



STATUS OF MEDICINAL PLANTS IN MPCAS AND ADJOINING AREAS IN TERAJ-DUARS REGION OF WEST BENGAL, INDIA

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Abstract

Terai-Duars belt is covered by the IUCN recognised Himalaya Hotspot for biodiversity conservation and is rich in medicinally important herbs, shrubs and trees. The area is home to numerous rare and threatened species also. The present investigation recorded occurrence of 397 species of medicinally important plants belonging to 283 genera and 96 families, including 9 spp. of pteridophytes. Most of the recorded plants were herbs and found to be used medicinally and few for their aromatic property. Of these, 38 species were recognized as threatened ones. Comparison with previous report nicely showed fruitfulness of establishing the MPCAs to conserve threatened medicinal and accompanying non-medicinal plants those required conservational attention. It also suggests proper conservation strategies to protect this important green wealth of the country.

Key words: Medicinal Plants, Terai, Duars, Conservation, MPCAs.

Introduction

Terai–Duars region of West Bengal is lying at the feet of Eastern Himalaya and extended from Nepal to Assam. Entire Siliguri sub-division, southern and lower part of Kurseong sub-division of Darjeeling district and a small part of Jalpaiguri district lying west to the river Tista is known as Terai whereas the eastern part of Tista composed of remaining portion of Jalpaiguri and entire Alipurduar District is known as Duars [= Dooars]. The entire belt is covered with dense forests and being contiguous with the Eastern Himalaya, it is quite rich and diverse in floral components and is also diverse in habitat structure and forms of vegetation. Not only that, Terai-Duars belt is also covered by the IUCN recognised Himalaya Hotspot for biodiversity conservation (Conservation International 2005) and is home to numerous rare and threatened species of plants (Das 1996; Kadir 2001; Das *et al.*, 2003; Rai & Das 2008; Kadir & Das 2007; Shukla *et al.*, 2014; Sarkar & Das 2015, 2017). Mixed-deciduous forests comprise the major forest type of this area and other prominent types of forests are riverine scrubs and forests, herblands,

shrubby-scrubs, savannah type tall grasslands etc. (Mukerjee 1965; Sikdar 1984; Mohanta 2004; Das *et al.*, 2010; Sarkar & Das 2017). But, in recent decades, plantations (monoculture and mixed plantation of both native and exotic species) occupied wide area of Terai-Duars belt.

This Sub-Himalayan belt support excellent Savannah type of tall and very dense grasslands, which provide shelter to extremely high population of big animals like elephant, rhino, bison, different type of deer, leopard, royal bengal tiger, etc. To protect the rich diversity of plants and animals a number of Protected Areas, like three National Parks [Gorumara NP, Buxa NP and Jaldapara NP]; three Wildlife Sanctuaries [Mahananda WLS, Chapramari WLS and Buxa WLS]; one Reserve Forest [Buxa Tiger Reserve] have been developed in this zone (Anonymous 1997; http://wiienviis.nic.in/Database/WestBengal_7842.aspx). Forest and vegetations of this areas harbour a wide variety of useful and medicinal plants also (Biswas & Chopra 1940, 1956; Yonzon *et al.*, 1984; Ghosh *et al.*, 2020).

Previously, up to the end of 19th century, the entire Terai–Duars region was covered mostly with thick and

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dense forests. But, with the explosion of human population, rapid extension of settlement areas, construction of roads and rail-tracks, over exploitation and damages to the natural habitat, initiation and expansion of tea and tree plantations, forests and vegetation of this region are being degraded seriously. Not only that the collection of wide variety of medicinal and aromatic plants from different vegetation of this area, which was in practice since long, became excessive and limitless, and without effective control over such exploitation (Das *et al.*, 2010; Saha & Das 2013). As a result the habitat and population of medicinal and other useful plants are rapidly shrinking. Along with this situation, recent realization of the benefits of herbal medicines over synthetic drugs made the concerned authorities to think about the conservation of the rapidly declining natural resource.

Foundation for Revitalisation of Local Health Traditions (FRLHT), Bangalore took the leading role in collaboration with different state Forest Department, Universities, NGOs, scientists etc. and has recognised a number of Medicinal Plants Conservation Areas (MPCAs) in Terai and Duars region of West Bengal. These are Rajavatkhaoa MPCA in Buxa Tiger Reserve (NRVK – 8; NRVK – 9; 400 hectares); Sursuti, Lataguri MPCA near Gorumara National Park (Sursuti – 4; 100 hectares) and North Sevoke MPCA in Mahananda Wildlife Sanctuary (100 hectares).

A meeting of FRLHT with the West Bengal State Forest Department, Universities, NGOs and other scientists held at Kolkata in December 2007, not only recognized a number of Medicinal Plants Conservation Areas (MPCAs) in West Bengal but also enlisted 46 species of threatened medicinal plants expected to occur in those MPCAs.

Though these three MPCAs were established in 2007 and Das *et al.*, (2010) published a list of plant resources and their distribution pattern in these conservation sites, till date, no detailed data is available on these specially protected areas. So, the present study was designed to record and understand the present status of medicinally important species from these MPCAs, including their distribution, uses, population structure, etc. The newly generated data is expected to be important and significant for framing their conservation strategies.

Study Area

Geographically Terai - Duars region is located between 26°16'00" N to 27°00'00" N Latitudes and 87°59'30" E to 89°53'00" E Longitudes and covers Jalpaiguri and Alipurduar districts and also Siliguri sub-division and southern part of Kurseong sub-division of

Darjeeling district. The topography of Terai region is uneven and the altitude ranges from 62 to 350 m amsl. whereas for Duars it ranges from 90 to 1750 m amsl. The entire belt is criss-crossed by numerous glacier- and/or rain-fed Himalayan rivers, rivulets and streams. Main rivers of Terai are Mahananda, Balason and Mechi. In Duars, Tista is the major river and other important rivers of this region include Torsa, Jaldhaka, Diana, Karatoya, Raidak, Kaljani etc. Soil of this Sub-Himalayan belt consists of almost horizontal layers of unconsolidated sand, silt, pebbles and gravels (Ghosh 2006) and Jana (1997) described it as alternating beds of sand of different sizes, gravels and boulders. Soil is highly porous, deep, light-textured, with moderate organic matter and low in phosphate, potassium, and micronutrient contents (Bhattacharjee 2001; Ghosh *et al.*, 2020). The climate of Terai-Dooars belt is more or less similar to that of the remaining districts of North Bengal and mostly of humid subtropical type. Due to its proximity to the high Himalayan hills, it faces longer winter and receives heavier precipitation.

Due to the variation in altitudinal range, Terai–Duars region experiences spatial alteration in temperature. The average monthly maximum temperature varies between 23°C – 32°C in January and September, respectively, whereas the average monthly minimum temperature ranges from 10°C in January to 24.6°C in September. The area also receives 476.3 cm of average annual precipitation. This high rainfall is restricted within a period of 103 to 110 days during monsoon and experiences a high relative humidity (Sarkar 2011).

Widely diverse floristic components of this belt are greatly influenced by the Himalayan elements. The vegetation in this region is mainly of (i) Tropical plains vegetation, and (ii) Subtropical vegetation. Tropical plains vegetation is influenced by high temperature and heavy rainfall and is extended from plains to 800 m amsl. These forests are mostly dominated by *Shorea robusta*, a tall deciduous tree. On the basis of composition and distribution of the major floristic elements Sikdar (1984) recognised following five types of vegetation in Duars: (i) Semi-Evergreen Forest, (ii) Moist Deciduous Forest, (iii) Dry Deciduous Forest, (iv) Sal Forest and (v) Grasslands.

Three MPCAs of this region covered during the present study include: (i) Rajabhatkhaoa (NRVK), (ii) Sursuti-Lataguri (SL) and (iii) Northe Sevoke (NS) protected forest areas.

Materials and Methods

A combination of different methods was followed

for the present study. Intensive random sampling for the preparation of detailed medicinal flora of these three MPCAs was performed during 2008 - 2009 (Das *et al.*, 2010) and to evaluate their present status different sites were revisited and surveyed during 2017 - 2018. For the preparation of medicinal flora, plant materials were collected randomly from all the places covering different types of habitat in different seasons of the year, with major stress for the postmonsoon vegetation. For understanding their population structure and phytosociological relationships three tier nested quadrates were laid. Importance Value Index (IVI) were determined following Misra (1966), Das & Lahiri (1997), Ghosh (2006), Das *et al.*, (2010) and Moktan & Das (2014). Importance Value Index (IVI) of recorded threatened medicinal plants (out of the 46 species recognized in the year 2007) have been represented in Annexure II.

Voucher specimens were collected and processed into mounted herbarium sheets following standard herbarium techniques (Jain & Rao 1977; Das 2018) and were identified using available literature (Prain 1903; Hara 1966, 1971; Hooker 1872 – 1897; Ohashi 1975; Hara *et al.*, 1978, 1982; Hara & Williams 1979; Grierson & Long 1983, 1984, 1987, 1991, 1999, 2001; Noltie 1994, 2000; Pearce & Cribb 2002). Identified specimens were finally matched at CAL for confirmation. For updated nomenclature and the family delimitation www.theplantlist.org and www.ipni.org has been consulted for all the species. Medicinal and aromatic nature of the recorded medicinal plants have been recognised using a number of references including Kirtikar & Basu (1935), Biswas & Chopra (1956), Chopra *et al.*, (1956), Gurung (2002), Das & Mandal (2003) and Khare (2004). Ethnomedicinal plants were also recorded during the present survey in addition to established medicinal plants of both domestic and commercial uses.

Results and Discussion

From the present survey in three MPCAs of North Bengal, a total of 397 species of medicinally important plants belonging to 283 genera and 96 families table 1 has been recognised. List of the recorded plants along with their local names, uses, occurrences and habit is presented in Annexure I. The recorded medicinal flora also includes 9 species of pteridophytes covering 9 genera

Table 1: Numerical distribution of the recorded medicinal plants into different major taxa.

	Dicots	Monocots	Ferns	Total
Family	70	18	8	96
Genus	229	45	9	283
Species	326	62	9	397

and 8 families table 1.

Herb formed the most predominant habit-group among the recorded medicinal species [140 spp.] and was followed by 103 spp. of trees, 80 spp. of shrubs and 75 spp. of climbers. Among the dicotyledonous families, Leguminosae was represented by 38 species, followed by Compositae [20 spp.], Lamiaceae, Phyllanthaceae, and Malvaceae [15 spp. each], Rubiaceae and Apocynaceae [14 spp.], Euphorbiaceae [12 spp.], Rutaceae [11 spp.], Cucurbitaceae [10 spp.], etc. On the other hand, among the monocotyledons, Zingiberaceae and Araceae were recorded for the highest representation of 10 species each, followed by Poaceae [9 spp.], Dioscoreaceae [7 spp.], Orchidaceae [5 spp.], Commelinaceae [4 spp.], etc.

Out of the recorded species, 379 are used as medicines, 15 species are with aromatic properties and 03 species are with both medicinal and aromatic properties. As much as 279 species were recorded from all the three MPCAs [NRVK, SL, NS], 45 species from NRVK and SL, 23 species from only NRVK, 20 species from only NS, 19 species from SL, only 07 species from SL and NS MPCAs and only 05 species from NRVK and NS MPCAs. This information is important for framing appropriate conservation strategies for all these plants.

Earlier, 25 species out of the 46 species of different threatened categories enlisted in 2007 were recorded from these three MPCAs of North Bengal (Das *et al.*, 2010). Whereas the present survey recorded 38 species of those medicinal plants which are under different category of threats and are presented in Annexure II along with their IVI score in different seasons and sites as well as the score of dominant species in the respective site and the season. Out of 38 threatened species 27 were recorded through the quadrat sampling within the MPCAs and remaining 11 species were recorded through random sampling only. About 8 species of different threatened categories were recorded having very rare occurrence in the MPCAs. They were spotted only in one or two sites and seasons and also having quite less IVI scores. These include *Asparagus racemosus*, *Gloriosa superba*, *Codariocalyx motorius*, *Mucuna pruriens*, *Rauwolfia serpentina* etc. Obviously, it indicates the higher degree of threats mainly due to excessive and uncontrolled collection of these plants.

However, a previous study recognized 41 rare, endemic and threatened species from the Terai-Duars region (Biswas 2017). Again the high rate of exploitation and loss of their natural habitat were claimed as the major threat (Das *et al.*, 2010; Biswas 2017). Regarding the

APPENDIX-I

List of medicinal and aromatic plants recorded from three MPCAs and adjoining areas in Terai and Duars of West Bengal along with their distribution

[Abbreviations used: **Habit:** CL = Climber; H = Herb; S = Shrub; T = Tree. **MPCA:** L = Sursuti-Lataguri (SL); R = Rajabhatkhaola (NRVK); S = Northe Sevoke (NS). **Uses:** A = Aromatic; M = Medicinal]

