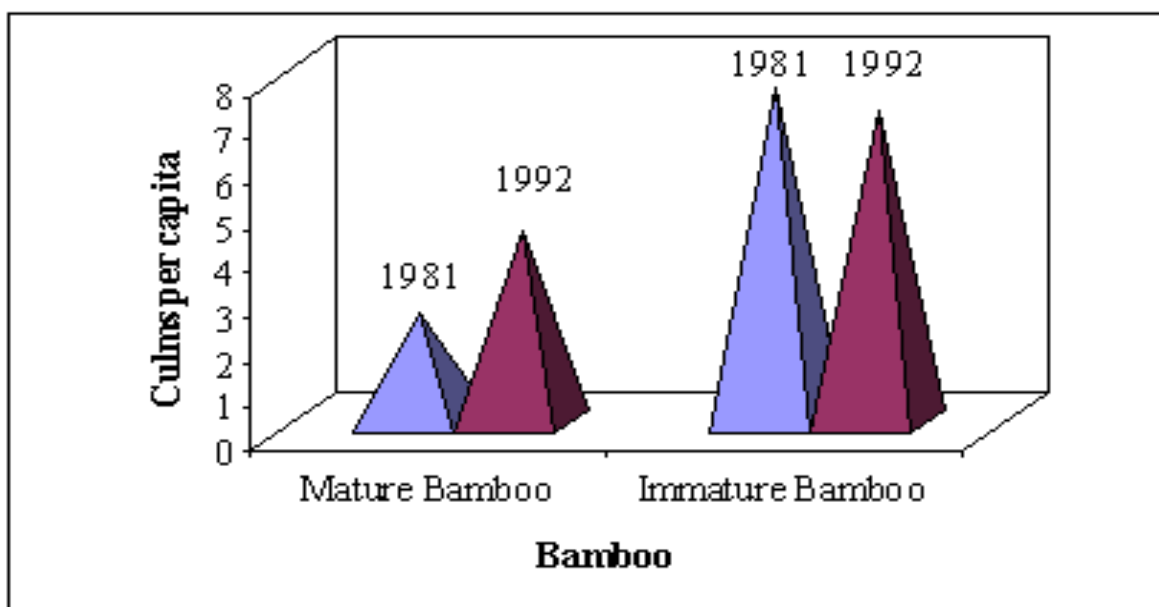


Figure 10: Change in growing stock of bamboo

The number of trees has increased during last ten years but their volume has remained roughly the same (Figure 11) indicating a decline in large diameter trees and increase in small diameter trees in the village forests.

