

FLORISTIC STUDY OF THE RATARGUL SWAMP FOREST IN BANGLADESH

MOHAMMAD SAYEDUR RAHMAN^{1*}, MAHBUBA SULTANA, A.K.M. KAMRUL HAQUE²,
MOHAMMAD AMDADUL HOQUE AND AHMED SAQEE

*Bangladesh National Herbarium, Chiriakhana Road,
Mirpur-1, Dhaka-1216, Bangladesh*

Keywords: Floristic study, Ratargul Swamp Forest, Bangladesh

Abstract

Floristic study of Ratargul swamp forest (RSF) has been completed. This survey has explored 217 species of vascular plants under 161 genera and 76 families. Among these, Pteridophytes are represented by 11 species, Magnoliopsida (Dicotyledons) by 160 species and Liliopsida (Monocotyledons) by 46 species. Six dominant families of the study area are Asteraceae (19 species), Cyperaceae (13 species), Poaceae (12 species), Polygonaceae (10 species), Scrophulariaceae and Euphorbiaceae (each with 9 species). The largest genus is *Persicaria* with 5 species followed by *Ficus*, *Fimbristylis*, *Lindernia* with four species each and *Alternanthera*, *Cyperus*, *Smilax*, *Oldenlandia* with 3 species each. Among the species, the number of herbs, shrubs, trees and climbers are 148, 29, 21 and 19 respectively. The data analysis has also revealed that 157 plant species (over 70% of the total flora) have either known economical or ecological values and three species of the flora are found vulnerable for the country.

Introduction

Forest is one of the most diverse ecosystems with complex interactions among flora, fauna, microbes and the diverse habitats on earth. Swamp forests are more complex than the other forest types because of the nature of the aquatic vegetation with tolerance to periodic inundation and occurrence on the banks of rivers or lakes. A forest is considered to be a swamp forest which is inured or full of fresh water either a permanent, irregular or seasonal condition. Water is the prime requisite of the vegetation of the swamp forests (Manhas *et al.*, 2009). These kinds of forest wetland are found on the lower parts of a river or freshwater lakes in many different regions having a specific climate and physiognomy conditions (Yongxing, 2003). Swamp forests around the world play an important role in maintaining biodiversity, sustaining livelihood and nourishing the ecosystem of wetlands. In the world, there are only 22 freshwater swamp forest that is considered as a 'biological supermarket' for its rich biodiversity (Nabahungu and Visser 2011). The fresh water swamps are associated with abundant and often unique plant growth dominated by trees and high shrubs in the tropics.

Ratargul swamp forest (RSF) is the only fresh water swamp forest in Bangladesh. It is located about 45 km in the North-West of Sylhet town on the bank of the river Gowain. Geographically the area falls within the administrative jurisdiction of Fatehpur union under Gowainghat upazila of Sylhet district (Fig. 1). An area of 292.60 acres was declared as Reserved Forest vides notification number 1774-R dated June 9th 1932, later on declared again as 'Reserve

*¹Corresponding author email: sayedur.rahman@gmail.com

² Mohammdpur Government College, Dhaka

Forest of Special Biodiversity' in 2015 by the government of Bangladesh. The topography of the area mainly of low hilllock found in scattered way. Soils are heavy silty, clay loam to clayey and gray in color. The area is about 10.6 m above from the sea level (Choudhury *et al.* 2004). Usually it is heavy rainfall area with 4162 mm annual average rainfall and July is the wettest month while December is the driest one. May and October are the hottest months with around 32°C maximum temperature, while minimum temperature drops down around 12°C in January. During December the relative humidity is about 74% and it increase over 90% during July.

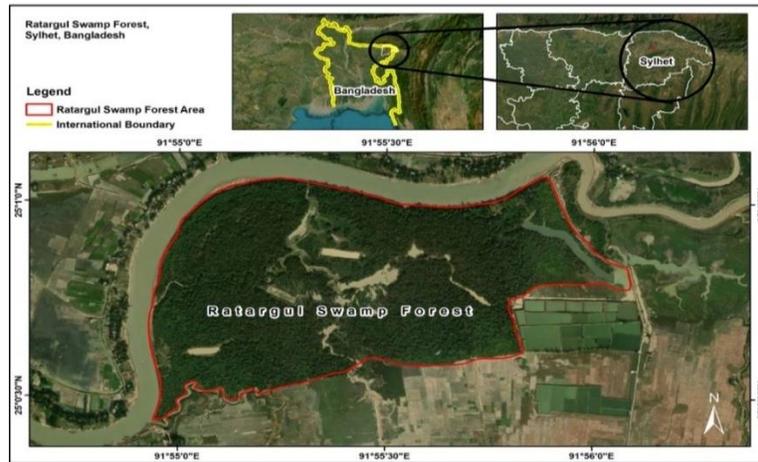


Fig. 1. Map of the Ratargul Swamp Forest.



Figs. 2-3. Ratargul Swamp Forest: 2. in winter season, 3. in rainy season.

Ratargul swamp forest known as the amazon of Bangladesh for its aesthetic view and significant role to the food and economy of poor fishing community of the adjacent area (Das *et al.*, 2017). This forest is submerged under 6.09 to 9.10 m water in the rainy season because of excessive water comes from India enters into the lake through Gowain River. For the rest of the year, the water level remains about 3.05 m deep (Choudhury *et al.* 2004). Therefore, the vegetation of rainy season is completely different from winter period (Figs. 2-3). