



Secondary Data Collection for Pilot Protected Areas: Rema-Kalenga Wildlife Sanctuary



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Secondary Information on Rema-Kalenga Wildlife Sanctuary

Official Name	: Rema-Kalenga Wildlife Sanctuary
Previous Name	: Taraphil (Torofhil?) Reserved Forest
Protection Status	: Sanctuary
Forest Type	: Tropical evergreen and semi-evergreen forest (Sarker and Haq 1985, Mountfort and Poore 1968) and much of it is primary forest (Uddin <i>et al.</i> 2002a).

1. Location

1.1 Forest administrative location

Beat	: Rema, Chonbari, Kalenga
Range	: Habigonj-2
Division	: Sylhet Forest Division

1.2 Civil administrative location:

Union Parishad:

Upazila	: Chunarughat
District	: Habigonj

1.3 GPS location:

24°06'-24° 14' N and 91° 36'-91° 39' E (BCAS 1997)

24°06'-24° 14' N and 91° 34'-91° 41' E (Uddin *et al.* 2002a)

1.4 Bio-ecological zone: 9b -Sylhet Hills (Nishat *et al.* 2002).

2. History of establishment

The Taraphil Reserved Forest was established under a declaration of the forest Act 1927, covering a total area of 6232 ha. Considering its biodiversity values and conservation needs, later the government declared a part of the Reserved Forest (RF)

as the Rema-Kalenga Wildlife Sanctuary in 1982 and further expanded the sanctuary area through another declaration in 1996.

The sanctuary comprises southern eastern parts of Taraphil Reserved Forest incorporating parts of Kalenga, Chonbari and Rema beats (Chemonics 2002).

1st Gazette Notification : No. 11/ FR-68/81/882, dated 7-1-1982.

2nd Gazette Notification for extension : No. PBM (Sec-3) 7/96/371, dated 7-7-1996

3. Area

Area under 1st gazette Notification = 1095 ha approx. (2705 acres)

Area under 2nd gazette notification = 700 ha approx (1730 acres)

Total area = 1995 ha approx (4435 acres)

4. Boundary

The Sanctuary is generally bounded on the North by the northern limit of Kalenga Beat area, on the East by the international boundary of India following the lines between boundary monuments Nos. 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1959, and 1960 in a general south to southwesterly directions, and on the west by the limits of Forest Compartments 2 and 4 of Rema Beat (Rosario, 1997a).

FSP (2000a) mentioned that the Sanctuary is bordered along most of its northern and western boundaries by FD lands, along part of its southwestern boundary Tea Estate lands, along its southern and eastern boundaries by India, and along a small portion of its northern boundary by Khas lands (Map attached).

5. Legal Status and Special Regulatory Provisions

The Rema-Kalenga Wildlife Sanctuary was established under the provisions of Article 23(1) of the Bangladesh Wildlife (Preservation) Order of 1973 (Presidents Order No. 23 of 1973), as amended by The Bangladesh Wildlife (Preservation) (Amendment) Act, 1974. Specifically, the Order prohibits any kind of killing, hunting or trapping of any wildlife (within and around 1 mile radius from the outer boundary

of the sanctuary), agricultural activities, living or entering into the sanctuary of any persons or destruction to the sanctuary habitat. The Order also prohibit introduction of any exotic or release of any domesticated animals in the sanctuary. However, under special circumstances, such activities could be allowed by the government only when it is deemed necessary for its development, its beautification or for any other scientific reasons (Bangladesh Wildlife (Preservation) (Amendment) Act, 1974).

6. Topography/Physiography

The sanctuary encompasses several hills of different elevations and the low-laying valleys. The highest peak of the hills is about 67 m from the sea level (Rizvi, 1970). There are a series of ridges of the hills running in different directions, and valleys locally known as “Lunga” with flowing water during monsoon but dry in winter season. Three main channels viz. Karangi chara, Lokkhia chara, Rema chara with many tributaries criss-cross the sanctuary and constitute the major drainage system in the area. All the three channels flow towards west and fall in the Khuai River (Uddin, 2002).

The hills of Rema-Kalenga are composed of Upper Tertiary rocks in which sandstone largely predominates (Ahmad 1970) along with siltstones and mudstones, locally altered to slates and shales. Limestones are also found in hills on the northeast border of Khasia and Jainta Hills.

Soil of the sanctuary varies from clay to sandy loam exceedingly fertile and show low pH. In some cases, soils texture consists of yellowish red sandy clay mixed with granules of magniferous iron ore (Ahmed 1970). The sanctuary enjoys a most tropical climate characterized by a period of high precipitation from April to September and five months of relatively dry period from November to March.

FRR and DU (1996) reported two important and valuable habitats: *jheels* - low-laying areas of forest with an upper canopy 25-30 m high, and in some areas *phumdi*, found on the forest floor – a mat of soft decomposing organic matter with some grass and herbs overlying water. One artificial lake has been recently created on the edge of the present sanctuary by excavating and damming a natural drainage course (<5 h) (FSP 2000a, FRR and DU 1996).

7. Climatic data

	Range	
	Lowest	Highest
Temperature (°C)	9.6 (January)	34.8 (April)
Humidity (%)	14 (April)	100 (All month)
Rainfall (mm)	4.5 Ave. (January)	522.8 Ave. (June)
Sunshine	9.8 (Ave. of days) (August)	30.2 (Ave. of days) (December)

Source: Rosario (1997a). Based on data for Srimongal

8. Settlements

Settlement history of Taraphil Reserved Forest goes back to 40-100 years. Table 1 provides some information on the settlements in and outside of the Reserved Forest (RF). The people (HHs) living inside the forest are registered with the Forest Department (FD) and they are recognized as Forest Villagers. They get some privileges (permission for living on FD land and cultivation of level forest land) from the FD. In return, they provide assistance with plantation management and forest protection (FRR and DU 1996, FSP 2000a, Chemonics 2002).

As per FD records, Tarap Hill Reserved Forest is currently inhabited by approximately 200 or more households of Forest Villagers (HHs), but their actual number would be much more than in accordance with the population increase (FRR and DU 1996 and FSP 2000a).

There are both tribal (Tipra tribe) and Bangalee settlements inside and outside of the forest. The Tripra are concentrated in Debrabari village and also in HH clusters bordering northwestern and northern boundary of the sanctuary. However, their location in relation to sanctuary is uncertain.(FSP 2000), probably due to confusion in demarcating the sanctuary boundary.

FSP (2000a) identified other outside settlements in the immediate vicinity of the sanctuary, which have stake with the RF. However, their stake with the forest is mostly at the subsistence level. They have also encroached some FD lands and exploit resource on subsistence basis.

Table 1. Information on the settlements inside and adjacent to the Rema-Kalenga Wildlife Sanctuary

Sl. No .	Name of settlements	Race of population	Location of settlements	No. of HHs	History of establishment (years ago)	Population	Identified stake with the sanctuary
1	Rashidpur beat area		Inside the forest	33	100		-collect fuelwood and building materials -cultivate FD land -collect country food, medicinal plants and other NTFPs -graze cattle, goats etc.
2	Kalenga beat area		Inside the forest	95			--
3	Chonbari beat area		Inside the forest	50			--
4	Rema beat area		Inside the forest	13			--
5	Debrabari	Tripura and Debormon	Inside the forest	26	100	200	--
6	Chonbari	Tripura	Northern boundaries of the sanctuary	Total Households 60 or more	60-70		-collect fuelwood and building materials -cultivate FD land -collect country food, medicinal plants and other NTFPs -graze cattle, goats etc
7	Mongoliabari						-grow fruits and vegetables
8	Kaliabari						
9	Krishnachara						
10	Kalenga Office Tila	Bangalee	Outside the forest, adjacent to the Kalenga Beat Office/	57	~50		-subsistence collection of fuelwood and building materials -some (illicit) harvest of tree and other forest products for sale,

Sl. No .	Name of settlements	Race of population	Location of settlements	No. of HHs	History of establishment (years ago)	Population	Identified stake with the sanctuary
11	Hizmalia	Bangalee	Outside the forest, western edge of the RF near the Range Office	~200	~70		etc. -cattle grazng at forest edge
12	Tea estate	mixed	Southwest			1200	-some incursion into RF for fuelwood, building materials -collection of some NTFP

Note: Prepared with information from FSP (2000a), FRR and DU (1996) and Chemonics (2002).

9. Land tenure/land encroachment

As per land use agreement, FD allotted 1.2 ha of land to each registered forest HH (forest villagers) only, including their homesteads and agricultural land. The allotment was made long back to HHs which now belongs to their descendants, although they are not registered with FD (FSP 2000a).

The forest villagers using more than the allocated land/HH (1.2 ha) by FD and other non-registered households (could be descendants of registered HHs) residing inside the forest are also enjoying FD land. FD records show that about 206 ha of inside forest and another 674 ha of outside forest land still remain under cultivation, of which substantial area is encroached. An estimated 50% inside agriculture land in the sanctuary are used by the people from outside villages (Chemonics 2002).

Conflict: In 1982 an estimated 400 families who were residing inside the RF, or were residing elsewhere but were cultivating paddy fields inside the RF (including the original sanctuary) were evicted on the basis that they were not recognized as forest villagers. Some land was recovered and was brought under plantation by the Forest Department (FSP 2000a).

Chemonics (2002) apprehends that it is bit difficult to change the land use pattern of the local people (or to establish FD rights on the encroached agric. land), particularly, in the north. (Chemonics 2002) as the paddy cultivation and subsistence use of forest resources (fuelwood and bamboos) are long established.

10. Economic Activities

FRR and DU (1996) reported that the remainder of the cultivated land in the sanctuary is used by outsiders from the other forest villages. In addition to traditional uses of the forest including collecting honey, fuelwood, and bamboo and cane for handicrafts and weaving, these villagers and outside people graze considerable numbers of cattle and buffaloes in the cultivated areas when they are fallow (in the early monsoon), where the fields have been abandoned, and in marshy lowlands.

The inside villagers cultivate paddy in adjacent rainfed fields, grow fruits and vegetables in homestead gardens and raise small number of livestock. Some people undertake small business, while some serve as day laborer (FSP 2000a.)

11. Land use cover/pattern within the sanctuary

Table 2 summarizes the use of forest lands within the sanctuary under the three beats (currently 4 beats).

Table 2: Tarap Hill Reserved Forest Cover from maps prepared under RIMS

Use	Rema Beat (ha)	Kalenga Beat (ha)	Rashidpur Beat (ha)	Total (ha)	% of total area
Low-High Forest	880	688	0	1,568	31
Low Forest	0	16	39	55	1
Scattered trees	67	17	0	84	2
LR planted up to 1959	205	372	0	577	11
LR planted 1960-69	252	172	106	530	11
LR planted 1970-79	260	173	116	549	11
LR planted 1980-89	362	0	40	402	8
LR planted 1990-95	0	251	0	251	5
SR planted 1980-89	0	594	133	727	14

SR planted 1990-95	0	65	0	65	1
Failed Plantation	0	96	43	139	3
Bamboo	0	12	4	16	0
Murta/Cane ¹	0	14	6	20	0
Agriculture ²	?	?	0	?	na
Total	2,026	2,470	487	4,983	100

Source: FRR and DU (1996), prepared based on RIMS data

Notes: ¹ planted under forest, murta growth is acceptable in well-watered areas (but should not be introduced into forest jheels (see above)

² substantial areas are shown on maps, and separate completely the northern half of Kalenga baet from Chonbari and Rema beats.

LR = long rotation plantation; SR = short rotation plantation

FRR and DU (1996) reported that the area notified for the wildlife sanctuary was marked in the field, but by February 1996 the wildlife team stationed there had carried out a survey of the estimated to form the sanctuary in preparation for notification. However, this covers only 1,095 ha, and excludes around 600 ha of natural forest adjoining this area (to the south-west and north), which was later included in the enlarged sanctuary. Table 3 summarizes land use by area within the estimated area of the gazetted sanctuary –only 76% of this area is under natural forest.

Table 3: Land use within Rema-Kalenga Wildlife Sanctuary

Use	Area (ha)	%
Natural forest	829	76
Plantation	101	9
Paddy	50	5
Road	49	4
Streams	61	6
Fallow	5	0
Total	1095	100

Source: Prepared by Wildlife Field Team (1996). Quoted by FRR and DU (1996)

Table 4 shows the present land use cover data separately for the Rema-Kalenga WS and remainder of the Taraphil Reserved Forest.

Table 4. Forest and land use cover in Tarap Hill Reserved Forest

Cover Type	Notified Sanctuary Area		Proposed Buffer Zone		Reminder of Tarap Hill RF		Total	
	Area (ha) ¹	Percent	Area (ha) ¹	Percent	Area (ha) ¹	Percent	Area (ha) ¹	Percent
High forest	1404.9	78.3	249.5	21.3	1.1	<0.1	1655.5	26.6
Low forest	0.0	0.0	10.5	0.9	41.8	1.3	52.3	0.8
Scattered trees	84.9	4.7	7.6	0.6	19.1	0.6	111.6	1.8
Bamboo	0.0	0.0	0.0	0.0	15.4	0.5	15.4	0.2
Long-rotation plantation	97.9	5.5	606.1	51.7	1729.9	53.0	2433.9	39.1
-1930s	(0.0)	(0.0)	(1.6)	(0.1)	(0.0)	(0.0)	(1.6)	(<0.1)
-1930s	(0.0)	(0.0)	(0.0)	(0.0)	(34.6)	(1.1)	(34.6)	(0.6)
-1940s	(56.4)	(3.1)	(170.2)	(14.5)	(44.3)	(1.4)	(270.9)	(4.3)
-1950s	(0.0)	(0.0)	(10.3)	(0.9)	(78.4)	(2.4)	(88.7)	(1.4)
-1960s	(36.8)	(2.1)	(191.7)	(16.4)	(222.1)	(6.8)	(450.6)	(7.2)
-1970s	(0.0)	(0.0)	(47.6)	(4.1)	(544.8)	(16.7)	(592.4)	(9.5)
-1980s	(0.7)	(<0.1)	(125.9)	(10.7)	(315.4)	(9.7)	(442.0)	(7.1)
-1990s	(4.0)	(0.2)	(58.8)	(5.0)	(490.3)	(15.0)	(553.1)	(8.9)
Short-rotation plantation	0.0	0.0	71.4	6.1	569.4	17.4	640.8	10.3
Murta plantation	0.0	0.0	0.9	0.1	24.8	0.8	25.7	0.4
Bamboo plantation	0.0	0.0	0.0	0.0	2.1	<0.1	2.1	<0.1
Cane plantation	0.0	0.0	0.0	0.0	2.1	<0.1	2.1	<0.1
Rubber plantation	0.0	0.0	0.0	0.0	284.3	8.7	284.3	4.6
Failed plantation	0.0	0.0	0.0	0.0	79.3	2.4	79.3	1.3
Agriculture	206.5	11.5	226.0	19.3	458.0	14.0	890.5	14.3
Encroached/Other ⁴	0.8	<0.1	0.0	0.0	37.6	1.2	38.4	0.6
Total	1795.0	100.0	1172.0	100.0	3264.9	100.0	6231.9	100.0

¹areas are based on RIMS data.

² long-rotation plantations include teak (*Tectona grandis*), chikrassy (*Chikrasia tabularis*), pynkado (*Xylia dolabriformis*), mahogany (*Swietenia mahogoni*), dhakijam (*Syzigium grande*), jarul (*Lagerstroemia speciosa*), sal (*Shorea robusta*), chapalish (*Artocarpus chaplasha*), garjan (*Dipterocarpus turbinatus*), koroï (*Albizia spp.*), amora (*Spondias mangifera*), champa (*Michelia champaca*) and gamar (*Gmelina arborea*).

³short-rotation species include moluccana (*Albizia paraserianthes flacataria*), eucalyptus (*Eucalyptus spp.*), akashomoni (*Acacia auriculiformis*) and mangium (*Acacia mangium*).

⁴includes 0.8 ha BDR Camp located in high forest in the southern part of the Sanctuary.

12. Adjacent land use cover

The distribution of lands surrounding the sanctuary and their present uses are shown in Tables 4 & 5. The forest is bounded on the southeast by Indian border, on the southwest tea estates and to the north and northeastern by FD lands and on the northern boundary by khas land (Govt owned land – MoL).

Much of the land outside to the sanctuary, but within the remainder of the Reversed Forest area, is covered under long –rotation plantation (approx. 2336 ha), only about 346 ha remain under natural forest. The plantations now have developed a tall, closed canopy structure with an understory of naturally occurring tree and undergrowth species. The short rotation plantation, principally of few species, occupies about 640 ha and agriculture has taken about 684 ha. The other land use cover of the land outside the sanctuary includes rubber (284 ha), cane (2.1 ha), bamboo (2.1 ha), murtha (26 ha) etc.