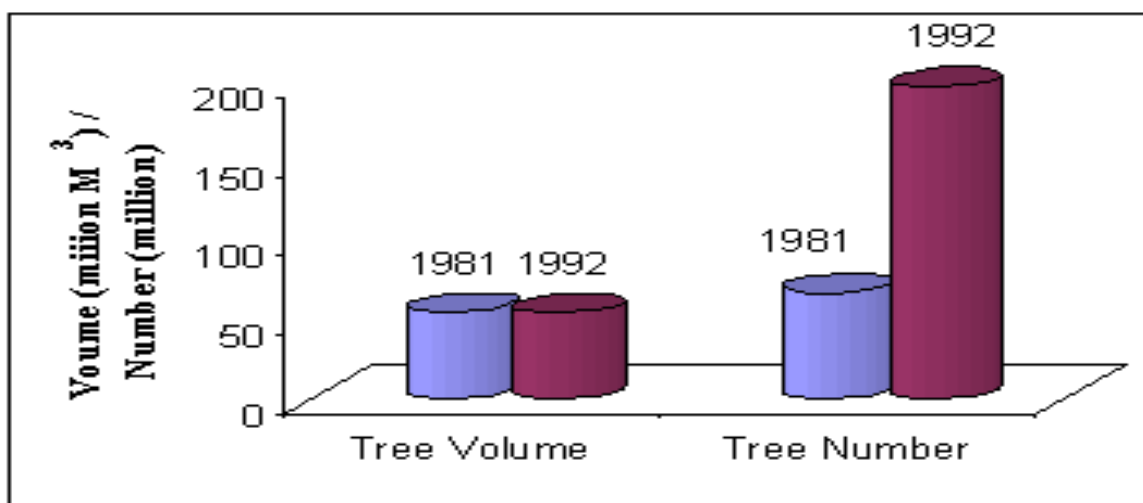


Figure 11: Change in growing stock of trees

Annual Yield

Public forests mainly meet large commercial and industrial needs. Current annual estimated yield from forests is between 8 to 9 million M³ of round wood. Privately owned trees and bamboo resources supply more products than the public forests. Harvesting on private land by individual owners, timber traders and contractors accounts for the bulk of wood production. The actual supply from public forests may be more than the above (8 to 9 million M³) level due to illegal felling. The FMP (1992) observes a significant amount of illegal felling (20-60%) over the regulated yield.

Biomass Production

The FMP (1992) expects annual round wood supply to increase up to the level of 11.2 million M³ in 2015. This estimation assumes an increasing future reliance on plantation wood supplies and a corresponding decline in relative forest sawlog availability. The share of plantation sawlogs and pulpwood may go up to 30%. Another expected significant change is the large increase of pole material. The total potential of supply of Bamboo is about 722 million culms. The contribution of public forests is estimated at about 194 million culms and that of village forests at about 528 million culms (FMP, 1992).

Biological diversity

Systematic information on biodiversity at all levels and particularly at ecological and genetic level is limited for Bangladesh. Base line information is not available to estimate trends. Most of the original natural habitat areas have been lost. Bangladesh has a large number of species (about 1,500 flowering plants, and 1,500 vertebrates) and many of them are currently threatened. Most of the biodiversity is confined to protected areas. About 968 species belonging to 812 genera and 501 families have been identified within the protected areas (Rosario, 1997).

Conservation of Biodiversity

Bangladesh has signed the Convention on Biological Diversity in 1992, and the Convention on International Trade in Endangered Species of Wild Fauna in 1973. She is signatory to the Ramsar Convention and the World Heritage Convention. The Bangladesh Wildlife (Preservation) Act, 1974, the Forest Act, 1927 (amended in 1989), the Fish Act, 1950, and the Environment Protection Act, 1995 provide legal support for biodiversity conservation in the country. The 1994 IUCN Red List contains 65 wildlife species (reptiles, birds and mammals, no amphibian in the list) and the Bangladesh National Herbarium lists 33 threatened flowering plants for the country. Apart from the Government of Bangladesh (GOB) the financing for biodiversity activities comes from international agencies like World Bank, Asian Development Bank, CIDA, USAID, NORAD, JICA, and ODA etc. Various projects like the Forest Resources Management Project, the Development of Wildlife Conservation and Management Project, the National Conservation Strategy Implementation Project, Phase-I, and the National Environmental Management Action Program are under implementation for the conservation and preservation of wildlife and biodiversity.

Protected Areas

The Protected Area network of Bangladesh (Figure 12) consists of one game reserve, five national parks, and seven wildlife sanctuaries. Bangladesh has managed to develop these protected areas in three out of the four bio-geographic zones. These PAs conserve a very large extent of the biodiversity present in the forests of Bangladesh. They span about 164,660 ha or about 1.11 percent of the geographical area.