Sl. No.	Plants [Families]	Local Name	Habit	MPCA	Used as
1	<i>Abelmoschus moschatus</i> Medik. [Malvaceae]	Latakasturi	S	R/L	A
2	<i>Abroma augusta</i> (L.) L.f. [Malvaceae]	Ulat kambal	S	L	M
3	<i>Abrus precatorius</i> L. [Leguminosae]	Sada Kunch	CL	R/L	M
4	<i>Abrus pulchellus</i> Thwaites [Leguminosae]	Badami Kunch	CL	R/L/S	M
5	<i>Abutilon indicum</i> (L.) Sweet [Malvaceae]	Petari	S	R/L/S	M
6	<i>Acacia catechu</i> (L.f.) Willd. [Leguminosae]	Khayer	T	R/L/S	M
7	<i>Acacia pennata</i> (L.) Willd [Leguminosae]	Aarare kanta	CL	R/L/S	M
8	<i>Acalypha indica</i> L. [Euphorbiaceae]	Muktajhuri	H	R/L/S	M
9	<i>Achyranthes aspera</i> L. [Amaranthaceae]	Apang	H	R	M
10	<i>Achyranthes bidentata</i> Blume [Amaranthaceae]	Apang, Ankhlay jhar	H	R/L/S	M
11	<i>Acmella uliginosa</i> (Sw.) Cass. [Compositae]	Pirazh	H	R/L/S	M
12	<i>Acmella calva</i> (DC.) R.K.Jansen [Compositae]	Kalijhar	H	R/L/S	M
13	<i>Acorus calamus</i> L. [Acoraceae]	Boch	H	R/L	M
14	<i>Actinodaphne obovata</i> (Nees) Blume [Lauraceae]	Bijolgota	T	R/L/S	M
15	<i>Aerva sanguinolenta</i> (L.)Blume [Amaranthaceae]	Lopang	H	R/L/S	M
16	<i>Aesculus assamica</i> Griff. [Sapindaceae]	Satpate, eksira	T	R/L	M
17	<i>Ageratina adenophora</i> (Spreng.) R.M.King & H.Rob. [Compositae]	Kalo Banmara	S	S	M
18	<i>Ageratum conyzoides</i> (L.) L. [Compositae]	Elame jhar	H	R/L/S	M
19	<i>Albizia chinensis</i> (Osbeck) Merr. [Leguminosae]	Kalo Siris	T	R/L/S	M
20	<i>Albizia lebbek</i> (L.) Benth. [Leguminosae]	Siris	T	R	M
21	<i>Albizia procera</i> (Roxb.) Benth. [Leguminosae]	—	T	L	M
22	<i>Alocasia fallax</i> Schott [Araceae]	Kala kochu, kalkochu	H	R/L/S	M
23	<i>Alpinia calcarata</i> (Haw.) Roscoe [Zingiberaceae]	—	S	L	M
24	<i>Alpinia nigra</i> (Gaertn.) Burt [Zingiberaceae]	Purundi	S	R/L	M
25	<i>Alstonia scholaris</i> (L.) R.Br. [Apocynaceae]	Chhatim, Chatiyani	T	R/L/S	M
26	<i>Alternanthera paronychioides</i> A.St.-Hil. [Amaranthaceae]	—	H	R/L/S	M
27	<i>Alternanthera sessilis</i> (L.) R.Br. ex DC. [Amaranthaceae]	Nunia Saag	H	R/L/S	M
28	<i>Amaranthus spinosus</i> L. [Amaranthaceae]	Kanta notey	H	R/L/S	M
29	<i>Amaranthus viridis</i> L. [Amaranthaceae]	Bon notey	H	R/L/S	M
30	<i>Amischotolype hookeri</i> (Hassk.) H.Hara [Commelinaceae]	—	H	R/L/S	M
31	<i>Amorphophallus napalensis</i> (Wall.) Bogner & Mayo [Araceae]	Bon Ol, Jungli ol	H	R/L/S	M
32	<i>Ampelocissus barbata</i> (Wall.) Planch. [Vitaceae]	Jangli angur	CL	R/L/S	M
33	<i>Angiopteris evecta</i> (G. Forst.) Hoffm. [Marattiaceae]	—	H	L	M
34	<i>Anisomeles indica</i> (L.) Kuntze [Lamiaceae]	Kukursunga, gopali	H	R/L/S	A
35	<i>Annona reticulata</i> L. [Annonaceae]	Nona	T	R	M
36	<i>Antidesma acidum</i> Retz. [Phyllanthaceae]	Archal	T	R/L/S	M
37	<i>Antidesma bunius</i> (L.) Spreng. [Phyllanthaceae]	Archal	T	R/L	M
38	<i>Antidesma montanum</i> Blume [Phyllanthaceae]	Archal	T	R/L	M
39	<i>Aphanamixis polystachya</i> (Wall.) R. Parker [Meliaceae]	Rasune lali	T	R/L/S	M
40	<i>Ardisia solanacea</i> (Poir.) Roxb. [Primulaceae]	Marlberry	S	L	M
41	<i>Argemone mexicana</i> L. [Papaveraceae]	Siyalkanta	H	R/L/S	M
42	<i>Argyreia roxburghii</i> (Wall.) Arn. ex Choisy [Convolvulaceae]	—	CL	R/L/S	M
43	<i>Aristolochia indica</i> L. [Aristolochiaceae]	Iswarmul	CL	R/L	M

Table Continued.....