Table 5: Land use adjacent to the boundaries of Rema-Kalenga Wildlife Sanctuary

Land Use	Boundary Length (km)	Percent of Total
Reserved forest	11.5	37.3
-natural forest	(5.1)	(16.6)
-converted to plantation	(3.2)	(10.4)
-converted to agriculture	(3.2)	(10.4)
Tea Estate	3.5	11.4
Indian border	15.0	48.7
Khas land	0.8	2.6
Total	30.8	100.0

Source: (FSP 2000)

Tea estate cover a total area of 850 ha, of which 400 ha may be considered as the buffer zone. The distribution of tea estate land is as follows: 40 ha rubber plantation, 144 ha tea garden and the reminder under shrub and natural forest. The tea estate's forest and secondary vegetation cover is reportedly being converted to tea and rubber

plantations at the rate of 20 ha/year, as illicit timber harvests take place by outsiders (FSP 2000a). The maintenance of tea estate forest is necessary to maintain the continuity of wildlife habitat of the sanctuary.

The land adjacent to sanctuary in India has largely been converted to rubber plantation and paddy fields and virtually little natural vegetation in the form of shrub is found in Indian side (Chemonics 2002).

The khas lands adjacent to the sanctuary in the northeast have been partially converted to citrus and banana plantations, and probably some of it has extended on FD lands (FSP 2000a).

FSP (2000a) further gave an estimate of the lands that are in the immediate vicinity of the sanctuary and has a management concern for the sanctuary, and is shown in Table 5.

13. Information on the biological resources

13.1 Highlights on previous surveys/studies on plant

FAP 6 (1995) identified some 30 tree species (evergreen and deciduous) and also mentioned about phumdi- found on the confined water surface, a mat of soft decomposing organic matter with some grasses and herbs overlaying water.

BCAS (1997) conducted a floristic survey during November 1995 – July 1996 and recorded 72 species of vascular plants (39 spp. trees, 12 spp. shrubs, 3 spp. Bamboos, 7 spp. grasses, 8 spp. climbers and 6 spp. herbs). Quantitative surveys were also conducted in a limited number of transects and the transect data are available in RIMS database.

Roy and Azam (1995) recorded 231 plant species from R-K WS, of them 41 were trees, 53 medium trees, 39 shrubs, 41 climbers and 57 herbs/grasses. The authors also carried out quantitative surveys on species number in randomly selected blocks and sub-blocks.

Uddin (2001) conducted a comprehensive floristic survey on R-K WS during the period 1998-2000 under a Ph.D. study program and subsequently published a numbers of scientific papers in Journals (Uddin *et al.*, 2001, 2002 a, 2000b and 2003). The author recorded 606 plant species (242 species herbs, 120 spp. shrubs, 147 spp. trees, 97 climbers), belonging to 384 genera and 102 families.

Uddin (*ibid*) also provided quantitative data on 102 species of trees (diameter more than 30 cm dbh) based on 350 sample plot counts. The quantified matrix included relative density, relative abundance and relative frequency of occurrences of plants. The maximum density of plants is about 391 individual/ha with more than 30 cm dbh, species diversity is about 5.68 and conc. of dominance is about 0.0285. The author identified 19 plant species as very rare in the area The author also proposed a model for the conservation of plant resources of the sanctuary.

Uddin *et al* (2002a) provided a checklist on monocot angiosperm of Rema-Kalenga WS. The checklist included 166 monocot plant species belonging to 106 genera and 21 families. The species representation in the familie varied from 1 to 41 species. The author also provided short description of each plant species.

Uddin *et al.* (2003) provided a checklist of dicot angiosperm plants for Rema-Kalenga WS. The checklist included 128 dicot plants belonging to 72 genera and 32 families with a short description of each species.

Rosario (1997a) provided lists of most abundant and less abundant floral species in the Rema-Kalenga Wildlife Sanctuary and is given in Annexure 7.

Rosario (1997a) quoting RIMS/GIS estimation, provided data on vegetation density as crown closure by using satellite imagery. The RIMS estimation shows that 10% area had 10-30% crown closure, 20% area had 30-70% crown closure and 70% area had above 70% crown closure. However, information on number and volume per unit area of trees under different size classes are lacking.

Information on the uses of plants by the local community of R-K WS.

Uddin *et al.* (2001a) reported 27 plant species that are used as herbal medicine by the local tribal people, of them 7 were recorded as useful in malaria, 9 in jaundice and 11 in diarrhoea and dysentery.

Uddin *et al.* (2002b) further conducted an ethnobotanical survey in R-K WS during 1998-2000 and reported that 84 plant species are used as medicine, 9 as the ingredients for indigenous alcohol, 10 in religious festival, 22 as ornamental plants, 31 as wild vegetables, 27 as edible fruits and 16 as pesticidal materials by the local ethnic community. A list of the plants is provided in Annexure 5.

Present state of knowledge on plant resource

Based on the above studies/surveys, a list of plant species has been compiled for R-K WS with limited attributes and provided in Annexure 1. Although, 634 plant species have been recorded from R-K WS, the list provides names of 377 species only (the rest in the process of publication), of them 112 species are trees, 147 species are herbs, 35 species are shrubs, 49 species are climbers, 18 species are grass, 16 species are epiphytes.

13.2 Information on the faunal resources: Highlights of the past studies

Roy and Azam (1995a) recorded 167 wild animal species, of which 119 species of birds, 21 mammals, 20 reptiles and 7 amphibia from the forest. Roy and Azam (1995b) also identified two turtle species from Rema-Kalenga WS and took various body measurements of the collected specimens.

BCAS (1997) reported 83 species of wildlife from R-K WS (20 mammals, 6 reptiles, 3 amphibians, 54 birds). They also made some quantitative surveys along a limited number of transects. These transect count data are available in RIMS database.

Thompson and Johnson (1999) recorded 162 bird species from the forest and indicated relative abundance of the birds based on their transect counts. Thompson and Johnson (2003) further recorded one species of bird in the sanctuary.

FRR and DU (1996) reported that so far the Forest Department survey team (of 5 people) has recorded some 250 species of plant, 121 bird species and 19 mammal

species (including five primate species, good populations of barking deer and wild boar, and one record of Sambar). The author commented that more species were likely to occur in the RF.

Rosario (1997a) prepared a list of most abundant and less abundant faunal species in the Rema-Kalenga Wildlife Sanctuary and is provided in Annexure 8.

Information on food and feeding habit and ecology

Roy and Azam (1995) studied food, feeding habits, feeding and feeding regimes of some important wildlife (2 amphibian i.e. Toad and Bull Frog; 5 reptiles i.e. Sundi Kasim, Gui Shap, Ajagor Shap, Rat Snake, Cobra; 15 birds i.e. Herons, Ducks, Kingfisher, Kites, Vultures, Jungle Fowl, Doves, Horital, Parakeets and Lorikeets, Owls, Swifts and Swallows, Drongos, Mynas, Crows, Bulbuls; and 7 mammals i.e. Banars, Hanuman, Mongoose, Deer, Wild Boar, Squirrels) of Rema-Kalenga Wildlife Sanctuary during April - June 1995. People around the sanctuary were interrogated about mentioned habitat and detail of feeding of the wildlife of the forest.

Kabir (2002) studied the behavioural ecology and food and feeding habit of Phayre's (*Trachypithecus phayrei*) and capped (*T. pileatus*) langurs in Rema-Kalenga Wildlife Sanctuary during the period December 1998 and May 2000. The home range of the Phayre's langur was 64ha and capped langur was 67ha. The mean day ranges were 699m and 419m, respectively. In the study area, both Phayre's and capped langur are completely arboreal and both of them spent less than 1% of their total active time on the ground. Both langurs are generalist feeder, and they used 78 and 68 plant species, respectively, in their annual diet. The top ten species of these plant accounted for more than 85% of the total feeding time. They were folivorous, but may switch to flowers, fruits and seeds.

Present state of knowledge on wildlife species of the Rema-Kalenga WS

Based on the above studies, lists of amphibia and reptiles, birds and mammals of Rema-Kalenga WS have been prepared and provided in Annexures 2, 3 and 4, respectively. Of the 229 Wildlife species recorded from the RF, amphibian is represented by 7 species, reptiles by 18 species, birds by 168 species and mammals by 37 species.

Rosario (1997b) reported occurrence of 5 species of mammals and 36 birds as protected animals, in Rema-Kalenga WS (Annexure 6), but only one of them is included in the endangered category (*Elephas maximus*).

Rosario (ibid) also recorded 1 species of mammal, 3 species of bird and 1 species of amphibia from the sanctuary as game animals (Annexure 6). Three species of mammals and 2 species of birds found in Rema-Kalenga are included in CITES schedule I and II (Annexure 5).

14. Information on resource exploitation

Collection of fuel wood and building materials

All inside HHs and adjacent village people collect house building material and fuel wood for their daily needs from the sanctuary as well as from the remaining part of the reserved forest. However, there is no hard data on the volume of fuel wood and building materials collected by the people. Tea state workers and people living in the villages and squatter settlements near the tea estate also make use the forest for fuelwood, building materials, materials for handicraft, food and medicinal plants (FRR and DU 1996).

There is also heavy harvesting pressure on some NTFPs destined for outside/urban markets (eg. Creepers used for making baskets (FSP 2000a) to the extent that some of the sanctuary's NTFP resources are becoming severely depleted (FSP 2000a).

Illicit tree felling

Illegal logging has been reported to be wide spread in Taraphil RF (FSP 2000a, Chemonics 2002). However, this is mainly concentrated in the north and west plantations (Rashidpur beat area). Illicit feller from Indian territory also enter the forest along eastern and southeastern boundary of the sanctuary. Some local feller also enter the north eastern part of the sanctuary via adjacent khas land and Tea Estate and floats logs out down the Kalenga Chara. (FSP 2000a and Chemonics 2002). The illegally felled trees are smuggled through the sanctuary area (FRR and DU 1996).

Uddin (2001) mentioned that signs of tree felling in Rema-Kalenga is a common phenomenon now a days. *Vitex peduncularis* (Awal), *Gmelina arborea* (Gamari), *Chukrassia tubularis* (Chikrasi) and *Aquilaria agallocha* (Agar) are major victims in the case of tree felling. Apart from these, *Dipterocarpus turbinatus* (Garjan), *Artocarpus chaplasha* (Chapalish) and *Hopea odorata* (Telsur) are major timber yielding tree species in Rema-Kalenga. These species are cut by illegal logger very prudently (Uddin 2001).

According to FRR and DU (1996) the felled trees include medium sized teak. The other species include awal, gamari, chikrashi, agar and also garjan, chapalish and telsur.

Cattle Grazing

Wide spread grazing by the cattle and goats of inside and outside villagers are found in the peripheral part of the sanctuary (FRR and DU 1996, Uddin 2001). According to Chemonics (2002) probably 4000 + cattle and goats browse in the area and interfere with the natural regeneration of canopy trees. In addition, outside people graze considerable number of cattle and buffaloes in the cultivated areas and forest periphery (Uddin 2001).

Collection of tree bark and leaves

Barks of some trees are extensively collected on a commercial basis for selling and used for making mosquito coil. Similarly leaves of *Carya arborea* are widely used in wrapping up of biri (Uddin 2001).

Orchids

Some beautiful orchids, such as *Vanda teres*, *Dendrobium lindlegi*, *Rhyncostylis retusa*, *Arides multiflora* and *Phaius tancarvilleae* are major ornamental resources in Rema-Kalenga WS. Over collection of these inside the forest causing threats to this group of plants (Uddin 2001).

Medicinal plants

Uddin *et al.* (2001a) reported 27 plant species that are used as herbal medicine by the local tribal people, of them 7 were recorded as useful in malaria, 9 in jaundice and 11 in diarrhoea and dysentery.

Uddin *et al.* (2002b) further conducted an ethnobotanical survey in R-K WS during 1998-2000 and reported that 84 plant species are used as medicine, 9 as the ingredients for indigenous alcohol, 10 in religious festival, 22 as ornamental plants, 31 as wild vegetables, 27 as edible fruits and 16 as pesticidal materials by the local ethnic community. A list of the plants is provided in Annexure 5.

Several species of medicinal plant are over exploited (*viz. Listea glutinosa, Dillenia pentagyna, Andropogon paniculata, Tinispora cordifolia and Oroxylum indicum*) and their population are seriously threatened (Uddin 2001).

Hunting of animals

Hunting is now-a-days very restricted in the sanctuary. However, some level of hunting is still reported and is carried out by illegal tree fellers and wild boar and jungle fowl are hunted by tribal Forest Villagers. One of the techniques for hunting boar is to set fires to forest bushes and drive out the boar to come outside of the forest (FSP 2000a).

15. Plantation/Production forestry of FD

Plantation of Tarap Hill Reserved Forest virtually started around 1940s, initially with long-rotational plantation. The long-rotational plantation mainly included segun, jarul, chapalish, chickrassy, sisso, telsur, gamari, kadam etc. (FD 1997). During the period 1984-91, about 785 ha was clear felled and converted to plantations. area coverage of plantation in the sanctuary as well as in the remainder of the Reserved Forest is shown in Table 4. The sanctuary area covers only about 98 ha of long-rotation plantation, while the remainder of the forest have about 2335 ha long-term rotation plantation.

No short rotational plantation has been done in the sanctuary, but to a greater extent, about 640 ha, are found in the remainder of the Reserved Forest. Rubber plantation covers an area of about 285 ha (FSP 2000a).

16. Access and infra-structural facilities

A dry season road connecting the Kaleng, Chonburi and Rema Beat Offices forms ~5 km of the western boundary of the Sanctuary. All stream crossings on this road are currently bridged or culverted, but the road is unsurfaced and may not be passable by vehicle following heavy rains.

The most reliable road access to the Sanctuary is from the north, leaving the Madhabpur-Srimangal national highway at the market town of Losna (~10 km west of Srimongal) and proceeding south approximately 15 km of the Kalenga Beat Office. The central and southern portions of the road are unsurfaced and vehicle access is not possible during parts of the monsoon season (FSP 2000a).

Kalenga Beat Office is also accessible from the west, leaving the Madhabpur-Srimangal highway at Chunarughat and proceeding directly eastward along an LGED-maintained roadway for approximately 10 km.

An additional route from Chunarughat to Rema Beat Office proceeds southeast using public roads, and links up with the road network of the Rema Tea Garden along the Sanctuary's southwestern boundary. This route requires use of Rema Tea Garden's private ferry for crossing the Khaway River.

There is currently no road access to the interior of the Sanctuary, although as noted above an unsurfaced road forms approximately 5 km of the western boundary, and this is intersected by a number of foot trails leading into or across the Sanctuary, providing access to paddy fields and subsistence harvest areas in the interior. A major east-west foot trail (the Chouka Path) approximately bisects the Sanctuary and is used as a trade route to and from the Indian border (FSP 2000a).

Due to its isolated locations and relatively difficult access, the sanctuary receives very few visitors and has got very limited potential for the purpose in the near future (FRR and DU 1996 and Chemonics 2002). However, FSP (2000a) prioritized the site as moderate for ecotourism development on the basis of extent of its natural forest cover and rich biodiversity.

The visitor accommodation is limited to the rest house at Kalenga beat office and to house at Chonbari beat office (3 bed rooms), constructed under the Wildlife Conservation Management Project. There are currently other visitor facilities. There is one wildlife viewing tower (20m tall), built during the time of establishment of the sanctuary, now seems to have abandoned. (Chemonics 2002).

A 8 km long track has been created within the sanctuary. Besides, there are many trails, mainly used by woodcutter and grazers and has potential for visitors trailing. One artificial lake has been recently created on the edge of the present sanctuary by excavating and damming a natural drainage course (<5 h) (FSP 2000a, FRR and DU 1996).

17. Gaps in knowledge /comments/ suggestions for further study

- i. Although, a huge number of plant species have been recorded from R-K WS, yet it seems that the list is not complete and many more species may remain unidentified (personal communication, Dr. Zashim Uddin, Dept of Botany, Dhaka Univ.). In order to prepare a complete plant inventory for the forest, a further exploratory survey may be conducted, extending particularly to lower plants.
- ii. Till date, no study was done into the identification of locally threatened plant species of Rema-Kalenga WS and their ecology, which are necessary for developing any Action Plans for the management and conservation of plant resources of the sanctuary.
- iii. There is no quantitative information on the extent of illegal tree felling and other form of exploitation of plant resources and its impact on forest health and biodiversity.
- iv. Aspects of forest dynamics have not been studied. Focus should be given on the understanding of the forest regenerative processes.