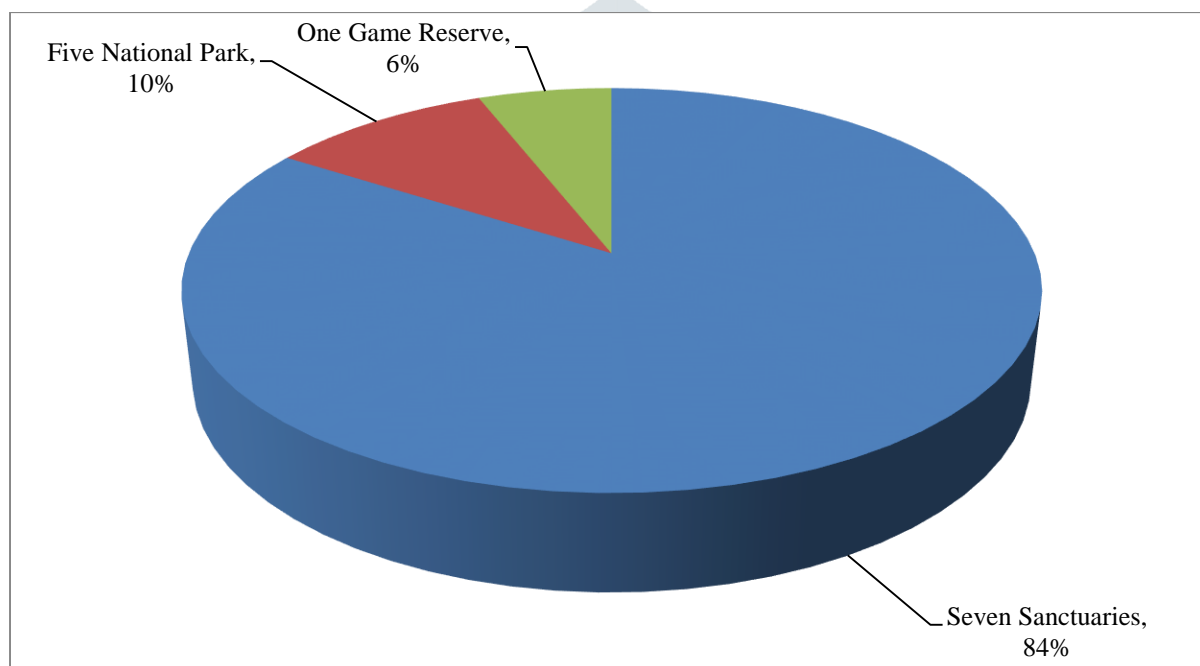


Figure 12: Composition (Area) of PAs

The extent of PAs in Bangladesh is well below the target of 5 percent established by the Wildlife Task force in 1986 and the target of 12 percent recommended by the World Commission on Environment and Development. Four wildlife sanctuaries (Pabla Khali and 3 WS in Sunderbans) alone constitute more than 75% of the total Protected Area in Bangladesh. Management plans guide the conservation and development of each PA (Rosario, 1997 a, 1997b) and Bangladesh Wildlife Preservation (Amendment) Act, 1974 provides the legal cover to these areas. The following sections describe main PAs.

Teknaf Game Reserve (TGR)

This game reserve was established through gazette notification of November 1, 1983 with an area of 11,615 ha. Currently, forests extend over an area of 10,225 ha (Rosario, 1997). It supports evergreen and some semi-evergreen forests and falls under the Tropical Evergreen and Semi-Evergreen Forest Bio-geographic Zone (TESEFBZ). The TGR contains both high tree type and low bushy type of forests. The high type forest is dominated by *Grewia microcos*, *Pterospermum acerifolium*, *Artocarpus Chaplasha*, and *Dipterocarpus turbinatus* mixed with other species such as *Albizia procera* and *Artocarpus lachucha*. The low forest type is generally bushy to brushy vegetation composed of mixed species such as *Ficus heterophylla*, and *Mocoranga denticulata*. The undergrowth in both types comprises of saplings, and shrub species such as *Melastroma malabathrica*, *Mussaenda glabrata*, and *Pavetta indica*. The TGR has palms like *Caryota urens*, grasses like *Thysanolaena maxima*, and *Melocanna baccifera*, climbers like *Mikania cordata*, *Discorea glabra*, and *Thurbergia grandiflora*, and herbs like *Eupatorium odoratum*, *Curculigo recurvata*, and *Calocasia nymphaefolia*. The TGR contains some patches of industrial tree plantations that form part of the remaining forest in the area. The TGR contains a considerably high floral diversity with about 112 vascular plant species of 95 genera and 66 families. The TGR has mammal species like *Elephas maximus*, *Aonyx cinerea*, *Canis aureus*, and *Cuon alpinus*, bird species like *Dicrurus aeneus*, *Pycnonotus cafer*, *Psittachula alexandri*, and *Dinopium bengalense*, reptile species like *Mabuya carinata*, and Gekko gecko, and amphibians species like *Rana cyanophyctis*, and *Garrulax moniligerus*. Four main habitat types (high forest, low forest, grassland and water body) have been identified in TGR. The high and low forests are the major habitat types in terms

of extent or size. The research summarizes the area of different habitat types in TGR against reported area of 11,615 ha. The forest habitat is preserved for the folivorous and frugivorous arboreal, and hoofed animals in the area. Uncontrollable harvesting of forest products and clearing of areas for cultivation are adversely affecting the wildlife habitat.

Himchari National Park (HNP)

The GIS database under RIMS of BFD estimates the current area of HNP as 7,935 ha. It consists of evergreen forest and comes under the Tropical Evergreen and Semi Evergreen Forest Biogeographic Zone (TESEFBZ). The remaining natural forest embraced by the Park is characterized by the presence of dominant tree species such as *Grewia microcos*, *Dipterocarpus turbinatus*, *Vitex pedunculata*, *Pterospermum acerifolium* and others. The shrub species like *Mussaenda corymbosa*, *Lantana camara*, and *Grewia glabra*, grass species such as *Melocalamus compactiflorus*, *Neohouzeaua dulloa*, climbers like *Discorea glabra*, *Paederia foetida*, and *Derris marginata*, and herbs like *Swintonia floribunda*, *Curculigo recurvata*, and *Alpinia nigra* are present in HNP. The HNP supports important mammal species like *Elephas maximus*, *Felis viverrina*, *Herpestes auropunctatus*, and *Lutra lutra*, bird species like *Hirundo rustica*, *Cypsiurus parvus*, and *Acridotheres fuscus*, reptile species like *Mabuyacarina*, and *Gekko gekko*, and amphibians such as *Xenochrophis piscator*, *Varanus bengalensis*. The HNP has three main habitat types (high forest, low forest, and grassland with scattered trees). The high forest is in the Bhangamura south sub-block on the south of Bhangamura creek, and the low bushy type forest is located in the Bhangamura north sub-block. The grassland habitat type are scattered on gently sloping areas and on top of low ridges and serves as the habitat of foraging hoofed mammals in the area. These areas are the remnants of the early land clearings done in the forest block. The HNP contains about 117 vascular plant species of 103 genera and 75 families.

Bhawal National Park (BNP)

The BNP was established on May 11, 1982. The GIS database of BFD estimates the current area as 5,022 ha. The park is in Dry Deciduous Forest Biogeographic Zone (DDFBZ). The BNP is dominated by *Shorea robusta* (Sal) mixed with a few evergreen medium-sized tree species such as *Antidesma ghaesembilla*, *Phyllanthus embelica*, *Syzygium fruticosum*, and *Zizyphus mauritiana*, and shrubs like *Leea crispa*, *Melastoma malabathrica*, *Mimosa pudica*, *Croton caudatus*, *Anisomeles indica* and others. The BNP has climbers such as *Discorea glabra*, *Hermidesmus indicus*, and *Ichnocarpus frutescens*, and herbs like *Agerathum conyzoides*, *Achyranthes aspera*, *Desmodium heterophyllum*, and *Adenosma capitatum*. Some important mammal species like *Callosciurus pygerythrus*, *Canis aureus*, *Pteropus giganteus*, and *Macaca mulatta*; bird species like *Acridotheres tristis*, *Turdoides caudatus*, and *Sturnus contra*, reptile species like *Calotes versicolor*, *Mabuya carinata*, *Gekko gekko*, and *Varanus bengalensis*, and amphibians like *Rana tigrina* live in BNP. The BNP has three habitat types (low forest, cultivated paddies and grassland, and water body). The low forest habitat includes the entire forest, which generally serves as the main habitat of arboreal animals in the Park. The Park contains low forest type with Sal generally comprising the upper layer of canopy. The undergrowth is comprised of Sal coppice and few shrub species. The grassland habitat type is generally flooded during the monsoon season and generally dries during the rest of the year. The lake and riverine habitat type supports some introduced fish species, water birds, and amphibians. The BNP has about 225 vascular plant species of 164 genera and 73 families.