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44	<i>Aristolochia saccata</i> Wall. [Aristolochiaceae]	—	CL	R/L/S	M
45	<i>Aristolochia tagala</i> Cham. [Aristolochiaceae]	<i>Kiramar</i>	CL	L	M
46	<i>Artemisia indica</i> Willd. [Compositae]	<i>Titeypati</i>	S	S	M
47	<i>Artocarpus chama</i> Buch.-Ham. [Moraceae]	<i>Lator, Lathar, Chaplash</i>	T	R/L/S	M
48	<i>Asparagus officinalis</i> L. [Asparagaceae]	<i>Asparagus</i>	CL	R/L/S	M
49	<i>Asparagus racemosus</i> Willd. [Asparagaceae]	<i>Satabari, Satamuli</i>	H	R/L	M
50	<i>Baccaurea ramiflora</i> Lour. [Euphorbiaceae]	<i>Latka, kusum</i>	T	R/L/S	M
51	<i>Bacopa monnieri</i> (L.) Wettst. [Plantaginaceae]	<i>Bramhi</i>	H	R	M
52	<i>Barleria cristata</i> L. [Acanthaceae]	<i>Sada Jati</i>	S	R/L/S	M
53	<i>Barleria strigosa</i> Willd. [Acanthaceae]	<i>Nil Jati</i>	S	R/L/S	M
54	<i>Bauhinia malabarica</i> Roxb. [Leguminosae]	<i>Kanchan</i>	T	R/L	M
55	<i>Bauhinia purpurea</i> L. [Leguminosae]	<i>Rakta kanchan</i>	T	R/L/S	M
56	<i>Bauhinia vahlii</i> Wight & Arn. [Leguminosae]	<i>Valla</i>	CL	R/L/S	M
57	<i>Bauhinia variegata</i> L. [Leguminosae]	<i>Swet kanchan</i>	T	R/L/S	M
58	<i>Bidens pilosa</i> L. [Compositae]	<i>Kuro</i>	H	R/L/S	M
59	<i>Biophytum reinwardtii</i> (Zucc.) Klotzsch [Oxalidaceae]	<i>Rani lajjabati</i>	H	R/L/S	M
60	<i>Biophytum sensitivum</i> (L.) DC. [Oxalidaceae]	<i>Rani Lajjabati</i>	H	R/L/S	M
61	<i>Bischofia javanica</i> Blume [Phyllanthaceae]	<i>Kainjal</i>	T	R/L/S	M
62	<i>Boerhavia diffusa</i> L. [Nyctaginaceae]	<i>Punarnava</i>	H	R/L/S	M
63	<i>Bombax ceiba</i> L. [Malvaceae]	<i>Simul</i>	T	R/L/S	M
64	<i>Bridelia retusa</i> (L.) A.Juss. [Phyllanthaceae]	<i>Datan, Gayo</i>	T	R/L/S	M
65	<i>Bridelia sikkimensis</i> Gehrm. [Phyllanthaceae]	<i>Kasai Datan</i>	CL	R/L/S	M
66	<i>Bridelia tomentosa</i> Blume [Phyllanthaceae]	<i>Kasai Datan</i>	CL	S	M
67	<i>Buddleja asiatica</i> Lour. [Scrophulariaceae]	<i>Bhimsen pati</i>	S	S	M
68	<i>Bulbophyllum careyanum</i> (Hook.) Spreng. [Orchidaceae]	—	H	R/L/S	M
69	<i>Butea monosperma</i> (Lam.) Taub. [Leguminosae]	<i>Palas</i>	T	R/L/S	M
70	<i>Caesalpinia cucullata</i> Roxb. [Leguminosae]	<i>Ultey kate</i>	CL	R/L/S	M
71	<i>Caesalpinia bonduc</i> (L.) Roxb. [Leguminosae]	<i>Nata</i>	S	R/L	M
72	<i>Caesalpinia pulcherrima</i> (L.) Sw. [Leguminosae]	<i>Krishnachurha</i>	S	R/L/S	M
73	<i>Cajanus cajan</i> (L.) Millsp. [Leguminosae]	<i>Arhar</i>	S	R/L/S	M
74	<i>Callicarpa arborea</i> Roxb. [Lamiaceae]	<i>Gwelo</i>	T	R/L/S	M
75	<i>Calotropis gigantea</i> (L.) Dryand. [Apocynaceae]	<i>Akanda</i>	S	R/L/S	M
76	<i>Canna indica</i> L. [Cannaceae]	<i>Sarba jaya</i>	H	R/L	M
77	<i>Cannabis sativa</i> L. [Cannabaceae]	<i>Vang</i>	S	R	M
78	<i>Careya arborea</i> Roxb. [Lecythidaceae]	<i>Kumbhi</i>	T	R/L/S	M
79	<i>Caryota urens</i> L. [Arecaceae]	<i>Rambhang</i>	T	R/L/S	M
80	<i>Cassia fistula</i> L. [Leguminosae]	<i>Bandarlathhi</i>	T	R/L/S	M
81	<i>Ceiba pentandra</i> (L.) Gaertn. [Malvaceae]	<i>Sewt Simul</i>	T	R/L	M
82	<i>Celastrus paniculatus</i> Willd. [Celastraceae]	<i>Malkaguni</i>	CL	R/L/S	M
83	<i>Centella asiatica</i> (L.) Urb. [Apiaceae]	<i>Thankuni, manimuni</i>	H	R/L/S	M
84	<i>Cheilocostus speciosus</i> (J.Koenig) C.D.Specht [Costaceae]	<i>Kemuk, betlahara</i>	H	R/L/S	M
85	<i>Chenopodium album</i> L. [Amaranthaceae]	<i>Bhetua</i>	H	R/L/S	M
86	<i>Chlorophytum arundinaceum</i> Baker [Asparagaceae]	<i>Makai phul</i>	H	S	M
87	<i>Chromolaena odorata</i> (L.) R.M.King & H.Rob. [Compositae]	<i>Bonmara</i>	S	R/L/S	M
88	<i>Chukrasia tabularis</i> A.Juss. [Meliaceae]	<i>Chikrasi</i>	T	R/L/S	M
89	<i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet [Lauraceae]	<i>Sin Kaule, Janglee tejpat,</i>	T	R/L/S	M
90	<i>Cinnamomum glaucescens</i> (Nees) Hand.-Mazz. [Lauraceae]	<i>Malagiri</i>	T	R/L	M
91	<i>Cissampelos pareira</i> L. [Menispermaceae]	<i>Batulepati</i>	CL	R/L/S	M
92	<i>Cissus adnata</i> Roxb. [Vitaceae]	—	CL	R/L/S	M
93	<i>Citrus medica</i> L. [Rutaceae]	<i>Nebu, lebu</i>	S	R/L/S	M

Table Continued.....

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94	<i>Clausena excavata</i> Burm.f. [Rutaceae]	<i>Junglee Karipata</i>	S	R/L	A
95	<i>Cleome rutidosperma</i> DC. [Cleomaceae]	<i>Torel</i>	H	L	M
96	<i>Cleome viscosa</i> L. [Cleomaceae]	<i>Hurhure</i>	H	R/L	M
97	<i>Clerodendrum indicum</i> (L.) Kuntze [Lamiaceae]	<i>Bamunhati</i>	S	R/L/S	M
98	<i>Clerodendrum infortunatum</i> L. [Lamiaceae]	<i>Bhant, Ghentu</i>	S	R/L/S	M
99	<i>Coccinia grandis</i> (L.) Voigt [Cucurbitaceae]	<i>Talakucha</i>	CL	R/L/S	M
100	<i>Cocculus laurifolius</i> DC. [Menispermaceae]	<i>Daigachh</i>	CL	R/L/S	M
101	<i>Codariocalyx motorius</i> (Houtt.) H.Ohashi [Leguminosae]	<i>Ban Chandal</i>	S	R	M
102	<i>Coelogyne fuscescens</i> Lindl. [Orchidaceae]	<i>Sunakhari</i>	H	S	M
103	<i>Coffea benghalensis</i> B.Heyne ex Schult. [Rubiaceae]	<i>Chaitiful</i>	S	R/L/S	M
104	<i>Colocasia affinis</i> Schott [Araceae]	—	H	R/L	M
105	<i>Colocasia esculenta</i> (L.) Schott [Araceae]	<i>Maankachu</i>	H	R/L/S	M
106	<i>Combretum decandrum</i> Jacq. [Combretaceae]	<i>Kali lahara</i>	CL	R/L/S	M
107	<i>Commelina suffruticosa</i> Blume [Commelinaceae]	<i>Kane jhar</i>	H	R/L/S	M
108	<i>Commelina benghalensis</i> L. [Commelinaceae]	<i>Kane jhar</i>	H	L	M
109	<i>Crateva religiosa</i> G.Forst. [Capparaceae]	<i>Chiple, Barun</i>	T	R/L/S	M
110	<i>Crinum amoenum</i> Ker Gawl. ex Roxb. [Amaryllidaceae]	<i>Nagdan</i>	H	R/L/S	M
111	<i>Crotalaria alata</i> D.Don [Leguminosae]	<i>Atasi</i>	S	R/L/S	M
112	<i>Crotalaria retusa</i> L. [Leguminosae]	<i>Atasi</i>	S	S	M
113	<i>Croton bonplandianus</i> Baill. [Euphorbiaceae]	<i>Chur-churi</i>	H	R/L/S	M
114	<i>Croton caudatus</i> Geiseler [Euphorbiaceae]	<i>Khas-khasi</i>	S	R/L/S	M
115	<i>Cryptolepis dubia</i> (Burm.f.) M.R.Almeida [Apocynaceae]	<i>Kangrashringi</i>	CL	R/L/S	M
116	<i>Cryptolepis sinensis</i> (Lour.) Merr. [Apocynaceae]	<i>Kankrashringi</i>	CL	R/L/S	M
117	<i>Curculigo orchioides</i> Gaertn. [Hypoxidaceae]	<i>Talmuli</i>	H	R/L/S	M
118	<i>Curcuma amada</i> Roxb. [Zingiberaceae]	<i>Amm aada</i>	H	R/L/S	M
119	<i>Curcuma aromatica</i> Salisb. [Zingiberaceae]	<i>Jangli halud</i>	H	S	M, A
120	<i>Curcuma caesia</i> Roxb. [Zingiberaceae]	<i>Kala Haldi</i>	H	R/L/S	M
121	<i>Curcuma zedoaria</i> (Christm.) Roscoe [Zingiberaceae]	<i>Kala haldi</i>	H	R/L/S	M
122	<i>Cuscuta reflexa</i> Roxb. [Convolvulaceae]	<i>Swarnalata</i>	H	L/S	M
123	<i>Cyanotis axillaris</i> (L.) D.Don ex Sweet [Commelinaceae]	—	H	R/L/S	M
124	<i>Cyanthillium cinereum</i> (L.) H.Rob. [Compositae]	<i>Sahadebi</i>	H	R/L/S	M
125	<i>Cymbidium aloifolium</i> (L.) Sw. [Orchidaceae]	<i>Pargacha</i>	H	R/L/S	M
126	<i>Cymbopogon jwarancusa</i> (Jones) Schult. [Poaceae]	<i>Nebughas</i>	H	R	M
127	<i>Cynodon dactylon</i> (L.) Pers. [Poaceae]	<i>Durba, Dubo</i>	H	R/L/S	M
128	<i>Cyperus rotundus</i> L. [Cyperaceae]	<i>Mutha ghas</i>	H	R/L/S	M
129	<i>Dactyloctenium aegyptium</i> (L.) Willd. [Poaceae]	—	H	R	M
130	<i>Dalbergia pinnata</i> (Lour.) Prain [Leguminosae]	<i>Sisoo</i>	CL	R/L/S	M
131	<i>Dalbergia stipulacea</i> Roxb. [Leguminosae]	<i>Latasiris, Lahara Sirish</i>	CL	R/L/S	M
132	<i>Datura metel</i> L. [Solanaceae]	<i>Dhatura</i>	S	R	M
133	<i>Datura stramonium</i> L. [Solanaceae]	<i>Sada-dhutra</i>	S	R	M
134	<i>Deeringia amaranthoides</i> (Lam.) Merr [Amaranthaceae]	<i>Chhorachhuri Saag</i>	H	R/L/S	M
135	<i>Dendrobium anceps</i> Sw. [Orchidaceae]	<i>Pargacha</i>	H	R/L/S	M
136	<i>Dendrobium sulcatum</i> Lindl. [Orchidaceae]	<i>Pargacha</i>	H	R/L/S	M
137	<i>Dentella repens</i> (L.) J.R.Forst. & G.Forst. [Rubiaceae]	—	H	R/L/S	M
138	<i>Desmodium gangeticum</i> (L.) DC. [Leguminosae]	<i>Salparni</i>	H	R/L	M
139	<i>Dicliptera bupleuroides</i> Nees [Acanthaceae]		H	R/L/S	M
140	<i>Dillenia indica</i> L. [Dilleniaceae]	<i>Chalta, Panchphol</i>	T	R/L/S	M
141	<i>Dillenia pentagyna</i> Roxb. [Dilleniaceae]	<i>Tartari</i>	T	R/L	M
142	<i>Dioscorea alata</i> L. [Dioscoreaceae]	<i>Kham alu</i>	CL	R/L/S	M
143	<i>Dioscorea belophylla</i> (Prain) Voigt ex Haines [Dioscoreaceae]	<i>Ban Tarul</i>	CL	R/L/S	M

Table Continued.....

Table Continued.....

144	<i>Dioscorea bulbifera</i> L. [Dioscoreaceae]	<i>Gittha Tarul</i>	CL	R/L/S	M
145	<i>Dioscorea deltoidea</i> Wall. ex Griseb. [Dioscoreaceae]	<i>Bhyakur</i>	CL	R/L/S	M
146	<i>Dioscorea hispida</i> Dennst. [Dioscoreaceae]	<i>Punglung</i>	CL	R/L/S	M
147	<i>Dioscorea pentaphylla</i> L. [Dioscoreaceae]	<i>Kanta alu, Ban Tarul, Bhegur</i>	CL	R/L/S	M
148	<i>Dioscorea prazeri</i> Prain & Burkill [Dioscoreaceae]	<i>Kukur tarul</i>	CL	R/L/S	M
149	<i>Diplazium esculentum</i> (Retz.) Sw. [Athyriaceae]	<i>Dhekia saag</i>	H	R/L/S	M
150	<i>Diplocyclos palmatus</i> (L.) C. Jeffrey [Cucurbitaceae]	<i>Bon Kakra</i>	CL	R/L	M
151	<i>Dipterocarpus turbinatus</i> C.F. Gaertn [Dipterocarpaceae]	<i>Garjan</i>	T	R	M
152	<i>Dischidia bengalensis</i> Colebr. [Apocynaceae]	—	CL	L	M
153	<i>Dregea volubilis</i> (L.f.) Benth. ex Hook.f. [Apocynaceae]	<i>Chhint</i>	CL	R/L/S	M
154	<i>Drosera burmanni</i> Vahl [Droseraceae]	<i>Surjasisir</i>	H	R/L/S	M
155	<i>Drymaria cordata</i> (L.) Willd. ex Schult. [Caryophyllaceae]	<i>Avijal</i>	H	S	M
156	<i>Drynaria quercifolia</i> (L.) J. Sm. [Polypodiaceae]	<i>Porgacha</i>	H	R/L/S	M
157	<i>Duabanga grandiflora</i> (DC.) Walp. [Lythraceae]	<i>Lampate</i>	T	S	M
158	<i>Dysoxylum excelsum</i> Blume [Meliaceae]	<i>Gandha Lahasune</i>	T	R/L/S	M
159	<i>Dysoxylum mollissimum</i> Blume [Meliaceae]	<i>Chhalegach</i>	T	L	M
160	<i>Echinochloa crus-galli</i> (L.) P. Beauv. [Poaceae]	<i>Sama</i>	H	R/L/S	M
161	<i>Eclipta prostrata</i> (L.) L. [Compositae]	<i>Keshut</i>	H	R/L/S	M
162	<i>Elaeocarpus floribundus</i> Blume [Elaeocarpaceae]	<i>Jalpai</i>	T	R	M
163	<i>Elephantopus scaber</i> L. [Compositae]	<i>Gajjalata Deshigajban</i>	H	R/L/S	M
164	<i>Eleusine indica</i> (L.) Gaertn. [Poaceae]	<i>Kodho jhar</i>	H	R/L/S	M
165	<i>Emilia sonchifolia</i> (L.) DC. ex DC. [Compositae]	—	H	R/L/S	M
166	<i>Entada rheedii</i> Spreng. [Leguminosae]	<i>Gila</i>	CL	R/L	M
167	<i>Enydra fluctuans</i> DC. [Compositae]	<i>Helencha</i>	H	L	M
168	<i>Equisetum diffusum</i> D. Don [Equisetaceae]	<i>Kurkure Jhar</i>	H	S	M
169	<i>Erigeron canadensis</i> L. [Compositae]	—	H	R/L/S	M
170	<i>Erythrina stricta</i> Roxb. [Leguminosae]	<i>Madar</i>	T	R/L/S	M
171	<i>Euphorbia heyneana</i> Spreng. [Euphorbiaceae]	—	S	R/L	M
172	<i>Euphorbia hirta</i> L. [Euphorbiaceae]	<i>Pusidudh</i>	H	R	M
173	<i>Euphorbia hypericifolia</i> L. [Euphorbiaceae]	—	H	R/L	M
174	<i>Evolvulus nummularius</i> (L.) L. [Convolvulaceae]	—	H	R/L/S	M
175	<i>Ficus benghalensis</i> L. [Moraceae]	<i>Bot, Bor</i>	T	R/S	M
176	<i>Ficus hispida</i> L.f. [Moraceae]	<i>Kak Dumur, Koksa</i>	T	R/L/S	M
177	<i>Ficus racemosa</i> L. [Moraceae]	<i>Dumri</i>	T	R	M
178	<i>Ficus religiosa</i> L. [Moraceae]	<i>Ashathwa</i>	T	R/L/S	M
179	<i>Ficus semicordata</i> Buch.-Ham. ex Sm. [Moraceae]	<i>Khaniun</i>	T	R/L/S	M
180	<i>Firmiana colorata</i> (Roxb.) R.Br. [Malvaceae]	<i>Seto odal</i>	T	L	M
181	<i>Flacourtia jangomas</i> (Lour.) Raeusch. [Salicaceae]	<i>Panial</i>	T	R/L/S	M
182	<i>Flemingia strobilifera</i> (L.) W.T. Aiton [Leguminosae]	<i>Ghora chabuk</i>	S	R/L/S	M
183	<i>Flueggea virosa</i> (Roxb. ex Willd.) Royle [Phyllanthaceae]	<i>Darim pate</i>	T	R/L/S	M
184	<i>Garuga floribunda</i> Decne. [Burseraceae]	<i>Dobdabe</i>	T	R/L/S	M
185	<i>Girardinia diversifolia</i> (Link) Friis [Urticaceae]	<i>Bhyangrey Shishnu</i>	S	R/L/S	M
186	<i>Glinus oppositifolius</i> (L.) Aug. DC. [Molluginaceae]	<i>Gima Saag</i>	H	R/L/S	M
187	<i>Gloriosa superba</i> L. [Colchicaceae]	<i>Ulatchandal</i>	H	L/S	M
188	<i>Glycosmis cyanocarpa</i> var. <i>cymosa</i> Kurz [Rutaceae]	<i>Ban jamir, Ashseora</i>	S	L	M
189	<i>Glycosmis pentaphylla</i> (Retz.) DC. [Rutaceae]	<i>Ban jamir, Ashseora</i>	S	R/L/S	M
190	<i>Gonostegia hirta</i> (Blume ex Hassk.) Miq [Urticaceae]	—	H	R/L/S	M
191	<i>Grangea maderaspatana</i> (L.) Poir. [Compositae]	—	H	L/S	M
192	<i>Grewia optiva</i> J.R. Drumm. ex Burret [Malvaceae]	<i>Fersa</i>	T	R/L/S	M

Table Continued.....

Table Continued.....

193	<i>Gynocardia odorata</i> R. Br. [Achariaceae]	<i>Chalmogra, Ramphal</i>	T	R/L/S	M
194	<i>Hedychium coccineum</i> Buch.-Ham. ex Sm. [Zingiberaceae]	—	H	L/S	M
195	<i>Hedyotis scandens</i> Roxb. [Rubiaceae]	<i>Kanchiru Lahara</i>	H	R/L/S	M
196	<i>Heliotropium indicum</i> L. [Boraginaceae]	<i>Hatisunrh</i>	H	R/L/S	M
197	<i>Helminthostachys zeylanica</i> (L.) Hook. [Ophioglossaceae]	<i>Charaigarua</i>	H	R/L/S	M
198	<i>Holarrhena pubescens</i> Wall. ex G.Don [Apocynaceae]	<i>Kurchi, Khirra</i>	T	R/L/S	M
199	<i>Homalomena rubescens</i> (Roxb.) Kunth [Araceae]	—	H	L	M
200	<i>Hoya verticillata</i> (Vahl) G. Don [Apocynaceae]	<i>Dudhe lahara</i>	H	R/L/S	M, A
201	<i>Hydrocotyle sibthorpioides</i> Lam. [Araliaceae]	<i>Gande jhar</i>	H	R/L/S	M
202	<i>Hygrophila auriculata</i> (Schumach.) Heine [Acanthaceae]	<i>Kulekhara</i>	H	R/L/S	M
203	<i>Hypericum japonicum</i> Thunb. [Hypericaceae]	—	H	R/L/S	M
204	<i>Hyptis suaveolens</i> (L.) Poit. [Lamiaceae]	<i>Ban Tulsi</i>	S	R/L/S	M
205	<i>Ichnocarpus frutescens</i> (L.) W.T.Aiton [Apocynaceae]	<i>Dudhe Lahara</i>	CL	R/L/S	M
206	<i>Imperata cylindrica</i> (L.) Raeusch. [Poaceae]	<i>Kush, siru</i>	H	R/L/S	M
207	<i>Jasminum multiflorum</i> (Burm.f.) Andrews [Oleaceae]	<i>Jui</i>	CL	R/L/S	A
208	<i>Jasminum nepalense</i> Spreng. [Oleaceae]	<i>Jui</i>	CL	R/L/S	A
209	<i>Jasminum scandens</i> (Retz.) Vahl [Oleaceae]	<i>Hara lahara</i>	CL	R/L/S	A
210	<i>Jatropha curcas</i> L. [Euphorbiaceae]	<i>Sada varenda</i>	S	L/S	M
211	<i>Justicia adhatoda</i> L. [Acanthaceae]	<i>Basak</i>	S	R/S	M
212	<i>Kaempferia rotunda</i> L. [Zingiberaceae]	<i>Bhuichampa</i>	H	S	M
213K	<i>nema erratica</i> (Hook f. & Thomson) J. Sinclair [Myristicaceae]	<i>Ranguwa</i>	T	R	M
214	<i>Kyllinga nemoralis</i> (J.R.Forst. & G.Forst.) Dandy ex Hutch. & Dalziel [Cyperaceae]	<i>Mutha jhar</i>	H	R/L/S	M
215	<i>Lagerstroemia parviflora</i> Roxb. [Lythraceae]	<i>Sidha</i>	T	R/L/S	M
216	<i>Lagerstroemia speciosa</i> (L.) Pers. [Lythraceae]	<i>Jarul</i>	T	R/L/S	M
217	<i>Lannea coromandelica</i> (Houtt.) Merr. [Anacardiaceae]	<i>Jiol</i>	T	R/L/S	M
218	<i>Lantana camara</i> L. [Verbenaceae]	<i>Saibani lata</i>	S	R/L/S	M
219	<i>Lasia spinosa</i> (L.) Thwaites [Araceae]	<i>Kanta kochu</i>	H	R/L/S	M
220	<i>Leea aequata</i> L. [Vitaceae]	—	S	R/L/S	M
221	<i>Leea asiatica</i> (L.) Ridsdale [Vitaceae]	<i>Kakjangha</i>	S	R/L/S	M
222	<i>Leea indica</i> (Burm.f.) Merr. [Vitaceae]	<i>Kakjangha</i>	S	R/L/S	M
223	<i>Leucas zeylanica</i> (L.) W.T.Aiton [Lamiaceae]	<i>Swetodrone Dandakalas</i>	H	R/L/S	M
224	<i>Lindenbergia indica</i> Vatke [Plantaginaceae]	—	H	R/L/S	M
225	<i>Lippia alba</i> (Mill.) N.E.Br. ex Britton & P.Wilson [Verbenaceae]	<i>Ban Nebu</i>	S	R/L	M
226	<i>Litsea cubeba</i> (Lour.) Pers. [Lauraceae]	—	T	R/L/S	M
227	<i>Litsea glutinosa</i> (Lour.) C.B.Rob. [Lauraceae]	<i>Kawala Kukurchita</i>	T	R/L/S	M, A
228	<i>Litsea monopetala</i> (Roxb.) Pers. [Lauraceae]	<i>Bonsum</i>	T	R/L/S	M
229	<i>Litsea salicifolia</i> (J. Roxb. ex Nees) Hook.f. [Lauraceae]	<i>Kawla</i>	T	R/L/S	A
230	<i>Ludwigia octovalvis</i> (Jacq.) P.H.Raven [Onagraceae]	<i>Ban Lavanga</i>	H	R/L	M
231	<i>Ludwigia perennis</i> L. [Onagraceae]	<i>Ban Lavanga</i>	H	R/L/S	M
232	<i>Luffa acutangula</i> (L.) Roxb. [Cucurbitaceae]	<i>Dhundul</i>	CL	R/L/S	M
233	<i>Luffa cylindrica</i> (L.) M.Roem. [Cucurbitaceae]	<i>Dhundul</i>	CL	R/L/S	M
234	<i>Lycopodiella cernua</i> (L.) Pic. Serm. [Lycopodiaceae]	<i>Nagbeli</i>	H	L/S	M
235	<i>Lygodium flexuosum</i> (L.) Sw. [Lygodiaceae]	<i>Bhutraaj</i>	CL	R/L/S	M
236	<i>Macaranga denticulata</i> (Blume) Mull.Arg. [Euphorbiaceae]	<i>Malata</i>	T	R/L	M
237	<i>Machilus glaucescens</i> (Nees) Wight [Lauraceae]	<i>Bhale Kawlo, Kawala</i>	T	R/L/S	A
238	<i>Maesa indica</i> (Roxb.) A. DC. [Primulaceae]	<i>Bilauney</i>	S	R/L/S	M
239	<i>Magnolia champaca</i> (L.) Baill. ex Pierre [Magnoliaceae]	<i>Champ</i>	T	R/L/S	A
240	<i>Magnolia hodgsonii</i> (Hook.f. & Thomson)	<i>Chiuri</i>	T	R/L/S	M