- v. The occurrence of reptiles seems to be underestimated, a fresh survey needs to be carried out on the reptilian fauna. Study should aim at preparing a complete faunal inventory with more population attributes.
- vi. Quantitative data is available, to some extent, only on avifauna. Further quantitative surveys are needed on other groups of wildlife, based on scientific methodology. Other faunal attributes such as seasonal occurrence, local threatened category, relative abundance, microhabitat preference not available
- vii. Some aspects of biological, behavioural and ecological studies have done on two species of mammals. Comprehensive studies should be done on these aspects, including population ecology of all non-human primates.
- viii. No initiative was taken to identify the locally threatened wildlife. Study should be carried out identify the threatened wildlife of the sanctuary and assess their ecological requirements.
- ix. No study has been carried on invertebrate fauna. Survey on butterfly and mollusc may be useful
- x. Biology, food and feeding habit needs to be investigated, at least for some important species.
- xi. No survey was carried out on the socio-economic profile of the local people. The project should collect in depth data on this of relevance of the project needs. Project also should focus on assessing the human impact on the forest resources and ecosystem integrity.

18. Threats to the resources and forest ecosystem

FRR and DU (1996) identified the following threats to the sanctuary:

- i. cattle grazing and movement along tracks through the forest by people living inside and outside the sanctuary, which causes loss of undergrowth and natural regeneration;
- ii. hunting with guns and traps, including by Indians (there is only one border defence post within the sanctuary).
- iii. extensive collection and cutting of bamboo and firewood which is widespread throughout the forest visited;
- iv. felling of larger trees and trafficking in swan logs through the wildlife sanctuary;
- v. fires which damage both natural forest and plantation was lost to fire

- vi. clearance of forest undergrowth and under-story trees within the sanctuary by Forest Department to plant “fodder plantations”
- vii. Possible flooding of natural marsh areas for artificial lakes.

Uddin (2001) identified following threats and issue that probably contribute to the degradation to the forest ecosystem and its plant resources:

Illegal logging: The people involved in illegal logging in the sanctuary are local poor people and also local influentials including local Union Parishad Members and Chairmen under the connivance of the Forest Department employees.

Agricultural encroachment: A number of narrow valleys are present in the forest area. These valleys harbor wild animals and facilitate corridor from one forest to the next and have been allocated to and /or encroached by forest resident and outsiders. During the course of time, they extended their land and encroached into the forest area. Conversion of land and agricultural activities inside the forest cause harm to wildlife and regeneration of forest.

Forest fire: Man made fires are common phenomenon in the dry season when huge amount of litter gathers on the forest bed. Fire burns seeds, barks, seedlings, undergrowth vegetation and interferes with regeneration dynamics of canopy trees. Firing is done intentionally by local people and sometimes accidentally. One reason can be given for intentional forest firing: it opens up ground for logging, and facilitates loggers to move freely inside the forest and also for driving out wild boar. Sometimes firing is done intentionally to promote sprouting of sun grass in some particular areas.

Over grazing inside the forest: Domestic cows and buffaloes browse on seedlings and undergrowth. They interfere with the natural regeneration of canopy trees.

Overexploitation of some non-timber plant products: Local people collect medicinal plants, orchids, tree barks in a small commercial way and over exploitation of some resources have already caused depletion in resources.

Chemonics (2002) while analyzing the threats identified the following threats:

- clear felling and subsequent short rotation plantation by FD
- presence of forest villages and their activities
- illegal logging
- over-exploitation of NTFPs

- activities at the adjacent lands

19. Sanctuary Management Plans

FRR and DU (1996) made an appraisal of the protected areas of Bangladesh and provided guidelines for the development of Management Plan for Rema-Kalenga WS.

The guidelines were given in the following areas:

- zone based management planning
- Boundaries and regulations
- Visitors facilities and infrastructure development
- Participatory management and enhancement of buffer zone plantations

Rosario (1997a) prepared a 1st Five year work plan targets for the management plan of Rema-Kalenga Wildlife Sanctuary. The major plans included:

- Viable genetic protection and preservation
- General biodiversity protection and preservation
- Protection and enhancement of environmental quality
- Sanctuary management research and development
- Awareness building
- Personnel development
- Rehabilitation zone management
- Recreational zone management and development
- Special zone management
- Multiple zone management and development
- Buffer zone management and development
- Project management information system development etc.

FSP (2000a) prepared a detailed management plan for the sanctuary with following management programs:

- Administration program
- Resource management program
- Visitor use and visitor management program
- Development program

20. References:

Ahmad, N. 1970. Working plan for the forests of the Sylhet division for the period. (1963-64 to 1982-83), Working Plan Division 2, CTG. E. P. Dacca, East Pakistan Govt. Press. pp; 1-22.

BCAS (Bangladesh Centre for Advanced Studies). 1997. Biological Survey. Final Report. Prep. For Forest Resources Management Project. Forest Department, Dhaka.

Chemonics (Chemonics International). 2002. Biodiversity Sustainable Forestry IQC (BIOFOR) Strengthening The Arannyk Foundation. Site Selection Inventory and Monitoring Report. USAID – Bangladesh.

FAF 6 (Flood Action Plan 6), Northeast Region Environment Management, Research and Education Project, Bangladesh Water Development Board, Northeast Regional Water Management Project, 1993.

FD (Forest Division). 1996. Sylhet Forest Division - at a glance. Forest Department, Government of the People's Republic of Bangladesh.

FRR and DU (Fountain Renewable Resources and Desh Upodesh). 1996. Forestry Sector Study (ADB TA 2339-BAN). Final Report. Volume 1, Main Report, and Volume 2, Appendices. Prep. For Department of Forests, Ministry of Environment and Forests, Government of the People's Republic of Bangladesh.

FSP (Forestry Sector Project). 2000a. First Five Year Management Plan for Rema-Kalenga Wildlife Sanctuary. Vol. 1. Management Plan. Forest Department, Ministry of Environment and Forests, Dhaka.

FSP (Forestry Sector Project). 2000b. First Five Year Management Plan For Rema-Kalenga Wildlife Sanctuary. Volume 2: Background and support material. Forest Department, Ministry of Environment and Forests, Dhaka.

Gittins, S. P. and A. W. Akonda. 1982. What survives in Bangladesh? *Oryx* XVI (3): 275-281.

Kabir, M. M. 2002. Behavioral ecology of two sympatric langur species in the semi-evergreen forest of Bangladesh. Ph. D. Thesis. University of Cambridge. UK.

Khan, M. A. R. 1982. On the distribution of the mammalian fauna of Bangladesh. *Proc. of the Second National Forestry Conference Bangladesh – 1982*, Sishu Academy, Dacca.

Mountfort, G. and Poore, D. 1968. Report on the second World Wildlife Fund Expedition to Pakistan. Unpublished report, p. 25.

Rizvi, S. N. H. 1970. East Pakistan District Gazetteers for Sylhet. Government of East Pakistan Services and General Administration Department, Dhaka. Pp. 5-6.

- Rosario, E. A. 1997a. The Conservation management plan of the protected areas other than those in the Sundarban forests. In: Bangladesh (Final Report). GoB/WB Forest Resources Management Project, Technical Assistance Component. Mandala Agricultural Development Corporation, Dhaka, Bangladesh.
- Rosario, E. A. 1997b. The Conservation management plan of the protected areas other than those in the Sundarban forests. In: Bangladesh (Final Report). Annex 1- Appendices & Annex 2 – Maps. GoB/WB Forest Resources Management Project, Technical Assistance Component. Mandala Agricultural Development Corporation, Dhaka, Bangladesh.
- Roy, P. C. and M. A. Azam. 1995a. Wildlife survey in Rema-Kalenga Wildlife Sanctuary. Pages 1-10, In: Wildlife research activities of Sylhet Forest Division, 1994-95. Forest Department, Government of the People's Republic of Bangladesh.
- Roy, P. C. and M. A. Azam. 1995b. Vegetation survey in Rema-Kalenga Wildlife Sanctuary. Pages 11-20, In: Wildlife research activities of Sylhet Forest Division, 1994-95. Forest Department, Government of the People's Republic of Bangladesh.
- Roy, P. C. and M. A. Azam. 1995c. Turtle and tortoise survey in Rema-Kalenga Wildlife Sanctuary. Pages 21-23, In: Wildlife research activities of Sylhet Forest Division, 1994-95. Forest Department, Government of the People's Republic of Bangladesh.
- Roy, P. C. and M. A. Azam. 1995d. Food and feeding habits of important wildlife of Rema-Kalenga Wildlife Sanctuary. Pages 24-30, In: Wildlife research activities of Sylhet Forest Division, 1994-95. Forest Department, Government of the People's Republic of Bangladesh.
- Sarker, S. U. and A. K. M. F. Haq. 1985. Country report on national park, wildlife sanctuaries and game reserves of Bangladesh. Prepared for the 25th working-session of IUCN's Commission on National Parks and Protected areas. Corbett National Park, India, 4-8 February 1985, 5 p.
- Thompson, P. M. and D. L. Johnson. 1999. Checklist of birds recorded at 19 sites in Bangladesh. Updated to 1 February 1999. Unpublished Report.
- Thompson, P. M. and D. L. Johnson. 2003. Further notable bird records from Bangladesh. *FORKTAIL* 19: 85-102.
- Uddin, M. Z. 2001. Exploration, documentation and germplasm collection of plant genetic resources of Rema-Kalenga Wildlife Sanctuary (Habiganj) in Bangladesh. Ph. D. Thesis (Awarded), Department of Botany, Dhaka University. (unpublished).
- Uddin, M. Z., M. S. Khan and M. A. Hassan. 2001. Ethnomedical plant records of Kalenga Forest Range (Habiganj), Bangladesh for Malaria, Jaundice, Diarrhoea and Dysentery. *Bangladesh J. Plant Taxon.* 8(1): 101-104.
- Uddin, M. Z., M. S. Khan and M. A. Hassan. 2002a. An annotated checklist of angiospermic flora of Rema-Kalenga Wildlife Sanctuary (Habiganj) in Bangladesh –I.

Liliopsida (Monocots). *Bangladesh J. Plant Taxon.* 9(2): 57-66.

Uddin, M. Z., M. S. Khan and M. A. Hassan. 2002b. An annotated checklist of angiospermic flora of Rema-Kalenga Wildlife Sanctuary (Habiganj) in Bangladesh –II.a: Magnoliopsida (Dicots). *Bangladesh J. Plant Taxon.* 10(1): 79-94.

Uddin, M. Z., M. S. Khan and M. A. Hasssan. 2002c. Ethnobotanical survey in Rema-Kalenga wildlife sanctuary (Habiganj) in Bangladesh. *Bangladesh J. Plant Taxon.* 9(1): 51-60.

Uddin, M. Z., M. S. Khan and M. A. Hasssan. 2003. An annotated checklist of angiospermic flora of Rema-Kalenga Wildlife Sanctuary (Habiganj) in Bangladesh –II.b: Mangnoliopsida (Dicots). *Bangladesh J. Botany* (in press).

ANNEXURES

Annexure - 1

List of plant species of Rema-Kalenga Wildlife Sanctuary

The list is sorted alphabetical order by species name.

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
1	Malvaceae	<i>Abelmoschus moschatus</i>		undershrub	4
2	Malvaceae	<i>Abutia indicum</i>		undershrub	4
3	Leguminosae	Acacia auriculiformis		tree	3
4	Leguminosae	<i>Acacia mangium</i>		tree	3
5	Orchidaceae	<i>Acampe praemorsa</i>		epiphyte	5
6	Orchidaceae	<i>Acampe rigida</i>		epiphyte	5
7	Amaranthaceae	<i>Achyranthes aspera</i>	Upathlenga	herb	2, 4
8	Passifloraceae	<i>Adenia trilobata</i>		climber	4
9	Acanthoaceae	<i>Adhatoda zeylanica</i>		shrub	2
10	Orchidaceae	<i>Aerides multiflora</i>		epiphyte	5
11	Orchidaceae	<i>Aerides oborata</i>		epiphyte	5
12	Amaranthaceae	<i>Aerua monsonia</i>		herb	4
13	Amaranthaceae	<i>Aerua sanguinolenta</i>		herb	4
14	Araceae	<i>Aglaonema hookerianum</i>		herb	5
15	Leguminosae	<i>Albizia falcataria</i>		tree	3
16	Leguminosae	<i>Albizia odoratissimus</i>		tree	2
17	Leguminosae	<i>Albizia procera</i>		tree	2
18	Leguminosae	<i>Albizia spp.</i>		herb	3
19	Araceae	<i>Alocasia acuminata</i>		herb	5
20	Araceae	<i>Alocasia cucullata</i>		herb	5
21	Araceae	<i>Alocasia fallax</i>		herb	5
22	Zingiberaceae	<i>Alpinia malaccensis</i>		rhizomatous herb	5
23	Zingiberaceae	<i>Alpinia nigra</i>		herb	1, 2
24	Zingiberaceae	<i>Alpinia nutans</i>		rhizomatous herb	5
25	Amaranthaceae	<i>Alternanthera sessilis</i>	Haichashak	herb	4
26	Amaranthaceae	<i>Amaranthus spinosus</i>	Kantanotey	herb	4
27	Amaranthaceae	<i>Amaranthus viridis</i>	Notey Shak	herb	4
28	Araceae	<i>Amerphophalus bulbifer</i>		herb	1
29	Zingiberaceae	<i>Amomum aromaticum</i>	Tara	rhizomatous herb	5
30	Zingiberaceae	<i>Amomum corynostachyum</i>		rhizomatous herb	5
31	Zingiberaceae	<i>Amomum dealbatum</i>		rhizomatous herb	5
32	Araceae	<i>Amorphophallus bulbifer</i>		herb	5
33	Araceae	<i>Amorphophallus napalensis</i>		herb	5
34	Araceae	<i>Amorphophallus paeoniifolius</i>	Ol Kachu	herb	5
35	Polygonaceae	<i>Ampelgynonum chinense</i>		herb	4
36	Poaceae	<i>Arandinella bengalensis</i>		herb	5
37	Myrsinaceae	<i>Ardisia colorata</i>		shrub	4
38	Myrsinaceae	<i>Ardisia solanacea</i>		shrub	4

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
39	Aristolochiaceae	<i>Aristolochia tagala</i>	Ishwarmul	climber	4
40	Moraceae	<i>Artocarpus chaplasha</i>	Chamul	tree	1, 2, 3, 4
41	Moraceae	<i>Artocarpus heterophyllus</i>	Kanthal	tree	4
42	Moraceae	<i>Artocarpus lakoocha</i>		tree	4
43	Poaceae	<i>Axonopus compressus</i>		herb	5
44	Poaceae	<i>Bambusa longispiculata</i>		bamboo	2
45	Poaceae	<i>Bambusa polymorpha</i>	Parua	bamboo	2, 5
46	Poaceae	<i>Bambusa tulda</i>	Wana, Mitinga	bamboo	1, 2, 5
47	Lecythidaceae	<i>Barringtonia acutangula</i>	Hijol	bushy tree	4
48	Leguminosae	<i>Bauhinia acuminata</i>		tree	2
49	Hydrocharitaceae	<i>Blyxa japonica</i>		submerged herb	5
50	Urticaceae	<i>Boehmeria platyphylla</i>	Ulichara	undershrub	4
51	Bombacaceae	<i>Bombax ceiba</i>	Shimul Tula	tree	2, 4
52	Bombacaceae	<i>Bombax insigne</i>	Toirol	tree	4
53	Zingiberaceae	<i>Bosenbergia longifolia</i>		herb	5
54	Poaceae	<i>Bothriochloa pertusa</i>		herb	5
55	Orchidaceae	<i>Brachycorythis helferi</i>		herb	5
56	Sterculiaceae	<i>Buettneria pilosa</i>		climbing shrub	4
57	Orchidaceae	<i>Bulbophyllum lilacinum</i>		epiphyte	5
58	Orchidaceae	<i>Bulbophyllum neilgherrense</i>		epiphyte	5
59	Burseraceae	<i>Bursera serrata</i>		tree	1, 2
60	Arecaceae	<i>Calamus sp.</i>		climber	3
61	Arecaceae	<i>Calamus tenuis</i>	Jalibet	scandent rattan	5
62	Verbenaceae	<i>Callicarpa arborea</i>		tree	2
63	Orchidaceae	<i>Camarotis pallida</i>		epiphyte	5
64	Cannaceae	<i>Canna indica</i>		herb	1
65	Cyperaceae	<i>Carex jackiana</i>		herb	5
66	Lecythidaceae	<i>Careya arborea</i>	Biripata	tree	2, 4
67	Flacourtiaceae	<i>Casearia vareca</i>		shrub	4
68	Fagaceae	<i>Castanopsis echinocarpa</i>	Hingra	tree	4
69	Fagaceae	<i>Castanopsis hystrix</i>		tree	2
70	Fagaceae	<i>Castanopsis indica</i>	Hinguri	tree	4
71	Fagaceae	<i>Castanopsis lancefolia</i>	Singra	tree	4
72	Fagaceae	<i>Castanopsis purpurella</i>	Kata Singra	tree	4
73	Fagaceae	<i>Castanopsis tribuloides</i>		tree	2
74	Poaceae	<i>Centotheca lappacea</i>		grass	5
75	Meliaceae	<i>Chikrasia tabularis</i>		tree	3
76	Poaceae	<i>Chrysopogon aciculatus</i>		rhizome	5
77	Capparaceae	<i>Cleome gynandra</i>		herb	4
78	Capparaceae	<i>Cleome viscosa</i>		herb	4
79	Verbenaceae	<i>Clerodendrum inerme</i>		shrub	2
80	Verbenaceae	<i>Clerodendrum infortunatum</i>		shrub	2
81	Marantaceae	<i>Clynogene dichotoma</i>		shrub	3