Madhupur National Park (MNP)

The MNP was established on 24 February 1982. It comes under the Dry Deciduous Forest Biogeographic Zone (DDFBZ), and forms part of the strip of Sal forest that extends down to North Dhaka. The current area in GIS database is about 8,438 ha. The forest of MNP is dominated by Sal tree with other tree species like *Grewia laevigata*, *Zizyphus oenoplia*, *Phyllanthus embelica*, *Terminalia belerica* and others. The shrub consists of species like *Leea crispa*, *Glycosmis arborea*, *Thespesia lampa*, and *Urena lobata*. The MNP has climbers such as *Mucuna pruriens*, *Ficus scandens*, *Pothos scandens*, and *Smilax macrophylla*, and herbs like *Ageratum conyzoides*, *Desmodium gangeticum*, *Cleome viscosa*, and *Clerodendrum viscosum*. The important mammal species present in MNP include *Macaca mulatta*, *Presbytis pileatus*, *Callosciurus pygerythrus*, *Canis aureus*, and *Pteropus giganteus*. The bird species like *Dicrurus adsimilis*, *Acridotheres tristis*, *Psittacula alexandri*, and *Egretta garzeta*, the reptile species such as *Calotes versicolor*, *Varanus bengalensis*, and *Gekko gekko*, the amphibians like *Rana tigrina* and *Rana cyanophlyctis* are present in MNP. MNP has three habitat types (low forest, cultivated paddies and grassland, and water body). The low forest contains Sal in its upper canopy and Sal coppice and few shrub species in its lower canopy. The cultivated paddies and grassland habitat type is partly flooded during the monsoon season and generally dries during the rest of the year. The lake and riverine habitat type include introduced fish species, water birds, and amphibians. The research provides details of 176 vascular plant species of 141 genera and 72 families identified in MNP.

Rema-Kalenga Wild life Sanctuary (RKWS)

According to GIS database the RFWS extends over 1,795 ha. The RKWS has primary forest falling under the Tropical Evergreen and Semi-Evergreen Forest Biogeographic Zone (TESEFBZ). The forest consists of primary tree species such as *Artocarpus chaplash*, *Dillenia pentagyna*, *Bursera serrate*, *Castanopsis tribuloides*, and *Dipterocarpus turbinatus*, shrub species like *Macaranga roxburghii*, *Adhataoda zeylanica*, *Leea crispa*, *Schimawallichii*, and *Carya arborea*, bamboo species such as *Bambusa polymorpha*, *Bambusa tulda*, and *Bambusa longispiculata*, grass species such as *Melocanna baccifera*, *Daemonorops jenkinsiana*, and *Saccharum spontaneum*, climber species like *Piper sylvestre*, *Smilax macrophylla*, and *Dioscorea bulbifera*, and herbs like *Curculigo orchioides*, and *Alpinia nigra*. The RKWS supports mammal species like the *Muntiacus muntik*, *Sus scrofa*, *Hylobates hoolock*, and *Macaca mulatta*, bird species such as *Nectarinia zeylonica*, *Psittacula alexandri*, and *Gallus gallus*, reptile species

like *Mabuya carinata*, *Chrysopelea ornata*, *Cuora amboioensis*, and *Varanus bengalensis*, and amphibians species such as *Rana cyanophlyctis*, and *Bufo melanostictus*. The RKWS contains about 69 vascular plant species of 60 genera and 45 families. RKWS has four habitat types (high forest, low forest, cultivated paddies and grassland, and water body). The high and low forests are the major habitat types in terms of land area. The high forest type is dominated by *Artocarpus chaplasha*, *Dipterocarpus turbinatus*, and *Elaeocarpus floribunda* etc. mixed with other species such as *Dillenia pentagyna* and *Castanopsis tribuloides*. The low forest type consists of mixed species such as *Garcinia cowa*, *Bauhinia oeninata* and others. The undergrowths in both types are generally comprised of saplings, and shrub species such as *Schima wallichii*, *Careya arborea* and others. The grassland habitat type is partly flooded during the monsoon season and is generally dry during the rest of the year. The water body harbours some introduced fish species, and water birds, and amphibians.

Chunati Wildlife Sanctuary (CWS)

The CWS was established through gazette notification of March 18, 1986. The GIS database of forest department estimates the current area as 7,410 ha. The forest belongs to the Tropical Evergreen and Semi-Evergreen Forest Biogeographic Zone (TESEFBZ). The natural forest comprises of tree species like *Anacissus lanceolata*, *Phyllanthus reticulatus*, *Ficus hispida*, and *Grewia microcos*, shrub species like *Clerodendrum indicum*, *Mussaenda roseburghii*, *Melastoma malabathrica*, and *Solanum torvum*, grass species such as *Melocanna baccifera*, *Oxytenanthera nigrocilinta*, and *Thysanolaena maxima*, climbers like *Chromolaena odorata*, *Mucana pruriens*, and *Calycopteris floribunda*, and herb species such as *Triumfetta rhomboidea*, *Musa ornata*, and *Costus speciosus*. The CWS provides habitat for a good number of important mammal species such as *Elephas maximus*, *Callosciurus pygerythrus*, and *Cuon alpinus*, bird species like *Nectarinia zeylanica*, *Hirundo rustica*, *Motacilla alba*, *Pycnonotus cafer*, and *Dicrurus aeneus*, reptile species such as *Mabuya carinata*, and *Rhabdophis subminiata*, and amphibians species like *Rana limnocharis*, and *Bufo melanostictus*. The CWS has four main habitat types (high forest, low forest, grassland and water body). The high forest habitat is dominated by *Artocarpus chaplasha*, and *Stereospermum chelonoides* mixed with other species such as *Bursera serrata*, and *Grewia microcos*. The low forest habitat is generally bushy to brushy vegetation composed of mixed species like *Ficus religiosa*, and *Clerodendrum indicum*. The undergrowth in both types consists of species like *Clerodendrum indicum*, and *Mussaenda roxburghii*. The CWS has some patches of industrial tree plantation, which are part of the remaining forest in the area. It also has large patches of betel leaf cultivation along the banks and flood plains of the major rivers adversely affecting the wildlife habitats in CWS. The CWS contains about 107 vascular plant species of 96 genera and 71 families. Most of the plant species found in the CWS are indigenous and none is endemic and rare. The CWS has some exotic species like *Acacia auriculiformis*, *A. mangium*, *Eucalyptus camaldulensis* and *Tectona grandis*.

Char Kukri Mukri Wildlife Sanctuary (CKMWS)

The CKMWS was established through gazette notification of December, 19, 1981. The GSI database of BFD estimates the current area as 2,106 ha. The CKMWS falls under the Sundarban/Mangrove Forest Biogeographic Zone (S/MFBZ). The dominant tree species include *Sonneratia apetala*, *Avicennia officinalis*, *Excoecaria agallocha*, and *Heritiera fomes*. The shrub species comprise of *Dalbergia spinosa* and *Hibiscus tiliaceus*. The CKMWS has palm species like *Nypa fruticans* and, climbers such as *Derris scandens* and *Caesalpinia crista*, and herbs like *Acrostichum aureum* and *Typha angustata*. The CKMWS is good habitat for mammal species like *Pteropus giganteus*, *Axis axis*, and *Lutra lutra*, bird species such as *Egretta intermedia* and *Egretta alba*, reptiles like *Varanus bengalensis* and *Mabuya carinata*, and amphibians like *Rana cyanophlyctis* and *Rana tigrina*. The CKMWS has three kind of habitats (high forest, openland/grassland and sandbar / shore area). The high forest is the largest habitat type and is dominated by *Keora* mixed with other species such as *Baen* (*Avicennia officinalis*), *Gewa* (*Excoecaria agallocha*) and *Sundri* (*Heritiera fomes*). It has shrub species such as *Hargoza* (*Acanthus ilicifolius*) and *Anantakanta* (*Dalbergia spinosa*). The research provides area of different habitat types in the CKMWS. The sanctuary contains about 88 vascular plant species or 83 genera and 48 families.