Table Continued.....

Table Continued.....

	H.Keng [Magnoliaceae]				
241	<i>Mallotus nudiflorus</i> (L.) Kulju & Welzen [Euphorbiaceae]	<i>Pithali</i>	T	R/S	M
242	<i>Mallotus philippensis</i> (Lam.) Mull.Arg. [Euphorbiaceae]	<i>Sindure</i>	T	R/L/S	M
243	<i>Mangifera indica</i> L. [Anacardiaceae]	<i>Aam</i>	T	R/S	M
244	<i>Maranta arundinacea</i> L. [Marantaceae]	<i>Ararut</i>	H	L	M
245	<i>Marsilea minuta</i> L. [Marsileaceae]	<i>Sushni</i>	H	R/L	M
246	<i>Melastoma malabathricum</i> L. [Melastomataceae]	<i>Datrangi, Futki</i>	S	R/L/S	M
247	<i>Melilotus indicus</i> (L.) All. [Leguminosae]		H	R	M
248	<i>Mentha longifolia</i> (L.) L. [Lamiaceae]	<i>Jangli Pudina</i>	H	R/L	M
249	<i>Merremia hirta</i> (L.) Merr. [Convolvulaceae]	—	CL	R/L/S	M
250	<i>Merremia vitifolia</i> (Burm.f.) Hallier f. [Convolvulaceae]	—	CL	R/L/S	M
251	<i>Mesua ferrea</i> L. [Calophyllaceae]	<i>Nagkesar</i>	T	R/L/S	M
252	<i>Meyna spinosa</i> Roxb. ex Link [Rubiaceae]	<i>Moyna kata</i>	T	R/L/S	M
253	<i>Micromelum integerrimum</i> (Buch.-Ham. ex DC.) Wight & Arn. ex M. Roem. [Rutaceae]	<i>Ban-kunch</i>	S	R/L	M
254	<i>Mikania micrantha</i> Kunth [Compositae]	<i>Assami lata</i>	CL	R/L/S	M
255	<i>Mimosa himalayana</i> Gamble [Leguminosae]	<i>Arare</i>	S	R/L/S	M
256	<i>Mimosa pudica</i> L. [Leguminosae]	<i>Lajjabati</i>	H	R/L/S	M
257	<i>Molinieria capitulata</i> (Lour.) Herb. [Hypoxidaceae]	<i>Dhoti sara</i>	H	R/L/S	M
258	<i>Momordica charantia</i> L. [Cucurbitaceae]	<i>Karela</i>	CL	R/L/S	M
259	<i>Momordica cochinchinensis</i> (Lour.) Spreng. [Cucurbitaceae]	<i>Kakrol</i>	CL	R/L/S	M
260	<i>Momordica dioica</i> Roxb. ex Willd. [Cucurbitaceae]	<i>Bankarela</i>	CL	R/L/S	M
261	<i>Monochoria vaginalis</i> (Burm.f.) C.Presl [Pontederiaceae]	<i>Piralay</i>	H	R/L/S	M
262	<i>Morinda angustifolia</i> Roxb. [Rubiaceae]	<i>Haldikath</i>	S	R/L/S	M
263	<i>Morinda citrifolia</i> L. [Rubiaceae]	<i>Haldikath</i>	S	R/L	M
264	<i>Morus macroura</i> Miq. [Moraceae]	<i>Jangli tunt</i>	S	R/L/S	M
265	<i>Mucuna pruriens</i> (L.) DC. [Leguminosae]	<i>Alkushi</i>	CL	R/L/S	M
266	<i>Murraya koenigii</i> (L.) Spreng. [Rutaceae]	<i>Karipatta</i>	S	R/L/S	A
267	<i>Murraya paniculata</i> (L.) Jack [Rutaceae]	<i>Kamini</i>	S	R/L/S	M
268	<i>Mussaenda roxburghii</i> Hook.f. [Rubiaceae]	<i>Katmatia Saag</i>	S	R/L/S	M
269	<i>Naravelia zeylanica</i> (L.) DC. [Ranunculaceae]	<i>Chhagalbati</i>	CL	R/L/S	M
270	<i>Natsiatum herpeticum</i> Buch.-Ham. ex Arn. [Icacinaceae]	—	CL	R/L/S	M
271	<i>Neolamarckia cadamba</i> (Roxb.) Bosser [Rubiaceae]	<i>Kadam</i>	T	R/L	M

distribution of those species, the earlier study by Das *et al.*, (2010) noted their occurrences only in the conservation plots and, in few cases, in nearby plots. But, in a recent survey Biswas (2017) spotted a large number of these species growing in nearby areas around the conservation plots as well as in some distant sites and were represented with appreciable population structure. Here, the best example is *Abelmoschus moschatus* which was very restricted in distribution and its population also was very small in North Sevoke site. But now it is quite frequent and the population also has retrieved satisfactorily. A numbers of species [both medicinal and non-medicinal] having very fewer individuals are growing in the tract of natural vegetation in Terai-Duars belt, e.g. *Pterospermum mersupium*.