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
82	Cucurbitaceae	<i>Coccinia grandis</i>	Telakucha	climber	4
83	Poaceae	<i>Coix lachryma-jobi</i>	Hankish gota	herb	5
84	Araceae	<i>Colocasia esculenta</i>		herb	5
85	Araceae	<i>Colocasia fallax</i>		herb	5
86	Araceae	<i>Colocasia nymphaefolia</i>		herb	2
87	Commenlinaceae	<i>Commelina erecta</i>		herb	5
88	Commenlinaceae	<i>Commelina paludosa</i>		herb	5
89	Urticaceae	<i>Conocephalus suaveolens</i>		large climber	4
90	Boraginaceae	<i>Cordia dichotoma</i>		shrub	2
91	Costaceae	<i>Costus speciosus</i>	Keumul	herb	1, 5
92	Capparacea	<i>Crataeva nurvala</i>	Barun	tree	4
93	Liliaceae	<i>Crinum asiaticum</i>		herb	5
94	Liliaceae	<i>Crinum defixum</i>		herb	5
95	Liliaceae	<i>Crinum pratense</i>	Bonpiaz	herb	5
96	Zingiberaceae	<i>Cucrcuma latifolia</i>		rhizomatous herb	5
97	Zingiberaceae	<i>Cucrcuma zedoaria</i>		rhizomatous herb	5
98	Liliaceae	<i>Curculigo latifolia</i>		herb	5
99	Liliaceae	<i>Curculigo orchiodes</i>		herb	2, 5
100	Liliaceae	<i>Curculigo recurvata</i>	Satipata	herb	5
101	Zingiberaceae	<i>Curcuma aromatica</i>		herb	2
102	Orchidaceae	<i>Cymbidium aloifolium</i>		epiphyte	5
103	Poaceae	<i>Cynodon dactylon</i>		herb	5
104	Cyperaceae	<i>Cyperu cyperoides</i>		herb	5
105	Cyperaceae	<i>Cyperu difformis</i>		herb	5
106	Cyperaceae	<i>Cyperu diffusus</i>		herb	5
107	Cyperaceae	<i>Cyperu exaktatys</i>		herb	5
108	Cyperaceae	<i>Cyperu iria</i>		herb	5
109	Cyperaceae	<i>Cyperu laxus</i>		herb	5
110	Cyperaceae	<i>Cyperu pilosus</i>		herb	5
111	Cyperaceae	<i>Cyperu tenuispica</i>		herb	5
112	Cyperaceae	<i>Cyperus compactus</i>		herb	5
113	Poaceae	<i>Cyrtococcum oxyphyllum</i>		herb	5
114	Arecaceae	<i>Daemonorops jenkinsiana</i>	Golla bet	stout rattan	2, 5
115	Lauraceae	<i>Dehaasia kurzii</i>	Modon Mosto	tall tree	4
116	Orchidaceae	<i>Dendrobium aphyllum</i>		epiphyte	5
117	Orchidaceae	<i>Dendrobium lindleyi</i>		epiphyte	5
118	Orchidaceae	<i>Dendrobium macrostachyum</i>		epiphyte	5
119	Poaceae	<i>Dendrocalamus longispathus</i>		bamboo	5
120	Leguminosae	<i>Derris trifoliata</i>		climber	1
121	Annonaceae	<i>Desmos chinensis</i>		climber	4
122	Orchidaceae	<i>Didymoplexis pallens</i>		herb	5
123	Arecaceae	<i>Didymosperma nannum</i>		palm	5
124	Poaceae	<i>Digitaria adscendense</i>		herb	5

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
125	Dilleniaceae	<i>Dillenia indica</i>	Chalta	tree	4
126	Dilleniaceae	<i>Dillenia pentagyna</i>	Harganja	tree	2, 4
127	Dilleniaceae	<i>Dillenia scabrella</i>	Ekush	tree	2, 4
128	Dioscoreaceae	<i>Dioscorea bulbifera</i>		climber	2
129	Ebenaceae	<i>Diospyros montana</i>	Gab	tree	4
130	Dipterocarpaceae	<i>Dipterocarpus tubinatus</i>	Telia Garjon	tree	1, 2, 3, 4
131	Dioscoreaceae	<i>Discorea alata</i>		climber	5
132	Dioscoreaceae	<i>Discorea belophylla</i>		climber	5
133	Dioscoreaceae	<i>Discorea bulbifera</i>	Bon Alu	climber	5
134	Dioscoreaceae	<i>Discorea esculenta</i>		climber	5
135	Dioscoreaceae	<i>Discorea glabra</i>		climber	5
136	Dioscoreaceae	<i>Discorea hamiltonii</i>		climber	5
137	Dioscoreaceae	<i>Discorea hispida</i>		climber	5
138	Dioscoreaceae	<i>Discorea kamoensis</i>		climber	5
139	Dioscoreaceae	<i>Discorea melanophyma</i>		climber	5
140	Dioscoreaceae	<i>Discorea oppositifolia</i>		climber	5
141	Dioscoreaceae	<i>Discorea pentaphylla</i>		climber	5
142	Dioscoreaceae	<i>Discorea prazeri</i>		climber	5
143	Dioscoreaceae	<i>Discorea tomentosa</i>		climber	5
144	Dioscoreaceae	<i>Discorea trinerva</i>		climbing herb	5
145	Asclepiadaceae	<i>Doemia extensa</i>		climber	1
146	Liliaceae	<i>Dracaena spicata</i>		herb	2, 5
147	Poaceae	<i>Echinochloa crusgavonis</i>		herb	5
148	Pontederiaceae	<i>Eichhornia crassipes</i>	Kachwari pana	herb	5
149	Elaeocarpaceae	<i>Elaeocarpus floribundus</i>	Belpoi	large tree	2, 4
150	Elaeocarpaceae	<i>Elaeocarpus robusta</i>	Jolpai	small tree	4
151	Juglandaceae	<i>Engelhardtia spicata</i>	Zalna	tree	4
152	Leguminosae	<i>Entada phaseoloides</i>		climber	2
153	Poaceae	<i>Eragrostis unioides</i>		herb	5
154	Orchidaceae	<i>Eria flava</i>		herb	5
155	Zingiberaceae	<i>Etlingera linguiformis</i>		rhizomatous herb	5
156	Myrtaceae	<i>Eucalyptus spp.</i>		tree	3
157	Compositae	<i>Eupatorium odoratum</i>		shrub	2
158	Euphorbiaceae	<i>Euphorbia sp.</i>		shrub	1
159	Moraceae	<i>Ficus carica</i>		tree	1
160	Moraceae	<i>Ficus hispida</i>		tree	2
161	Moraceae	<i>Ficus racemosa</i>		tree	2
162	Cyperaceae	<i>Fimbristylis acuminata</i>		herb	5
163	Cyperaceae	<i>Fimbristylis dichotoma</i>		herb	5
164	Cyperaceae	<i>Fimbristylis falcata</i>		herb	5
165	Cyperaceae	<i>Fimbristylis miliacea</i>		herb	5
166	Sterculiaceae	<i>Firmiana colorata</i>	Naichicha Udal	tree	4
167	Moraceae	<i>Fiscus benghalensis</i>		tree	4
168	Moraceae	<i>Fiscus benjamina</i>		tree	4

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
169	Moraceae	<i>Fiscus elastica</i>	Kathali Bot	tree	4
170	Moraceae	<i>Fiscus erecta</i>		small shrub	4
171	Moraceae	<i>Fiscus fistula</i>		tree	4
172	Moraceae	<i>Fiscus fulva</i>		small tree	4
173	Moraceae	<i>Fiscus hirta</i>		bushy tree	4
174	Moraceae	<i>Fiscus hispida</i>		low tree	4
175	Moraceae	<i>Fiscus infectoria</i>		tree	4
176	Moraceae	<i>Fiscus irisiana</i>		tree	4
177	Moraceae	<i>Fiscus nervosa</i>		large tree	4
178	Moraceae	<i>Fiscus pumila</i>		climber	4
179	Moraceae	<i>Fiscus racemosa</i>		large tree	4
180	Moraceae	<i>Fiscus religiosa</i>		large tree	4
181	Moraceae	<i>Fiscus retusa</i>		medium tree	4
182	Moraceae	<i>Fiscus rumphii</i>		tree	4
183	Flacourtiaceae	<i>Flacourtia jangomas</i>	Paniala	shrub	4
184	Commenlinaceae	<i>Floscopa scandens</i>		herb	5
185	Cyperaceae	<i>Fuirena ciliaris</i>		herb	5
186	Cyperaceae	<i>Fuirena umbellata</i>		herb	5
187	Guttiferae	<i>Garcinia cowa</i>	Cowphal	tree	2, 4
188	Clusiaceae	<i>Garcinia paniculata</i>		tree	4
189	Clusiaceae	<i>Garcinia pedunculata</i>	Kaoatuti	tree	4
190	Clusiaceae	<i>Garcinia xanthochymus</i>	Dephal	tree	4
191	Orchidaceae	<i>Geodorum densiflorum</i>		herb	5
192	Orchidaceae	<i>Geodorum purpureum</i>		herb	5
193	Zingiberaceae	<i>Globba multiflora</i>		herb	5
194	Zingiberaceae	<i>Globba orixensis</i>		herb	5
195	Euphorbiaceae	<i>Glochidion lanceolarium</i>		tree	2
196	Verbenaceae	<i>Gmelina arborea</i>		tree	2, 3
197	Tiliaceae	<i>Grewia asiatica</i>		shrub	4
198	Tiliaceae	<i>Grewia microcos</i>		tree	2
199	Tiliaceae	<i>Grewia serrulata</i>		shrub	4
200	Cucurbitaceae	<i>Gymnopetalum cochinchinense</i>		climber	4
201	Poaceae	<i>Haygrorhiza aristata</i>		grass	5
202	Zingiberaceae	<i>Hedychium coccineum</i>		herb	5
203	Zingiberaceae	<i>Hedychium thyriforme</i>		herb	5
204	Bignoniaceae	<i>Hererophragma adenophyllum</i>		tree	2
205	Orchidaceae	<i>Hetaeria rubens</i>		herb	5
206	Moraceae	<i>Hevea brazilensis</i>		tree	3
207	Malvaceae	<i>Hibiscus sp.</i>		shrub/tree	1
208	Malvaceae	<i>Hibiscus surattensis</i>		undershrub	4
209	Apocynaceae	<i>Holarrhena antidysenterica</i>		tree	2
210	Araceae	<i>Homalomena aromatica</i>		herb	5
211	Gramineae	<i>Hygroryza sp.</i>		grass	1
212	Clusiaceae	<i>Hypericum japonicum</i>		herb	4
213	Aquifoliaceae	<i>Ilex godajam</i>		tree	2

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
214	Poaceae	<i>Imperata cylindrica</i>	Uluchhan	herb	1, 5
215	Convolvulaceae	<i>Ipomoea maxima</i>		climber	2
216	Juncaceae	<i>Juncus prismatocarpus</i>		herb	5
217	Cyperaceae	<i>Kyllinga brevifolia</i>		herb	5
218	Lythraceae	<i>Lagerstroemia parviflora</i>		tree	2
219	Lythraceae	<i>Lagerstroemia speciosa</i>		tree	2, 3
220	Urticaceae	<i>Laportia crenulata</i>	Chutra	shrub	4
221	Araceae	<i>Lasia spinosa</i>	Bonadia, Kanta kachu	herb	5
222	Leeaceae	<i>Leea crispa</i>		shrub	2
223	Arecaceae	<i>Liculala peltata</i>	Sati pata	palm	5
224	Fagaceae	<i>Lithocarpus elegans</i>	Khami	tree	4
225	Fagaceae	<i>Lithocarpus fenestrata</i>	Kalachukma	tree	4
226	Fagaceae	<i>Lithocarpus lappacea</i>		tree	4
227	Lauraceae	<i>Litsea angustifolia</i>		tree	1, 4
228	Lauraceae	<i>Litsea glutinosa</i>	Menda	tree	4
229	Lauraceae	<i>Litsea monopetala</i>	Huaria, Kukuchita	tree	4
230	Lauraceae	<i>Litsea panamonja</i>	Naori	tree	4
231	Ebenaceae	<i>Maba buxifolia</i>		tree	4
232	Euphorbiaceae	<i>Macaranga roxburghii</i>		shrub	2
233	Myrsinaceae	<i>Maesa montana</i>		tree	4
234	Myrsinaceae	<i>Maesa ramentacea</i>		tree	4
235	Cyperaceae	<i>Mariscus sumatrensis</i>		herb	5
236	Asclepiadaceae	<i>Marsdenia sp.</i>		tree	1
237	-	<i>Mayeae sp</i>		herb/grass	1
238	Poaceae	<i>Melocalamus compactiflorus</i>	Lata bans	bamboo	5
239	Poaceae	<i>Melocanna baccifera</i>	Oathoi	bamboo	1, 2, 5
240	Sterculiaceae	<i>Melochia corchorifolia</i>		herb	4
241	Cucurbitaceae	<i>Melothria indica</i>		climber	4
242	Cucurbitaceae	<i>Melothria leucocarpa</i>		climber	4
243	Magnoliaceae	<i>Michelia champaca</i>		tree	3
244	Tiliaceae	<i>Microcos paniculata</i>		shrub	4
245	Compositae	<i>Mikania cordata</i>		shrub	1
246	Compositae	<i>Mikania scandens</i>		climber	2
247	Rubiaceae	<i>Mitragyne parviflora</i>		shrub	2
248	Cucurbitaceae	<i>Momordica dioica</i>	Bon Korolla	climber	4
249	Pontederiaceae	<i>Monochoria hastata</i>		herb	5
250	Pontederiaceae	<i>Monochoria vaginalis</i>		herb	5
251	Commenlinaceae	<i>Murdannia elata</i>		herb	5
252	Commenlinaceae	<i>Murdannia loriiformis</i>		herb	5
253	Rutaceae	<i>Murraya sp.</i>		shrub	1
254	Musaceae	<i>Musa rosacea</i>		shrub	5
255	Myristicaceae	<i>Myristica angustifolia</i>		tree	4
256	Myristicaceae	<i>Myristica linifolia</i>		tree	4
257	Poaceae	<i>Neohouzeaua dulloo</i>		grass	2
258	Poaceae	<i>Neyraudia reynaudiana</i>		herb	5

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
259	Bignoniaceae	<i>Oroxylum indicum</i>		tree	2
260	Poaceae	<i>oryza granulata</i>	Bans Dhan	wild rice	5
261	Poaceae	<i>oryza latifolia</i>	Bon Dhan	wild rice	5
262	Hydrocharitaceae	<i>Ottelia alismoides</i>	Panikola	rooted herb	5
263	Poaceae	<i>oxytenanthera nigrociliata</i>	Kali	bamboo	5
264	Pandanaceae	<i>Pandanus foetidus</i>	Keya kanta	shrub	5
265	Poaceae	<i>Panicum auritum</i>		herb	5
266	Poaceae	<i>Panicum brevifolium</i>		herb	5
267	Poaceae	<i>Panicum trypheron</i>		herb	5
268	Poaceae	<i>Paspalidium flavidum</i>		herb	5
269	Poaceae	<i>Paspalum scorbiculatum</i>		herb	5
270	Orchidaceae	<i>Pelatantheria insectifera</i>		epiphyte	5
271	Haemodoraceae	<i>Peliosanthes teta</i>		herb	5
272	Piperaceae	<i>Peperomia pellucida</i>		herb	4
273	Menispermaceae	<i>Pericampylus glaucus</i>	Goal lata	climber	4
274	Polygonaceae	<i>Persicaria barbata</i>		herb	4
275	Polygonaceae	<i>Persicaria flaccida</i>		herb	4
276	Polygonaceae	<i>Persicaria hydropiper</i>	Bish Katali, Pakurmul	herb	4
277	Polygonaceae	<i>Persicaria lapathifolia</i>		herb	4
278	Polygonaceae	<i>Persicaria minus</i>		herb	4
279	Polygonaceae	<i>Persicaria orientalis</i>		herb	4
280	Polygonaceae	<i>Persicaria serrulata</i>		herb	4
281	Polygonaceae	<i>Persicaria strigosa</i>		herb	4
282	Polygonaceae	<i>Persicaria viscosa</i>		herb	4
283	Sterculiaceae	<i>Petrospermum acerifolium</i>		large tree	4
284	Sterculiaceae	<i>Petrospermum semisagittatum</i>		tree	4
285	Orchidaceae	<i>Phaius tancarvilleae</i>		herb	5
286	Lauraceae	<i>Phoebe lanceolata</i>		tree	4
287	Orchidaceae	<i>Pholidota pallida</i>		epiphyte	5
288	Marantaceae	<i>Phrynium imbricatum</i>		herb	5
289	Marantaceae	<i>Phrynium pubinerve</i>		herb	5
290	Euphorbiaceae	<i>Phyllanthus embelica</i>		tree	1, 2
291	Piperaceae	<i>Piper longum</i>	Pepul	ground creeper	4
292	Piperaceae	<i>Piper nigrum</i>		climber	4
293	Piperaceae	<i>Piper sylvaticum</i>	Ban pan	ground creeper	4
294	Piperaceae	<i>Piper sylvestre</i>		climber	2
295	Araceae	<i>Pistia stratiotes</i>	Topa pana	herb	5
296	Plumbaginaceae	<i>Plumbago zeylanica</i>		herb	4
297	Poaceae	<i>Pogonatherum panicum</i>		herb	5
298	Polygonaceae	<i>Polygonum plebejum</i>		herb	4
299	Polygonaceae	<i>Polygonum tomentosum</i>		herb	1
300	Orchidaceae	<i>Pomatocalpa decipiens</i>		epiphyte	5
301	Potamogetonaceae	<i>Potamogeton octandrus</i>		herb	5

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
302	Araceae	<i>Pothos scandens</i>		aroid	1, 5
303	Sterculiaceae	<i>Pterospermum acerifolium</i>		tree	2
304	Fagaceae	<i>Quercus gomeziana</i>	Batna	tree	4
305	Fagaceae	<i>Quercus spicata</i>	Batna	tree	4
306	Araceae	<i>Rhaphidophora lancifolia</i>		climber	5
307	Araceae	<i>Rhaphidophora peepla</i>		climber	5
308	Cyperaceae	<i>Rhynchospora corymbosa</i>		herb	5
309	Orchidaceae	<i>Rhynchostylis retusa</i>		epiphyte	5
310	Brassicaceae	<i>Rorippa indica</i>		herb	4
311	Poaceae	<i>Rottboellia exaltata</i>		herb	5
312	Poaceae	<i>Saccharum arundinaceum</i>		herb	5
313	Poaceae	<i>Saccharum spontaneum</i>		herb	2, 5
314	Poaceae	<i>Sacciolepis indica</i>		herb	5
315	Poaceae	<i>Sacciolepis interrupta</i>		herb	5
316	Theaceae	<i>Schima wallichii</i>	Bonak	tree	1, 2, 4
317	Poaceae	<i>Schizostachyum dullooa</i>	Oathrok, Dolu	bamboo	5
318	Cyperaceae	<i>Schoenoplectus articularis</i>		herb	5
319	Cyperaceae	<i>Schoenoplectus juncooides</i>		herb	5
320	Marantaceae	<i>Schumannianthus dichotomus</i>	Murta, Shital pati	shrub	5
321	Cyperaceae	<i>Scleria levis</i>		herb	5
322	Poaceae	<i>Setaria glauca</i>		herb	5
323	Poaceae	<i>Setaria pallide-fusca</i>		herb	5
324	Dipterocarpaceae	<i>Shorea robusta</i>	Sal, Gajari	tree	2, 3, 4
325	Malvaceae	<i>Sida acuta</i>	Nakphul	herb	4
326	Malvaceae	<i>Sida cordata</i>		herb	4
327	Malvaceae	<i>Sida cordifolia</i>		herb	4
328	Malvaceae	<i>Sida rhombifolia</i>		undershrub	4
329	Liliaceae	<i>Smilax macrophylla</i>		climber	2
330	Smilacaceae	<i>Smilax prolifera</i>		climber	5
331	Smilacaceae	<i>Smilax zeylanica</i>		climber	1, 5
332	Sphenocleaceae	<i>Sphenoclea zeylanica</i>		climber	1
333	Anacardiaceae	<i>Spondias mangifea</i>		tree	3
334	Anacardiaceae	<i>Spondias pinnata</i>		tree	2
335	Poaceae	<i>Sporobolus diander</i>		herb	5
336	Poaceae	<i>Sporobolus indicus</i>		herb	5
337	Stemonaceae	<i>Stemona tuberosa</i>		climber	5
338	Menispermaceae	<i>Stephania japonica</i>		climber	4
339	Sterculiaceae	<i>Sterculia villosa</i>	Chandul	tree	2, 4
340	Bignoniaceae	<i>Stereospermum sp.</i>		tree	1
341	Araceae	<i>Steudnera colocasiodes</i>	Bish Kachu	herb	5
342	Capparacea	<i>Stixis suaveolens</i>		woody scandent	4
343	Moraceae	<i>Streblus asper</i>	Sheora	bushy tree	4
344	Meliaceae	<i>Swietenia mahogoni</i>		tree	3
345	Myrtaceae	<i>Syzygium cumini</i>		tree	1

Sl. No.	Family	Scientific Name	Local Name	Growth Form	Source
346	Myrtaceae	<i>Syzygium formosanum</i>		tree	2
347	Myrtaceae	<i>Syzygium grande</i>		tree	1, 2, 3
348	Taccaceae	<i>Tacca integrifolia</i>		herb	5
349	Verbenaceae	<i>Tectona grandis</i>		tree	1, 3
350	Combretaceae	<i>Terminalia belirica</i>		tree	1,2
351	Dilleniaceae	<i>Tetracera sarmentosa</i>		climber	4
352	Datisceae	<i>Tetrameles nudiflora</i>	Tundul, Chundul	large tree	4
353	Poaceae	<i>Themeda quadrivalvis</i>		herb	5
354	Cucurbitaceae	<i>Thladiantha cordifolia</i>		climber	4
355	Acanthaceae	<i>Thunbergia grandiflora</i>		climber	2
356	Poaceae	<i>Thysanolaena maxima</i>	Jaoful	herb	2, 5
357	Menispermaceae	<i>Tinospora crispa</i>	Padmaguruz, Amguruz	climber	4
358	Ulmaceae	<i>Trema orientalis</i>		tree	4
359	Cucurbitaceae	<i>Trichosanthes bracteata</i>	Makal	climber	4
360	Cucurbitaceae	<i>Trichosanthes palmata</i>		climber	1
361	Tiliaceae	<i>Triumfetta rhomboidea</i>		undershrub	4
362	Malvaceae	<i>Urena lobata</i>		undershrub	2, 4
363	Annonaceae	<i>Uvaria hamiltonii</i>		climber	4
364	Orchidaceae	<i>Vanda teres</i>		epiphyte	5
365	Compositae	<i>Vernonia cinerea</i>		herb/grass	1
366	Poaceae	<i>Vetiveria zizanioides</i>	Binna, Khus Khus	herb	5
367	Verbenaceae	<i>Vitex altissima</i>		tree	2
368	Verbenaceae	<i>Vitex pinnata</i>		tree	2
369	Arecaceae	<i>Wallichia densiflora</i>		palm	5
370	Araceae	<i>Xanthosoma violaceum</i>	Dul Kachu	herb	5
371	Rubiaceae	<i>Xeromphis spinosa</i>		tree	2
372	Leguminosae	<i>Xylia dolabriformis</i>		tree	3
373	Zingiberaceae	<i>Zingiber purpureum</i>		herb	2
374	Zingiberaceae	<i>Zingiber zerumbet</i>		rhizomatous herb	5
375	Rhamnaceae	<i>Zizyphus oenoplia</i>		tree	2
376	Rhamnaceae	<i>Zizyphus rugosa</i>		tree	1,2

The above list of plant species reported from the Rema-Kalenga area is based on the following sources:

1. Roy, P. C. and M. A. Azam. 1995. Vegetation survey in Rema-Kalenga Wildlife Sanctuary. Pages 11-12. In: Wildlife research activities of Sylhet Forest Division, 1994-95. Forest Department, Government of the People's Republic of Bangladesh.
2. BCAS (Bangladesh Centre for Advanced Studies). 1997. Biological Surver. Final Report. Prep. for Forest Resources Management Project. Forest Department, Dhaka.
3. RIMS Database (plantation species composition).
4. Uddin, M. Z., M. S. Khan and M. A. Hasssan. 2002. An annotated checklist of angiospermic flora of Rema-Kalenga Wildlife Sanctuary

- (Habiganj) in Bangladesh –II.a: Magnoliopsida (Dicots). *Bangladesh J. Plant Taxon.* 10(1): 79-94.
5. Uddin, M. Z., M. S. Khan and M. A. Hasssan. 2002. An annotated checklist of angiospermic flora of Rema-Kalenga Wildlife Sanctuary (Habiganj) in Bangladesh –I. Liliopsida (Monocots). *Bangladesh J. Plant Taxon.* 9(2): 57-66.

Annexure - 2
List of Amphibian and Reptiles Species of Rema-Kalenga Wildlife Sanctuary

Amphibians

Sl. No	Common name	Scientific name	Reference	Status
1	Common Toad	<i>Bufo melanostictus</i>	1, 2	NT
2	Skipper Frog	<i>Euphlyctis (Rana) cyanophlyctis</i>	1, 2	NT
3	Bull Frog	<i>Hoplobatrachus tigerinus (Rana tigerina)</i>	1, 2	NT
4	Cricket Frog	<i>Limnoechtes (Rana) limnocharis</i>	2	NT
5	Bulenger's Frog (Pana Bang)	<i>Rana alticola (tyleri)</i>	2	VU
6	Taipeh Frog (Gach Bang)	<i>Rana taipehensis (temporalis)</i>	2	EN
7	Tree Frog	<i>Rhacophorus sp.</i>	2	-

Reptiles

Sl. No	Common name	Scientific name	Reference	Status
1	Malayan Box Turtle	<i>Cuora amboinensis</i>	1, 2	EN
2	Spotted Flapshell Turtle (Soft-shelled terrapin)	<i>Lissemys punctata</i>	1, 2	VU
3	Wall Lizard	<i>Gekko gekko</i>	2	VU
4	House Lizard	<i>Hemidactylus brookii</i>	2	NT
5	Garden Lizard (Rakta chusha)	<i>Calotes spp.</i>	2	-
6	Striped Skink	<i>Mabuya dissimilis</i>	2	VU
7	Bengal Monitor	<i>Varanus bengalensis</i>	1	VU
8	Ring Lizard (Kalo Gui)	<i>Varanus salvator</i>	2	EN
9	Rock Python	<i>Python molurus</i>	2, 3	VU
10	Striped Keelback	<i>Amphiesma stolata</i>	2	NT
11	Ornate Flying / Golden Flying (Tree) Snake	<i>Chrysopelea ornata</i>	1, 2	EN
12	Rat Snake	<i>Coluber(Ptyas) mucosus</i>	2	VU
13	Green Rat Snake	<i>Coluber(Zaocys)nigromarginatus</i>	2	VU
14	Wolf Snake	<i>Lycodon sp.</i>	2	VU
15	Red-necked Keelback	<i>Rhabdophis Subminiatus (subminiata)</i>	1	VU
16	Checkered Keelback	<i>Xenochrophis piscator</i>	2	NT
17	King Cobra	<i>Ophiophagus hannah</i>	2	EN
18	Green (Bamboo) Pit Viper	<i>Trimeresurus gramineus</i>	2	EN

The above Amphibian and Reptiles list is based on:

1. BCAS (Bangladesh Centre for Advanced Studies). 1997. Biological Survey. Final Report. Prepare for Forest Resources Management Project. Forest Department, Dhaka.
2. Roy, P. C. and M. A. Azam. 1995. Wildlife survey in Rema-Kalenga Wildlife Sanctuary. Pages 1-10. In: Wildlife research activities of Sylhet Forest Division, 1995. Forest Department, Government of the People's Republic of Bangladesh.
3. Gittins, S. P. and A. W. Akonda. 1982. What survives in Bangladesh? *Oryx* XVI (3): 275-281.

Nomenclature follow:

Baillie, J. and B. Groombridge (eds.). 1996. 1996 IUCN red list of threatened animals. IUCN, Gland, Switzerland.

IUCN Bangladesh. 2000. Red book of threatened amphibians and reptiles of Bangladesh. IUCN-The World Conservation Union. xi + 95 pp.
Alternative nomenclature is given in parentheses.

Status

Extinction risk ratings listed under “Status” are based on IUCN Bangladesh (2000) and refer to extinction risk within Bangladesh as a whole. The risk ratings are defined as:

- Critically Endangered (CR): facing an extremely high risk of extinction in the wild in Bangladesh in the immediate future;
- Endangered (EN): not Critically Endangered but facing a very high risk of extinction in the wild in Bangladesh in the near future;
- Vulnerable (VU): not Critically Endangered or Endangered but facing a high risk of extinction in the wild in Bangladesh in the medium-term future;
- Data Deficient (DD): inadequate information to make a direct, or indirect, assessment of risk of extinction in Bangladesh;
- Not Threatened (NT): no apparent threat of extinction in Bangladesh.

Annexure – 3

List of Birds Species of Rema-Kalenga Wildlife Sanctuary

Sl. No	Common name	Scientific name	Reference	Status
1	Small Buttonquail (Little Bustard Quil)	<i>Turnix sylvatica</i>	3	DD
2	Red Junglefowl	<i>Gallus gallus</i>	1, 2, 3	common/NT
3	Kalij Pheasant	<i>Lophura leucomelanos</i>	1, 2	uncommon/EN
4	Fulvous Whistling-duck (Large Whistling Teal)	<i>Dendrocygna bicolor</i>	3	NT
5	Lesser Whistling-duck (Whistling Teal)	<i>Dendrocygna javanica</i>	3	NT
6	Cotton Pygmy-goose (Teal)	<i>Nettapus coromandelianus</i>	3	NT
7	Eurasian Wryneck	<i>Jynx torquilla</i>	3	M
8	Yellow-crowned (Yellowfronted Pied) Woodpecker	<i>Dendrocopos (Picoides) mahrattensis</i>	3	DD
9	Rufous Woodpecker	<i>Celeus (Micropterus) brachyurus</i>	3	NT
10	Greater Yellownappe (Large Yellownaped Woodpecker)	<i>Picus flavinucha</i>	1, 3	uncommon/NT
11	Grey-headed Woodpecker	<i>Picus canus</i>	1	common/NT
12	Black-rumped Flameback (Red-backed /Lesser Golden-backed Woodpecker)	<i>Dinopium bengalensis</i>	1, 2, 3	rare (1) /NT
13	Bay Woodpecker	<i>Blythipicus pyrrhotis</i>	2	DD
14	Lineated Barbet	<i>Megalaima lineata</i>	1, 2, 3	common/NT
15	Blue-throated Barbet	<i>Megalaima asiatica</i>	1	common/NT
16	Blue-eared Barbet	<i>Megalaima australis</i>	1	uncommon/NT
17	Coppersmith (Crimson-breasted) Barbet	<i>Megalaima haemacephala</i>	2, 3	NT
18	Oriental Pied Hornbill	<i>Anthracoceros albirostris</i>	2	EN
19	Common Hoopoe	<i>Upupa epops</i>	3	NT
20	Red-headed Trogon	<i>Harpactes erythrocephalus</i>	1	uncommon/EN
21	Indian Roller	<i>Coracias bengalensis</i>	1, 3	uncommon/NT
22	Dollarbird (Broad-billed Roller)	<i>Eurystomus orientalis</i>	3	CR
23	Common (Small) Kingfisher	<i>Alcedo atthis</i>	2, 3	NT
24	(Brown-headed) Stork-billed Kingfisher	<i>Halcyon smyrnensis</i>	3	NT
25	White-throated (White-breasted) Kingfisher	<i>Halcyon smyrnensis</i>	1, 2, 3	uncommon/NT
26	Pied Kingfisher	<i>Ceryle rudis</i>	3	NT
27	(Little) Green Bee-eater	<i>Merops leschenaulti</i>	2, 3	NT
28	Chestnut-headed Bee-eater	<i>Merops leschenaulti</i>	2, 3	NT
29	Common Hawk Cuckoo	<i>Hierococcyx varius</i>	2	NT
30	Indian Cuckoo	<i>Cuculus micropterus</i>	3	NT
31	Drongo Cuckoo	<i>Surniculus lugubris</i>	1	uncommon/NT
32	Asian Koel (Kalokkokil)	<i>Endynamys scolopacea</i>	3	NT
33	Green-billed Malkoha	<i>Phaenicophaeus (Rhopodytes) tritis</i>	1, 3	uncommon/NT
34	Greater Coucal (Crow Pheasant)	<i>Centropus sinensis</i>	1, 3	uncommon/NT
35	Lesser Coucal	<i>Centropus bengalensis (toulou)</i>	1, 3	uncommon/NT
36	Vernal Hanging Parrot (Lorikeet)	<i>Loriculus vernalis</i>	1, 2, 3	uncommon/NT
37	Alexandrine (Large Indian) Parakeet	<i>Psittacula eupatria</i>	3	CR
38	Blossom-headed Parakeet	<i>Psittacula roseata</i>	2	NT

Sl. No	Common name	Scientific name	Reference	Status
39	Red-breasted Parakeet	<i>Psittacula alexandri</i>	1, 2, 3	abundant/NT
40	Asian Palm Swift	<i>Cypsiurus balasiensis (parvus)</i>	1, 2	common/NT
41	Barn Owl	<i>Tyto alba</i>	2	NT
42	Oriental Scops Owl	<i>Otus sunia</i>	1	common/NR
43	Collared Scops Owl	<i>Otus bakkamoena</i>	1	common/NT
44	Eurasian Eagle Owl	<i>Bubo bubo</i>	2	NR
45	Spot-billed Eagle Owl	<i>Bubo nipalensis</i>	1	rare (1)/EN
46	Brown Fish Owl	<i>Ketupa (Bubo) zeylonensis</i>	3	VU
47	Asian Barred Owlet	<i>Glaucidium cuculoides</i>	1	common/NR
48	Jungle Owlet	<i>Glaucidium radiatum</i>	1	common/NT
49	Spotted Owlet	<i>Athene brama</i>	3	NT
50	Brown Hawk Owl	<i>Ninox scutulata</i>	1	common/NT
51	Grey (Jungle) Nightjar	<i>Caprimugus indicus</i>	3	EN
52	Large-tailed Nightjar	<i>Caprimulgus macrurus</i>	1	common/NT
53	(Blue) Rock Pigeon	<i>Columba livia</i>	2, 3	NT
54	Oriental Turtle Dove	<i>Streptopelia orientalis</i>	1	uncommon/M
55	Spotted Dove	<i>Streptopelia chinensis</i>	1, 2, 3	common/NT
56	Red Collared Dove	<i>Streptopelia tranquebarica</i>	2	NT
57	Eurasian Collared (Ring) Dove	<i>Streptopelia decaocto</i>	3	NT
58	Emerald Dove	<i>Chalcophaps indica</i>	1, 3	uncommon/NT
59	Pompadour (Grey-fronted) Green Pigeon	<i>Treron pomadora</i>	1, 3	uncommon/NT
60	Yellow-footed Green Pigeon	<i>Treron phoenicoptera</i>	3	NT
61	Wedged-tailed/Pin-tailed Green Pigeon	<i>Treron sphenura</i>	2	M
62	Pin-tailed Green Pigeon	<i>Treron apicauda</i>	4	rare
63	White-breasted Waterhen	<i>Amaurornis phoenicurus</i>	2, 3	NT
64	Ruddy-breasted (Ruddy) Crake	<i>Porzana fusca (Amaurornis fuscus)</i>	3	DD
65	Watercock	<i>Gallicrex cinerea</i>	3	NT
66	Pintail Snipe	<i>Gallinago stenura</i>	3	M
67	Wood Sandpiper	<i>Tringa glareola</i>	3	M
68	Pacific (Eastern) Golden Plover	<i>Pluvialis fulva (dominica)</i>	3	M
69	Black (Pariah) Kite	<i>Milvus migrans</i>	3	NT
70	Brahminy Kite	<i>Haliastur indus</i>	2, 3	NT
71	Pallas's Fish (Fishing) Eagle	<i>Haliaeetus albicilla (leucoryphus)</i>	3	CR
72	(Himalayan) Grey-headed Fish (Fishing) Eagle	<i>Ichthyophaga ichthyaetus (nane)</i>	3	NT
73	White-rumped (White-backed) Vulture	<i>Gyps bengalensis</i>	3	NT
74	Crested Serpent Eagle	<i>Spilornis cheela</i>	2, 3	NT
75	Eurasian Marsh Harrier	<i>Circus aeruginosus</i>	1, 3	rare(1)/M
76	Pied Harrier	<i>Circus melanoleucos</i>	1, 3	rare(1)/M
77	Eurasian Sparrow hawk	<i>Accipiter nisus</i>	1	rare(1)/M
78	Common (Eastern) Kestrel	<i>Falco tinnucules</i>	3	M
79	Little Egret	<i>Egretta garzetta</i>	2, 3	NT
80	Grey Heron	<i>Ardea cinerea</i>	3	NT
81	Great (Large) Egret	<i>Casmerodeus albus (Egretta alba)</i>	3	NT
82	Cattle Egret	<i>Bubulcus ibis</i>	1, 2, 3	uncommon/NT
83	Indian Pond Heron	<i>Nycticorax nycticorax</i>	1, 2, 3	uncommon/NT
84	Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	3	NT
85	Malayan Night Heron (Tiger Bittern)	<i>Gorsachius melanolophus</i>	3	CR
86	Cinnamon (Chestnut) Bittern	<i>Ixobrychus cinnamomeus</i>	3	NT
87	Asian Openbill (Openbill Stork)	<i>Anastomus oscitans</i>	3	NT
88	Asian Fairy Bluebird	<i>Irenea puella</i>	3	NT
89	Blue-winged Leafbird	<i>Chloropsis cochinchinensis</i>	1	uncommon/N

Sl. No	Common name	Scientific name	Reference	Status
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90	Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	1, 2, 3	common/NT
91	Brown Shrike	<i>Lanius cristatus</i>	3	M
92	Long-tailed (Black headed) Shrike	<i>Lanius schach</i>	3	NT
93	Common Green Magpie	<i>Cissa chinensis</i>	3	DD
94	Rufous Treepie	<i>Dendrocitta vagabunda</i>	2, 3	NT
95	House Crow	<i>Corvus splendens</i>	3	NT
96	Large-billed (Jungle) Crow	<i>Corvus macrorhynchos</i>	1, 2, 3	common/NT
97	Ashy Woodswallow (Swallow Shrike)	<i>Atamus fuscus</i>	3	NT
98	Black-hooded Oriole	<i>Oriole xanthornus</i>	1, 2, 3	common/NT
99	Large Cuckooshrike	<i>Coracina macei</i>	1	common/NT
100	Black-winged Cuckooshrike	<i>Coracina melaschistos</i>	1	uncommon/NT
101	Rosy Minivet	<i>Pericrocotus roseus</i>	1	uncommon/NT
102	Scarlet Minivet	<i>Pericorcotus flammeus</i>	1, 3	common/NT
103	Bar-winged Flycatcher-shrike	<i>Hemipus picatus</i>	1	uncommon/NT
104	Black Drongo	<i>Dicrurus macrocercus (adsimilis)</i>	1, 2, 3	common/NT
105	Ashy Drongo	<i>Dicrurus leucocephalus</i>	1	uncommon/NT
106	Crow-billed Drongo	<i>Dicrurus annectans</i>	3	DD
107	Bronzed Drongo	<i>Dicrurus aeneus</i>	1, 2, 3	common/NT
108	Lesser Racked-tailed Drongo	<i>Dicrurus remifer</i>	1, 2, 3	uncommon/NT
109	Spangled (Hair-crested) Drongo	<i>Dicrurus hottentottus</i>	1	common/NT
110	Grater Racket-tailed Drongo	<i>Dicrurus paradiseus</i>	1, 2, 3	common/NT
111	Black-naped Monarch (Blue Flycatcher)	<i>Hypothymis azurea</i>	1, 2, 3	common/NT
112	Common Iora	<i>Aegithina tiphia</i>	1, 2, 3	common/NT
113	Large Woodshrike	<i>Tephrodornis gularis</i>	1	common/NT
114	Black-breasted Thrush	<i>Turdus dissimilis</i>	1	rare/M
115	Red-throated Flycatcher	<i>Ficedula parva</i>	1	common/NT
116	Verditer Flycatcher	<i>Eumyias thalassina</i>	1	uncommon/M
117	Pale-chinned (Brook's) Flycatcher	<i>Cyornis poliogenys</i>	1	uncommon/NT
118	Grey-headed Canary Flycatcher	<i>Culicicapa ceylonensis</i>	1	common/NT
119	Oriental Magpie Robin	<i>Copsychus saularis</i>	1, 2, 3	common/NT
120	White-rumped Shama	<i>Copsychus malabaricus</i>	3	NT
121	Common Stonechat	<i>Saxicola torquata</i>	1	uncommon/M
122	Chestnut-tailed Starling (Greyheaded Myna)	<i>Sturnus malabaricus</i>	3	NT
123	Asian Pied Starling (Pied Myna)	<i>Sturnus contra</i>	1, 2, 3	common/NT
124	Common Myna	<i>Acridotheres tristis</i>	1, 2, 3	common/NT
125	Jungle Myna	<i>Acridotheres fuscus</i>	2, 3	NT
126	Hill Myna	<i>Gracula religiosa</i>	1, 2, 3	uncommon/NT
127	Great (Grey) Tit	<i>Parus major</i>	3	NT
128	Barn (Common) Swallow	<i>Hirundo rustica</i>	2, 3	M
129	White-tailed Swallow	<i>Hirundo smithii</i>	3	DD
130	Nepal House Martin	<i>Delichon nipalensis</i>	3	DD
131	Black-crested Bulbul	<i>Pycnonotus melanicterus</i>	1	uncommon/NT
132	Red-whiskered Bulbul	<i>Pycnonotus jocosus</i>	1, 2, 3	abundant/NT
133	Himalayan (White-cheeked) Bulbul	<i>Pycnonotus leucogenys</i>	3	NR
134	Red-vented Bulbul	<i>Pycnonotus cafer</i>	1, 2, 3	abundant/NT
135	Olive Bulbul	<i>Iole viridescens</i>	1	uncommon/DD

Sl. No	Common name	Scientific name	Reference	Status
136	Ashy (Bronze-eared) Bulbul	<i>Hemixos flavula (Hysipetes flavalus)</i>	3	NT
137	Oriental White-eye	<i>Zosterops palpebrosus</i>	1, 2	common
138	Reed Warbler	<i>Acrocephalus sp.</i>	3	
139	Mountain (Golden-headed) Tailorbird	<i>Orthotomus cuculatus</i>	3	DD
140	Common Tailorbird	<i>Orthotomus sutorius</i>	1, 2, 3	common/NT
141	Dark-nacked Tailorbird	<i>Orthotomus atrogularis</i>	1	common/DD
142	Greenish Warbler	<i>Phylloscopus trochiloides</i>	1	common/M
143	Yellow-vented Warbler	<i>Phylloscopus cantator</i>	1	uncommon/M
144	Golden-spectacled Warbler	<i>Seicercus burkii</i>	1	common/M
145	lesser Necklaced Laughingthrush	<i>Garrulax monileger(Monilegerus)</i>	3	NT
146	Greater Necklaced Laughingthrush	<i>Garrulax pectoralis</i>	1	common/NT
147	Abbott's Babbler	<i>Malacocincla (Trichastoma) abbotti</i>	1, 3	common/NT
148	Puff-throated (Spotted) Babbler	<i>Pellorneum ruficeps</i>	1	common/NT
149	Striped Tit Babbler	<i>Macronous gularis</i>	1	common/NT
150	Jungle Babbler	<i>Turdoides striatus</i>	3	NT
151	Brown-cheeked Fulvetta (Quaker Babbler)	<i>Alcippe poioicephala</i>	1	uncommon/NT
152	Rufous-winged (Assam) Bushlark	<i>Mirafra assamica</i>	3	NT
153	Pale-billed (Tickell's) Flowerpecker	<i>Dicaeum erythrohynchos</i>	2, 3	NT
154	Scarlet-backed Flowerpecker	<i>Dicaeum cruentatum</i>	1, 2	common/NT
155	Ruby-cheeked Sunbird	<i>Anthreptes singalensis</i>	1	common/NT
156	Purple-rumped Sunbird	<i>Nectarinia zeylonica</i>	2	NT
157	Purple Sunbird	<i>Nectarinia asiatica</i>	3	NT
158	Crimson Sunbird	<i>Aethopyga siparaja</i>	1	common/NT
159	Little Spiderhunter	<i>Arachnothera longirostra</i>	2	NT
160	House Sparrow	<i>Passer domesticus</i>	3	NT
161	White Wagtail	<i>Motacilla alba</i>	3	M
162	Yellow Wagtail	<i>Motacilla cinerea</i>	3	M
163	Grey Wagtail	<i>Motacilla cinerea</i>	3	M
164	Paddy field (Australasian) Pipit	<i>Anthus hodgsoni</i>	2, 3	M
165	Olive-backed Pipit	<i>Anthus hodgsoni</i>	1	uncommon/M
166	Baya Weaver	<i>Ploceus phillippinus</i>	3	NT
167	Scaly-brested (Spotted) Munia	<i>Lonchura punctulata</i>	3	NT
168	Black-headed Munia	<i>Lonchura malacca</i>	3	NT

The above bird list is based on:

1. Thompsos, P. M. and D. L. Johnson. 1999. Checklist of birds recorded at 19 sites in Bangladesh. Updated to 1 February 1999. Unpublished Report.
2. BCAS (Bangladesh Centre for Advanced Studies). 1997. Biological Survey. Final Report. Prepare for Forest Resources Management Project. Forest Department, Dhaka.
3. Roy, P. C. and M. A. Azam. 1995. Wildlife survey in Rema-Kalenga Wildlife Sanctuary. Pages 1-10, In: Wildlife research activities of Sylhet Forest Division, 1995. Forest Department, Government of the People's Republic of Bangladesh.
4. Thompsos, P. M. and D. L. Johnson. 2003. Further notable birds records from Bangladesh. *FORKTAIL* 19: 85-102.

Nomenclature follow:

Inskipp, T., N. Lindsey and W. Duckworth. 1996. An annotated checklist of the birds of the Oriental Region. Oriental Bird Club, Sandy, U. K. Alternative nomenclature is given in parentheses.

Status

Frequency/abundance ratings listed under “Status” below are based on Thompson and Johnson (1999) and are defined as:

- rare (1-5): number of sightings of rare species in Rema-Kalenga since 1977, where known;
- rare: 5+ sightings since 1977; unlikely to be seen during a visit;
- uncommon: can expect to be seen on a single visit;
- abundant: seen on every visit; usually many seen.

Extinction risk ratings also listed under “Status” below are based on:

IUCN Bangladesh. 2000. Red list of threatened birds of Bangladesh. IUCN – The World Conservation Union. xi+ 116 pp.

The risk ratings are limited to species that are resident in Bangladesh and are defined as:

- Critically Endangered (CR): facing an extremely high risk of extinction in the wild in Bangladesh in the immediate future;
- Endangered (EN): not Critically Endangered but facing a very high risk of extinction in the wild in Bangladesh in the near future;
- Vulnerable (VU): not Critically Endangered or Endangered but facing a high risk of extinction in the wild in Bangladesh in the medium-term future;
- Data Deficient (DD): inadequate information to make a direct, or indirect, assessment of risk of extinction in Bangladesh;
- Not Threatened (NT): no apparent threat of extinction in Bangladesh.

Species that are known only as migrants in Bangladesh are designated with an M under “Status”.

A few species listed for Rema-Kalenga in the sources cited above are not included in either of IUCN’s lists of resident or migratory birds of Bangladesh; these are designated NR (not rated for extinction risk) under “Status”.

Annexure - 4
List of Mammalian Species of Rema-Kalenga Wildlife Sanctuary

Sl. No	Common name	Scientific name	Reference	Status
1	Grey Musk /House (White-tailed) Shrew	<i>Suncus murinus</i>	2	NT
2	(Common) Indian Flying Fox	<i>Pteropus giganteus</i>	1,2	NT
3	Indian False Vampire	<i>Megaderma lyra</i>	1	NT
4	Indian Pipistrelle	<i>Pipistrellus coromandra</i>	1	NT
5	Slow Loris	<i>Nycticebus coucang</i>	3	CR
6	Assamese Macaque	<i>Macaca assamensis</i>	2	DD
7	Rhesus Macaque	<i>Macaca mulatta</i>	1,2,3,9	VU
8	Pig-tailed Macaque	<i>Macaca nemestrina</i>	1,2,8	CR
9	Phayer's Langur (Leaf Monkey)	<i>Trachypithecus (Presbytis) phayrei</i>	1,2,3,8,9	CR
10	Capped Langur	<i>Trachypithecus (Presbytis) pileatus</i>	1,2,3,8,9	EN
11	Hoolock Gibbon	<i>Hylobates hoolock</i>	1,4,5,8	nearly extirpated/CR
12	Jackal	<i>Canis aureus</i>	1,2,3,5	VU
13	Asiatic Wild Dog	<i>Cuon alpinus</i>	5,7	probably extirpated/CR
14	Jungle Cat	<i>Felis chaus</i>	2	EN
15	Leopard	<i>Panthera pardus</i>	5,6	probably extirpated/CR
16	Tiger	<i>Panthera tigris</i>	7	expired/CR
17	Fishing Cat	<i>prionailurus viverrinus (Felix viverrina)</i>	1,2	EN
18	Small Indian Mongoose	<i>Herpestes auropunctatus</i>	1,2	NT
19	Common (Grey) Mongoose	<i>herpestes edwardsi</i>	2	VU
20	Crab- eating Mongoose	<i>Herpestes urva</i>	1	EN
21	Common Otter	<i>Lutra lutra</i>	1,2,3	CR
22	Sun Bear and/or	<i>Ursus malayanus</i>	5,7	extirpated/CR
23	Sloth Bear and /or	<i>Melursus ursinus</i>		
24	Asiatic Black Bear	<i>Ursus thibetanus</i>		
25	Small Indian Civet	<i>Vivericulla indica</i>	2	VU
26	Asian Elephant	<i>Elephus maximus</i>	5	extirpated/CR
27	Wild Boar	<i>Sus scrofa</i>	1,2,3,5,6,7,8	NT
28	Sambar	<i>Cervus unicolor</i>	1,2,5,7	nearly extirpated/CR
29	Barking Deer	<i>Muntiacus muntiac</i>	1,2,3,5,6,7	EN
30	Indian Pangolin	<i>Manis crassicaudata</i>	1	CR
31	Hoary-bellied Himalayan (Irrawaddy) Squirrel	<i>Callosciurus pygerythrus</i>	1	NT
32	Orange-bellied Himalayan Squirrel	<i>Dremomys lokriah</i>	1	DD
33	Black (Highland) Giant Squirrel	<i>Ratufa bicolor</i>	1,2	DD
34	Bandicoot Rat	<i>Bandicota bengalensis</i>	2	NT
35	House Mouse	<i>Mus musculus</i>	2	NT
36	Indian Porcupine	<i>Hystrix indica</i>	3	EN
37	Rufous-tailed Hare	<i>Lepus nigricollis</i>	3	EN

Adopted from compiled list Tecsult (2000)

The above mammals list is based on:

- 1 BCAS (Bangladesh Centre for Advanced Studies). 1997. Biological Survey. Final Report. Prepare for Forest Resources Management Project. Forest Department, Dhaka.
2. Roy, P. C. and M. A. Azam. 1995. Wildlife survey in Rema-Kalenga Wildlife Sanctuary. Pages 1-10. In: Wildlife research activities of Sylhet

Forest Division, 1995. Forest Department, Government of the People's Republic of Bangladesh.

3. Gittins, S. P. and A. W. Akonda. 1982. What survives in Bangladesh? *Oryx* XVI (3): 275-281.
4. Khan, M. A. R. 1982. On the distribution of the mammalian fauna of Bangladesh. Pages 560-575, in: proc. of the Second National Forestry Conference, Bangladesh-1982. Dhaka, Bangladesh, 21-26 January 1982.
5. Information from local Forest Department stall, May-December 1999.
6. Information from BDR, May-December 1999.
7. Information from local villagers, May-December 1999.
8. Observation by the FSP Biodiversity Conservation and Management Specialists, May-December 1999.
9. Kabir, M. M. *pres. comm.* 1999.

Status

Comments on status (nearly extirpated, probably extirpated, extirpated) are based on the sources listed above and refer to current known status in Rema-Kalenga Wildlife Sanctuary. Additional extinction risk ratings listed under "Status" are based on IUCN Bangladesh (2000) and refer to extinction risk within Bangladesh as a whole. The risk ratings are defined as:

- Critically Endangered (CR): facing an extremely high risk of extinction in the wild in Bangladesh in the immediate future;
- Endangered (EN): not Critically Endangered but facing a very high risk of extinction in the wild in Bangladesh in the near future;
- Vulnerable (VU): not Critically Endangered or Endangered but facing a high risk of extinction in the wild in Bangladesh in the medium-term future;
- Data Deficient (DD): inadequate information to make a direct, or indirect, assessment of risk of extinction in Bangladesh;
- Not Threatened (NT): no apparent threat of extinction in Bangladesh.

Note. FSP (2000b): Compiled list of mammals by Rema-Kalenga base ref no. 1-9.

Annexure - 5

Medicinal plants used by the ethnic people of Rema-kalenga Wildlife Sanctuary

Plant name	Local/Bangla name	Parts used	Diseases to be treated
<i>Achyranthes aspera</i> L.	Upathlenga	Whole plant	Jaundice. Pain
<i>Adhatoda zeylanica</i> Medikus	Bashak	Leaves	Diarrhoea
<i>Aegle marmelos</i> (L.) Corr.	Bel	Fruits	Laxative
<i>Azadirachta indica</i> A.Juss.	Neem	Leaves	Menstruation. Fever
<i>Alstonia scholaris</i> (L.) R. Br.	Chhatim	Barks	Chronic diarrhoea
<i>Alternanthera sessilis</i> (L.) R. Br.	Haicha	Whole plant	Snake bite
<i>Amaranthus spinosus</i> L.	Katanotey	Roots	Chest pain
<i>Andrographis paniculata</i> (Burm.f.) ex Nees	Kalomeg, chirata	Whole plant	Malaria
<i>Anthocephalus chinensis</i> (Lamk.) Rich ex Walp.	Kadam	Leaves	Wound, Fractures
<i>Averrhoa carambola</i> L.	Kamranga	Fruits	Blood piles
<i>Bauhinia acuminata</i> L.	Kanchan	Barks, Leaves	Dropsy
<i>Bulbophyllum lilacinum</i> Ridley	Ishwarmul (?)	Leave bases	Impotency
<i>Cajanus cajan</i> (L.) Huth.	Arhar	Leaves	Jaundice
<i>Calotropis procera</i> Br.	Akanda	Leaves	Stomach pain
<i>Careya arborea</i> Roxb.	Borpatk/Biripata	Barks	Diarrhoea
<i>Clerodendrum viscosum</i> Vent.	Bhat	Leaves	Malaria
<i>Costus speciosa</i> (Koenig) Sm.	Keumol	Roots	Snake bite, Skin disease
<i>Crinum defixum</i> Ker.	Bonpiaz	Bulbs	Stomach complaint of cow
<i>Curculigo orchoides</i> Gaertn.	Talmuli	Bulbs	Jaundice
<i>Curcuma longa</i> L.	Halud	Rhizomes	Scabis, Blood disorder
<i>Curcuma xedoaria</i> Rosc.	Shadi	Tubers, roots	Diarrhoea
<i>Cuscuta reflexa</i> Roxb.	Swarnalata	Stems	Jaundice
<i>Cymbidium aloifolium</i> (L.) Sw.	Tosabak	Seeds	Cut injury, lesion
<i>Cynodon dactylon</i> pers.	Dubra grass	Leaves	Cut injury
<i>Datura stramonium</i> L.	Dutra	Seeds	Rheumatic pain
<i>Dillenia indica</i> L.	Chalta	Fruits	Diarrhoea and Dysentery
<i>Dillenia pentagyna</i> Roxb.	Harganja	Barks, leaves	Diarrhoea, Dysentery, Antiseptic
<i>Dioscorea belophylla</i> (Prain) Haines	Shora alu	Shoot	Heart trouble
<i>Eclipta alba</i> (L.) Hassk.	Keshraraj	Leaves	Rheumatic fever
<i>Elephantopus scaber</i> L.	Hatichoda	Whole plant	Stomach pain
<i>Entada phaseoloides</i> (L.) Merr.	Gilla	Seeds	Mumps
<i>Eupatorium odoratum</i> L.	Pisaish	Leaves	Cut injury
<i>Ficus benghalensis</i>	Bot	Arial roots	Impotency
<i>Gardenia coronaria</i> Ham.	Sitgach	Leaves	Rheumatic pain

Plant name	Local/Bangla name	Parts used	Diseases to be treated
<i>Garuga pinnata</i> Roxb.	Bhadi	Fruits	Diarrhoea
<i>Glycosmis pentaphylla</i> (Retz.) A.DC.	Bonjamir Hotiggira	Leaves	Jaundice
<i>Holarrhena antidysenterica</i> (Heyne ex Roth) DC.	Kuchra	Barks	Diarrhoea, Dysentery
<i>Hoya parasitica</i> Wall	Chera pata	Leaves	Diarrhoea of cow
<i>Hyptis suaveolens</i> (L.) poit	Tokma, Kusmai	Seeds, leaves	Stomach ache, Uterus complaint
<i>Justicia gendarussa</i> Burm.	Kalobasak	Leaves	Chest pain
<i>Lasia spinosa</i> (L.) Thw.	gandagi	Leaves	Piles
<i>Leucas indica</i> (L.) R. Br. ex. Vatke	Danda Kalash	Leaves	Jaundice
<i>Litsea monopetala</i> (Roxb.)	Akorma	Barks	Diarrhoea
<i>Litsea glutinosa</i> (Lour.) Rob.	Baslap, Menda	Leaves, Barks	Diarrhoea, Dysentery
<i>Ludwigia adscendens</i> (L.) Hara.	Molchi	Leaves	Dysentery
<i>Mangifera longipes</i> Griff.	Milam	Fruits	Dog bite
<i>Melastoma malabathricum</i> L.	Khamtak	Leaves	Diarrhoea, Dysentery
<i>Melia azedarach</i> L.	Goraneem	Leaves	Malaria
<i>Mikania cordata</i> (Burm.f.) Robinson	Assamlata	Leaves	Cut injury
<i>Mimosa pudica</i> L.	Lajjabati	Whole plant	Jaundice
<i>Moringa oleifera</i> Lamk.	Sajna	Leaves, fruits	Cough
<i>Musa rosacea</i> Jacq.	Ramkola	Inflorescence	Diarrhoea
<i>Musa paradisiaca</i> L.	Kola	Inflorescence	Diarrhoea
<i>Ocimum tenuiflorum</i> L.	Kalotusi	Leaves	Cough, Bronchitis
<i>Oroxylum indicum</i> Vent.	Thona	Barks, Leaves	Jaundice
<i>Paedaria foetida</i> L.	gandhabadhuli	Leaves, roots	Diarrhoea, dysentery
<i>Persicaria hydropiper</i> L.	Bishkatali	Leaves	Stomach pain
<i>Phyllanthus emblica</i> L.	Amloki	Fruits	Diuretic, Diarrhoea
<i>Piper longum</i> L.	Peepul	Leaves	Fever
<i>Plumbago zeylanica</i> L.	Sisilimili	Leaves	Leprosy, Ringworm
<i>Polygonum plebejam</i> R. Br.	Chemtisag	Whole plant	Pneumonia
<i>Pterospermum acerifolium</i> Willd.	Moskonda	Flowers	Blood-mixed seminal ejaculation
<i>Tauvolfia serpentina</i> (L.) Benth. ex Kurz	Sarpaganda	Roots	High blood pressure
<i>Ricinus Communis</i> L.	Bheranda, Bella	Seeds oil	Constipation, Joint pain
<i>Scoparia dulcis</i> L.	Bondhane	Leaves	Malaria, Diarrhoea
<i>Sida acuta</i> Burm.	bite	Whole plant	Diarrhoea
<i>Smilax macrophylla</i> Roxb.	Kumarialata	Shoot tips	Head ache, Menstruation
<i>Spilanthes acmella</i> L.	Marhatiga	Heads	Tooth pain
<i>Stephania zeylanica</i> L. (Thunb.)	Khuskhuselata	Leaves	Cough, Bronchitis

Plant name	Local/Bangla name	Parts used	Diseases to be treated
Mirs.			
<i>Sterculia villosa</i> Roxb.	Chandul	Leaves,	Impotency
<i>Streblus asper</i> Lour.	Shaora	Seeds	Diarrhoea
<i>Syzygium cumini</i> (L.) Skeel.	Kalojam	Seeds	Jaundice
<i>Tagetes patula</i> L.	Gadaphul	Flowers	Diarrhoea
<i>Tamarindus indica</i> L.	Tetul	ripe pods	Jaundice
<i>Terminalia arjuna</i> (Roxb.) Wt. E. Arn.	Arjun	Fruits. Barks	Menstruation
<i>Terminalia bellirica</i> Roxb.	Bhoera	Fruits	Menstruation
<i>Terminalia citrina</i> Roxb.	Horitaki	Fruits	Menstruation
<i>Tinospora crispa</i> (L.) hook.f.&Thoms	Padmaguruz	Stems	Malaria
<i>Toona ciliata</i> J. Reem	Rongil	Flowers	Menstrual disorder
<i>Urena lobata</i> L.	Belazgota	Leaves	Abscess
<i>Vitex negundo</i> L.	Nishinda	Leaves	Diarrhoea
<i>Vitis quadrangularis</i> Wall.	Harbhagalata	Stems	Wound Fracture
<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Bazan	Seeds oil	Cholera, Heart
<i>Zingiber officinale</i> Rosc.	Ada	Rhizomes	Stomach complaint

Plants species used as ingredients in the process of manufacturing 'Langi' (home made alcoholic drink/indigenous alcohol from rice) by the ethnic people of Rema-Kalenga Wildlife Sanctuary.

Species name	Local/Bangla name	Parts used
<i>Allophylus cobbe</i> Bl.	Chuanthai, Chita	Whole plants
<i>Artocarpus heterophyllus</i> Lamk.	Thepoung, Kanthal	Leaves
<i>Capsicum frutescens</i> L.	Marich	Fruits
<i>Heterophragma adenophyllum</i> Seem.	Chuarai	Leaves
<i>Maba baxifolia</i> Pers.	Suksuma	Barks
<i>Musa paradisiaca</i> L.	Therik, Kola	Young leaves
<i>Stereospermum personatum</i> (hassk.) Chatt.	Takisereng (Barengawal)	Leaves
<i>Tiperia hirsuta</i> Kurz	Takisereng	Whole Plant
<i>Vernonia patula</i> (Drgand) Merr.	Kuksim	Whole plant

Plants species used in various religious festivals by the ethnic people of Rema-Kalenga Wildlife Sanctuary.

Species name	Local/Bangla name	Parts used
<i>Aegle marmelos</i> (L.) Cor.	Bel	Leaves
<i>Ficus benghalensis</i> L.	Bot	Leaves
<i>Ficus religiosa</i> L.	Asawatha	Leaves
<i>Hibiscus rosa-sinensis</i> L.	Joba	Flowers
<i>Mangifera indica</i> L.	Aam	Leaves
<i>Melocanna baccifera</i> (Roxb.) Kurz	Wathai, Muli	Stems
<i>Musa paradisiaca</i> L.	Kola	Leaves

<i>Nerium indicum</i> L.	Karabi	Flowers
<i>Ocimum tenuiflorum</i> L.	Tulsi	Whole plant
<i>Phrynium capitatum</i> Willd.	Taccapata	Leaves

Ornamental Plants used for various decoration purposes by the ethnic people of Rema-kalenga wildlife Sanctuary.