Sunderbans Wildlife Sanctuaries (SWS)

Sunderbans falls under biogeographic zone (SFBZ) and has three wildlife sanctuaries (East, South, and West) that extend over 23,198 ha, 20,094 ha, and 41,250 ha. All the three sanctuaries have three main habitat types (High mangrove forests, Low mangrove forests, and grassland and blanks. Very small area (25 ha) is under plantations. Most dominant vegetation is *Sundri-Gewa* in East SWS, *Gew-Goran* in South SWS, and *Goran-Gewa* in West SWS. Rosario (1997a) provides information on species and crown cover density wise coverage in the three wildlife sanctuaries. The three Sanctuaries in the Sundarban Forests contain a considerably high floral diversity. About 74 plant species of more than 53 genera have already been identified. The three wildlife sanctuaries contain almost the same composition of floral species. The slight difference in floristic composition can be attributed primarily to the difference in the levels of salinity with "East" having least, South possessing moderate and West containing maximum salinity. The number of floral species is varying inversely with salinity. The East Sanctuary contains the number (35) of plant species, followed by the South Sanctuary with 22 species and the West Sanctuary with 17 species. The more prominent tree species include the *Sundri*, *Gewa*, *Keora*, *Goran*, *Singra*, *Garjan*, *Dhundal*, *Amur*, *Passur* and *Kankra*.

The *Golapatta* is a very useful palm in the Sundarban. It is widely gathered for thatching material. It is abundantly found in the East and South Sanctuaries but very scarce in the West Sanctuary. *Hantal* is another palm species, which is used extensively in the construction of small huts as roof rafters and frame for walls. It is abundant in the West Sanctuary. *Sun grass* or *Ullu*, the main fodder species for deers, is widely gathered for thatching roofs. *Hogla* (*Typha elephantina*), is gathered and split for cheap fencing. *Nal* (*Orundo karka*) grass, is used extensively for making mats (*dharma*). These species are widely found in the East Sanctuary and sporadically growing in the South Sanctuary. These and other activities like collection of honey with the use of fire, small-

sized construction timber, firewood and barks, fishing in estuarine and riverine areas, seasonal settlements of fishermen on shore areas are degrading the quality of wildlife habitat.

Land use within PAs

Figure 13 provides compiled information on land use in protected areas. The percentage of closed forest in PAs is about seventy percent that is quite high. The three PAs of Sunderban alone account for more than sixty percent of the total area under the protected area net work.