As expected along with the conservation of threatened Medicinal Plants, these MPCAs are quite helpful to conserve all the recorded medicinal plants, as

well as other non-medicinal plants those required conservational attention. Not only the MPCAs but the entire belt of Terai Duars region is rich and diverse in medicinal flora including different category of threatened species (Das 1996; Kadir 2001; Das *et al.*, 2003; Rai & Das 2008; Kadir & Das 2007; Das *et al.*, 2010; Shukla *et al.*, 2014; Sarkar & Das 2015, 2017; Das *et al.*, 2020).

Thus along with the appreciation of establishment of MPCAs and its effectiveness for conserving important medicinal species, the integrity of conserved areas within the entire tract and its necessity has been realized. Accordingly the much better conservation strategies are to be framed and to be implemented in its strictest form to protect this important green wealth of the country.

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APPENDIX-II

List of threatened medicinal plants along with their acquired Importance Value Index (IVI) in different sites and seasons [Abbreviation used: IVI = Importance Value Index; W = Winter; PrM = Premonsoon; PoM = Post monsoon. Values inside [] represent IVI of the dominant species of that site in that season] SL = Sursuti-Lataguri; NRVK = Rajabhatkhaoo; NS = Northe Sevoke; '+' indicates occurrence of species]

Sl. No.	Species	IVI in NRVK site in			IVI in SL site in			IVI in NS site in		
		W	PrM	PoM	W	PrM	PoM	W	PrM	PoM
Recorded during phytosociological sampling										
1.	<i>Alpinia calcarata</i> (Haw.) Roscoe	—	—	—	2.6[20.99]	2.62[20.43]	11.34[21.81]	—	—	—
2.	<i>Ampelocissus barbata</i> (Wall.) Planch	2.15[20.62]	2.18[18.34]	2.17[20.85]	0.78[21.50]	1.02[15.68]	—	—	—	—
3.	<i>Aphanamixis polystachya</i> (Wall.) R. Parker	10.07[17.98]	—	9.82[17.55]	4.51[16.21]	—	4.33[15.49]	10.08[19.40]	—	9.56[18.38]
4.	<i>Argyrea roxburghii</i> (Wall.) Arn. ex Choisy	—	—	1.12[20.85]	—	1.01[20.43]	1.10[21.81]	—	3.16[11.77]	3.54[10.15]
5.	<i>Asparagus racemosus</i> Willd.	1.19[12.20]	—	—	—	—	—	—	—	—
6.	<i>Baccaurea ramiflora</i> Lour.	1.74[17.93]	—	1.70[17.55]	13.55[16.21]	—	13[15.49]	2.93[19.40]	—	2.78[18.38]
7.	<i>Celastrus paniculatus</i> Willd.	1.80[20.62]	1.94[18.34]	1.70[20.85]	2.75[20.99]	2.38[40.43]	1.10[21.81]	4.23[24.80]	—	—
8.	<i>Cinnamomum bejolghota</i> (Buch.-Ham.) Sweet	1.14[17.98]	—	1.12[17.55]	2.06[16.21]	—	1.99[15.49]	—	—	—
9.	<i>Codariocalyx motorius</i> (Houtt.) H.Ohashi	—	—	1.12[20.85]	—	—	—	—	—	—
10.	<i>Dioscorea prazeri</i> Prain & Burkill	—	2.18[18.34]	2.05[20.85]	—	—	1.02[16.17]	2.94[24.80]	—	—
11.	<i>Garuga floribunda</i> Decne.	1.14[17.98]	—	1.12[17.55]	7.84[16.21]	—	7.51[15.49]	—	—	—
12.	<i>Gloriosa superba</i> L.	1.90[12.32]	—	—	—	4.03[15.68]	—	—	—	—
13.	<i>Gynocardia odorata</i> R. Br.	1.14[17.98]	—	1.21[17.55]	8.49[16.21]	—	8.09[15.49]	—	—	—
14.	<i>Helminthostachys zeylanica</i> (L.) Hook.	1.29[12.32]	1.82[12.20]	1.30[8.79]	—	1.42[15.68]	—	—	—	—
15.	<i>Leea aequata</i> L.	3.60[13.32]	4.81[12.20]	1.74[16.72]	3.77[20.99]	3.31[20.43]	3.70[21.81]	1.58[24.80]	1.46[29.57]	0.95[30.00]
16.	<i>Listea glutinosa</i> (Lour.) C.B.Rob.	—	—	—	2.06[20.99]	—	1.77[20.43]	4.42[24.80]	2.09[29.57]	4.46[30.00]
17.	<i>Listea salicifolia</i> (J. Roxb. ex Nees) Hook. f.	—	—	—	2.06[16.21]	—	5.07[15.49]	—	—	—
18.	<i>Mucuna pruriens</i> (L.) DC.	—	—	—	—	2.67[20.43]	1.99[21.81]	—	—	—
19.	<i>Machilus glaucescens</i> (Nees) Wight	—	—	1.12[17.55]	16.21[16.21]	—	15.49[15.49]	6.07[19.40]	—	5.76[18.38]
20.	<i>Piper chuyva</i> (Miquel) C.DC.	3.48[12.32]	2.29[12.20]	2.32[18.38]	1.69[20.99]	1.40[20.43]	0.59[21.81]	6.98[29.57]	1.51[30.00]	—
21.	<i>Piper sylvaticum</i> Roxb.	1.10[12.32]	2.60[12.20]	—	—	—	—	—	—	—
22.	<i>Polyalthia simiarum</i> (Buch.-Ham. ex Hook. f. & Thomson)	8.45[17.98]	—	8.39[17.55]	8.84[16.21]	—	5.07[15.49]	3.88[19.40]	—	3.68[18.38]
23.	<i>Rauwolfia serpentina</i> (L.) Benth. ex Kurz	—	—	0.98[8.79]	—	—	—	—	—	—
24.	<i>Sauropus quadrangularis</i> (Willd.) Müll.Arg.	3.29[20.62]	—	1.54[20.85]	—	—	—	—	—	—
25.	<i>Stereospermum tetragonum</i> DC.	4.12[17.98]	—	4.03[17.65]	13.65[16.21]	—	13.00[15.49]	8.68[19.40]	—	8.23[18.38]
26.	<i>Tetrasigma campylocarpum</i> (Kurtz.) Planch.	4.32[20.62]	4.46[18.38]	3.26[20.85]	2.30[20.99]	2.93[20.43]	2.19[21.81]	—	—	2.80[10.15]
27.	<i>Toona ciliata</i> M.Roem.	1.74[17.98]	—	1.70[17.55]	—	—	2.79[15.49]	5.30[19.40]	—	5.03[18.38]
Recorded through random sampling only										
28.	<i>Abelmoschus moschatus</i> Medik.	+	+	+	+	+	+	+	+	+
29.	<i>Aristolochia indica</i> L.	+	+	+	+	+	+	+	+	+

Table Continued.....

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