Species name	Local/Bangla name	Habit
<i>Aerides odorata</i> Lour.	Porgacha	Epiphyte
<i>Bauhinia acuminata</i> L.	Kanchan	Scandent
<i>Bombax ceiba</i> L.	Shimultula	Tree
<i>Catharanthus roseus</i> D. Don	Nayantara	Herb
<i>Crinum asiaticum</i> L.	Bagpata	Herb
<i>Cymbidium alofolium</i> (L.) Gw.	Porgacha	Epiphyte
<i>Dendrobium aphyllum</i> (Roxb.) Fisch	Porgacha	Epiphyte
<i>Dendrobium lindleyi</i> Steud.	Porgacha	Epiphyte
<i>Erythrina stricta</i> Roxb.	Mandar	Tree
<i>Gynandropsis gynandra</i> (L.) Briq.	Kanalla	Herb
<i>Hibiscus rosa-sinensis</i> L.	Jaba	Shrub
<i>Holarrhena antidysenterica</i> (Heyne ex Roth) DC.	Kurchi	Small Tree
<i>Ipomoea hederifolia</i> L.	-	Climber
<i>Ixora javanica</i> DC.	Rongon	Shrub
<i>Nerium indicum</i> L.	Karabi	Shrub
<i>Pavetta indica</i> L.	Falda	Shrub
<i>Phaius tancarvilleae</i> (Banks ex L. Her) Bl	Porgacha	Epiphyte
<i>Plumbago zeylanica</i> L.	Sisilimili	Herb
<i>Rhynchostylis retusa</i> (L.) Bl.	Porgacha	Epiphyte
<i>Ruellia tuberosa</i> L.	Chatpotey	Herb
<i>Tagetes Patula</i> L.	Gadaphul	Herb
<i>Vanda teres</i> (Roxb.) Lindl.	Talachabi	Epiphyte

Species used as vegetables by ethnic people of Rema-Kalenga Sanctuary

Species name	Local / Bangla name	Parts used
<i>Alternanthera philoxeroides</i> (Mart.) Griseb	Haicha	Leaves, Stems
<i>Amaranthus spinosus</i> L.	Kantanotey	Leaves
<i>Amaranthus viridis</i> L.	Noteyshak	Leaves, Stems
<i>Amomum aromaticum</i> Roxb.	Tara	Fruits
<i>Amorphophalus bulbifer</i> (Roxb.) Bl.	Olkachu, Dadunga	Petioles
<i>Amorphophalus paeoniifolius</i> (Dennst)Nicolson	Olkachu	Petioles
<i>Canavalia gladiata</i> (Jacn.) DC.	Janglisim	Fruits
<i>Centella asiatica</i> (L.) Vrbn.	Adamoni	Whole plant
<i>Colocasia esculenta</i> (L.) Schoot	Kachu	Whole plant
<i>Dioscorea alata</i> L.	Ganga	Tubers
<i>Dioscorea bulbifer</i> L.	Bonalu	Tubers,

		Bulbils
<i>Dioscorea esculenta</i> (Lour.) Burkill.	Thyser	Tubers
<i>Dioscorea pentaphylla</i> L.	Thanarow	Tubers
<i>Discorea pubera</i> Bl.	Thakun	Tubers
<i>Diplazium esculentum</i> (Retz.) Swartz. (Fern)	Darmivikhoms, Dekishak	Young leaves
<i>Homalomena aromatica</i> Schott	Bonkachu	Petioles
<i>Ipomoea aquatica</i> Forsk.	Kollmi	Leaves, Stems
<i>Lasia spinosa</i> (L.) Thw.	Bonadia	Inflorescence
<i>Ludwigia adscendens</i> (L.) Hara	Mulsishak	Leaves
<i>Manihot esculenta</i> Crantz.	Kasava	Tubers
<i>Melocanna baccifera</i> (Roxb.) Kurz	Mulibans	Young shoots
<i>Momordica dioica</i> Roxb.	Bonkorala	Fruits
<i>Musa rosacea</i> Jacq.	Ramkola	Inflorescence , Central part
<i>Nymphaea nouchali</i> Burm.f.	Shapla	Petioles
<i>Oenanthe bengalensis</i> Benth.	Bandhania	Leaves, Stems
<i>Polygonum plebejum</i> R. Br.	Chemtisag	Stems, Leaves
<i>Premna bengalensis</i> Cl.	Gonroi	Leaves
<i>Premna esculenta</i> Roxb.	Lalong	Leaves
<i>Psilotrichum ferrugineum</i> Miq.	Putishak	Stem with leaves
<i>Synedrella nodiflora</i> (L.) Gaertn.	-	Leaves
<i>Xanthosoma violaceum</i> Schott	Dudkachu	Petioles

Plants yielding edible fruits for the ethnic people of Rema-Kalenga Wildlife Sanctuary.

Species name	Local/Bangla name	Habit
<i>Aegle marmelos</i> (L.) Cor.	Bel	Tree
<i>Aporosa diocica</i> (Roxb.) Muell.-Agr.	Kakra	Tree
<i>Artocarpus chaplasha</i> Roxb.	Chapalish	Tree
<i>Artocarpus lakoocha</i> Roxb.	Deoa	Tree
<i>Baccaurea ramiflora</i> Lour.	Bhubi	Tree
<i>Bursera serraata</i> Wall. ex. Colebr.	Neul	Tree
<i>Calamus guruba</i> Hum.	Bet	Climber
<i>Dillenia indica</i> L.	Chalta	Tree
<i>Elaeocarpus robustus</i> Roxb.	Jolpai	Tree
<i>Erjoglossum rubiginosum</i> (Roxb.) Bl.	Apain	Tree
<i>Ficus racemosa</i> L.	Jogadumur	Tree
<i>Garcinia xantochymus</i> Hook.f.	Dephal	Tree
<i>Garcinia cowa</i> Roxb.	Kao	Tree
<i>Lannea coromandelica</i> (Houtt.) Merr.	Bhadi	Tree
<i>Mangifera longipes</i> Griff	Milam	Tree
<i>Mangifera sylvatica</i> Roxb.	Uriam	Tree
<i>Melastoma malabathricum</i> L.	Khamtak	Shrub
<i>Microcos paniculata</i> L.	Pisti	Shrub
<i>Phyllanthus emblica</i> L.	Amloki	Tree

<i>Randia dumetorum</i>	Mongota	Shrub
<i>Sterculia villosa</i> Roxb.	Chandul	Tree
<i>Streblus asper</i> Lour.	Shaora	Tree
<i>Syzygium cumini</i> (L.) Skal.	Kalojam	Tree
<i>Syzygium fruticosum</i> (Roxb.) DC.	Bhutijam	Tree
<i>Terminalia bellerica</i> (Roxb.)	Bohera	Tree
<i>Terminalia citrina</i> Roxb.	Horitaki	Tree
<i>Willoughbeia edulis</i> Roxb.	Lolam	Climber

Plants known to be hazardous to man and having pesticidal properties.

Species name	Local/Bangla name	parts used	Nature of poisoning	Organisms affected
<i>Acacia concinna</i> DC.	Ultakata	Fruits	Lethal	Fish
<i>Cnesmone javanica</i> BI.	Gamaiun, Paharia chutra	Leaves	Irritant	Man
<i>Datura stramonium</i> L.	Dutra	Seeds	Lethal	Man
<i>Derris elegans</i> Benth.	Singrilata	Stems	Lethal	Fish
<i>Derris malaccensis</i>	Mellata	Stems	Lethal	Fish
<i>Dillenia scabrella</i> Roxb.	Ekuish	Barks	Irritant	Man
<i>Entada phaseoloides</i> (L.) Merr.	Gila	Barks	Lethal	Fish
<i>Holigrana longifolia</i> Roxb.	jaoa	Barks	Irritant	Man
<i>Laportea crenulata</i> Gaud	Agnichutra	Leaves	Irritant	Man
<i>Mucuna pruriens</i> (L) DC.	Alkushi	Fruit hairs	Irritant	Man
<i>Nerium indicum</i> L.	Karabi	All parts	Lethal	Man
<i>Persicaria hydropiper</i> (L.) Spac.	Pakurmul	Leaves	Irritant	Man, Fish
<i>Schima wallichii</i> Choisy	Bonak	Barks	Irritant	Man
<i>Stuednera colocasioides</i> Hook.f.	Biskachu	All parts	Lethal	Man
<i>Thevetia peruviana</i> (Pers.) K. Schun	Haldekarabi	All parts	Leathal	
<i>Wallichia densiflora</i> Mart.	Bonmukta	Seeds	Irritant	Man

Annexure – 6

List of protected, threatened, game, CITES included animal species in Rema-Kaleng Wildlife Sanctuary

A. List of protected animal species in the Rema-Kalenga Wildlife Sanctuary

Animal Group & Family	Scientific Name	English Name/Local Name
Mammals (5)		
Canidae	<i>Cuon alpinus</i>	Red. Dog. Wild Dog, Dhole/Bonnya Kakur
Cercopithecidae	<i>Macaca mulata</i>	Rhesus Macaque/Banor
Elephantidae	<i>Elephas maximus</i>	Indian Elephant/Hati
Sciuridae	<i>Dremomys lokriah</i>	Orange bellied Squirrel/Kant Birail
Sciuridae	<i>Callosciurus pygerythrus</i>	Irrawaddy Squirrel/Kant Birali
Birds (36)		
Accipitidae	<i>Spilornis cheela</i>	Crested Serpent-Eagle/Eagle
Alcedinidae	<i>Alcedo atthis</i>	Common Kingfisher/Machranga
Alcedinidae	<i>Halcyon smyrnensis</i>	White-throated Kingfisher/Machranga
Apodidae	<i>Cypsiurus parvus</i>	Palm Swift/Ababil
Campephagidae	<i>Pericrocotus cinnamome</i>	Small Minivet
Capitonidae	<i>Megalaima lineata</i>	Lineated Barbet
Columbidae	<i>Columba livia</i>	Rock Pigeon/Jalali Kabutar
Columbidae	<i>Strptoepelia chinensis</i>	Spotted Dove/Tila Ghughu
Columbidae	<i>Strptoepelia orientalis</i>	Rufous Turtle Dove/Ghughu
Columbidae	<i>Streptopelia tranquebaric</i>	Red Collered-Dove/Ghughu
Coraciidae	<i>Coracias bengalensis</i>	Indian Roller/Nilkanta
Corvidae	<i>Corvus macrorhynchos</i>	Large-billed Crow/Dar Kank
Corvidae	<i>Dendrocitta vegabunda</i>	Rufous treepie/Kutum Pakki
Cuculidae	<i>Centropus sinensis</i>	Greater Coucal/Kana Kokkwa
Cuculidae	<i>Rhopodytes tritis</i>	Malkoha
Dicruridae	<i>Dicrurus adsimilis</i>	Black Drongo/Finge
Dicruridae	<i>Dicrurus aeneus</i>	Bronzed Drongo/Finge
Dicruridae	<i>Dicrurus leucophaeus</i>	Ashy Drongo/Finge
Hirundinidae	<i>Hirundo rustica</i>	Barn Swallow/Ababil
Irenidae	<i>Aegithinia tiphia</i>	Common Iora/Ababil
Laridae	<i>Sterna aurantia</i>	River Tern /Gangchil
Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian Pipit/Khonjan
Motacillidae	<i>Motacilla alba</i>	White Wagtail/Khanjan Pokhi
Muscicapidae	<i>Acrocephalus agricola</i>	Paddyfield Warbler
Muscicapidae	<i>Acrocephalus dumetoru</i>	Blyth's Reed Warbler
Muscicapidae	<i>Copsychus saularis</i>	Oriental Magpie-Robin/Duel
Muscicapidae	<i>Orthotomus satorirus</i>	Tailor Bird/Tuntuni
Nectariniidae	<i>Nectarinia zeylonica</i>	Purple-rumped Sunbird/Moutushi
Picidae	<i>Dinopium bengalensis</i>	Woodpecker, Red-backed/Kant Tokra
Psittacidae	<i>Psittacula alexandri</i>	Red-breasted Parakeet/Tia

Pycnonotidae	<i>Pycnonotus cafer</i>	Red-vented Bulbul/Bulbuli
Pycnonotidae	<i>Pycnonotus jocosus</i>	Red-whiskered Bulbul/Bulbuli
Strunidae	<i>Acridontheres fuscus</i>	Jungle Myna/Bhat Shalik
Strunidae	<i>Acridontheres tristis</i>	Common Myna/Bhat Shalik
Strunidae	<i>Sturnus contra</i>	Asian Pied Starling/Go-shalik
Zosteropidae	<i>Zosterops palpebrosa</i>	White Eye, Oriental White-eye
Reptiles	None	
Amphibians	None	

The above list is based on:

Rosario, E. A. 1997b. The Conservation management plan of the protected areas other than those in the Sundarban forests in Bangladesh (Final Report). Annex 1- Appendices & Annex 2 – Maps. GoB/WB Forest Resources Management Project, Technical Assistance Component. Mandala Agricultural Development Corporation, Dhaka, Bangladesh.

B. List of animal species threatened & endangered in the Rema-Kalenga Wildlife Sanctuary

Animal Group & Family	Scientific Name	English Name/Local Name	
Mammals Elephantidae	Elephas maximus	Indian Elephant/Hati	Endangered
Birds	None		
Reptiles	None		
Amphibians	None		

The above list is based on:

Rosario, E. A. 1997b. The Conservation management plan of the protected areas other than those in the Sundarban forests in Bangladesh (Final Report). Annex 1- Appendices & Annex 2 – Maps. GoB/WB Forest Resources Management Project, Technical Assistance Component. Mandala Agricultural Development Corporation, Dhaka, Bangladesh.

C. List of Game Species found in the Rema-Kalenga Wildlife Sanctuary

Animal Group & Family	Scientific Name	English Name/Local Name
Mammals		
Suidae	<i>Sus scrofa</i>	Indian Wild Pig/Shukar
Birds		
Ardeidae	<i>Ardeola grayii</i>	Indian Pond-Heron/Kani Bok
Ardeidae	<i>Bubulcus ibis</i>	Cattle Egret/Gobok
Ardeidae	<i>Egretta garzetta</i>	Little Egret/Bok

Reptiles		
	None	
Amphibians		
Ranidae	<i>Rana limnocharis</i>	Cricket frog/Jhi-jhi Beng

The above list is based on:

Rosario, E. A. 1997b. The Conservation management plan of the protected areas other than those in the Sundarban forests in Bangladesh (Final Report). Annex 1- Appendices & Annex 2 – Maps. GoB/WB Forest Resources Management Project, Technical Assistance Component. Mandala Agricultural Development Corporation, Dhaka, Bangladesh.

D. List of Plant & Animal Species found in the Rema-Kalenga Wildlife Sanctuary included in CITES (schedule I, II, & III)

Animal Group & Family	Scientific Name	English Name/Local Name
Mammals		
Canidae	<i>Caun alpinus</i>	Red-Dog. Wild Dog. Dhole/Bonnya kakur
Cercopithecidae	<i>Macaca mulatta</i>	Rhesus Macaque/Banor
Elephantidae	<i>Elephas maximus</i>	Indian Elephant/Hati
Birds		
Accipitridae	<i>Spilornis cheela</i>	Crested Serpent-Eagle/Eagle
Psittacidae	<i>Psittacula alexandri</i>	Red-breasted Parakeet/Tia
Reptiles		
	None	
Amphibians		
	None	

The above list is based on:

Rosario, E. A. 1997b. The Conservation management plan of the protected areas other than those in the Sundarban forests in Bangladesh (Final Report). Annex 1- Appendices & Annex 2 – Maps. GoB/WB Forest Resources Management Project, Technical Assistance Component. Mandala Agricultural Development Corporation, Dhaka, Bangladesh.

Annexure - 7

List of most abundant and less abundant plant species in Rema-Kalenga WS

(After FRMP 1997).

Trees

Most abundant: *Artocarpus chaplasha*, *Dillenia pentagyna*, *Bursera serrata*, *Castanopsis tribinatus*, *Elaeocarpus floribundaas*, *Garcinia cowa*, *Heterophragma adenophyllum*, *Vitex altissima*, and *Vitex peduncularis*.

Less abundant: *Albizia odoratissimus*, *Bauhinia acuminata*, *Bombax ceiba*, *Callicapra arborea*, and *Dillenia scabrella*.

Shrubs

Most abundant: *Macaranga roxburghii*, *Adhatoda zeylanica*, *Leea crispa*, *Schima wallichii*, *Careya arborea*, *Clerodendrum inerme/Sitka*, *Cordia dichotoma*, *Clerodendrum infortunatum*, *Urena lobata*, and *Dracaena spicata*.

Less abundant: *Eupatorium odoratum*, *Mitragyne parviflora*, and *Xeromphis spinosa*.

Bamboos

Most abundant: *Bambusa polymorpha*, and *Bambusa tulda*.

Less abundant: *Bambusa longispiculata*.

Grasse

Most abundant: *Melocanna baccifera*, *Daemonorops jenkinsiana*, and *Neohouzeana dulloa*.

Less Abundant: *Saccharum spontaneum*, and *Thysanolaena maxima*.

Climbers

Most Abundant: *Piper sylvestre*, *Smilax macrophylla*, *Dioscorea bulbifera*, and *Entada phaseoloides*.

Less Abundant: *Ipomoea manima*, *Mikania scandens*, and *Thunbergia grandiflora*.

Herbs

Most Abundant: *Curculigo orchioides*, *Alpinia nigra*, *Colocasia nymphaefolia*, and *Achyranthes aspera*.

Less Abundant: *Zingiber purpureum*, and *Curcuma aromatica*.

Annexure - 8

List of most abundant and less abundant faunal species in the Rema-Kalenga Wildlife Sanctuary (After FRMP 1997)

Mammals:

Most Abundant: *Muntiacus muntjak*, *Sus scrofa*, *Herpestes auropunctatus*, *Cervus unicolor*, *Hylobates hoolock*, *Lutra lutra*, and *Macaca mulata*.

Less Abundant: *Callosciurus pygerythrus*, *Canis aureus*, and *Herpestes urva*.

Birds:

Most Abundant: *Nectarinia zeylonica*, *Psittacula alexandri*, *Gallus gallus*, *Hypothymis azurea*, *Streptothymis chinensis*, *Dicrurus aeneus*, *Accridotheres fuscus*, *Acridotheres tristis*, *Aegithina tiphia*, and *Alcedo atthis*.

Less Abundant: *Amaurornis phoenicurus*, *Anthracoceros malabaricus*, *Anthus novaeseelandiae*, *Arachnothera langirostris*, and *Ardeola grayii*.

Reptiles:

Most Abundant: *Mabuya carinata*, *Chrysopelea ornate*, *Cuora amboioensis*, and *Gekko gecko*.

Less Abundant: *Lissemys punctata*, *Rhabdophis subminiata*, and *Varanus bengalensis*.

Amphibians:

Most Abundant: *Bufo melanostictus*, and *Rana cyanophlyctis*.

Less Abundant: *Rana tigrina*, and *Dicaeum cruentatum*.