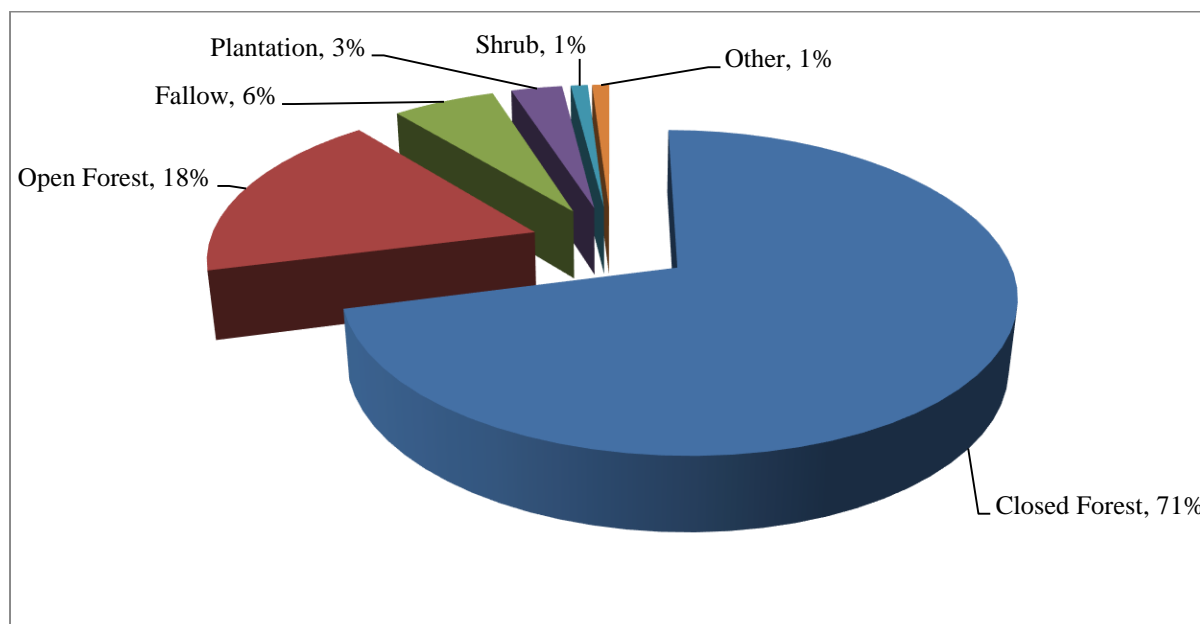


Figure 13: Land use in PAs.

Management of PAs

Management plans for the PAs have been developed for the first time in 1997 (Rosario, 1997 a, 1997b) utilizing tools like GIS. These plans cover almost all the PAs. The Bangladesh Wildlife Preservation (Amendment) Act of 1974 provides legal protection to all these areas. The total area of all the PAs is only 1.11 percent of the total land area of Bangladesh and is well below the target of 5 percent established by the Wildlife Task force in 1986 and the target of 12 percent recommended by the World Commission on Environment and Development. Considering the current population pressure on forests, it seems difficult for Bangladesh to make any additional land allocations to PAs.

CONCLUSION

The extent, density, growing stock and share of important species in the forest of Bangladesh are declining while area under cultivation and encroachment is increasing. So, more plants should be planted to increase the number of plant. Government should take immediate necessary steps for plantation of more plants. There is forests land in Bangladesh. Each and every year a lot of wood trees are being stolen by gang theft this stealing of trees should be stopped immediately. Master plan should be taken to improve the existing forest land situated in Bangladesh. It is difficult to increase the forest land by government alone. Mass people should be aware in this matter. Mass people have some duties and responsibilities. In each and every year mass people should plant more trees. There are some national forests in Bangladesh. Mass people should be very cautious about the national forests. Mass people should take necessary steps to stop the sealing the trees from the national forests. Mass people should be thought that the national forests are the property for the people not only the property of Government. They should protect the national forests. There are some hilly areas in our country. Some corrupted people steal the soil from the hilly area. The corrupted people cut the soil and sell it to the brick field and other places. These types of activities should be stopped immediately. Print and electronic Medias have duties and responsibilities in this matter. Print Medias should write more columns about the plantation of trees and preserve the hilly areas Electronic medias should prepare more programs about the importance of tree plantation and preserve the forest and hilly lands in Bangladesh. Incompatible and varying information makes it difficult to provide better estimates of change. Future supplies of forest product will mostly consist of small size material and plantation wood. Systematic information on biodiversity at all levels and particularly at ecological and genetic level is limited and base line information is not available to estimate trends. Most of the original natural habitat areas have been lost. Protected Area network contains most of the biodiversity with 968 identified species belonging to 812 genera and 501 families.

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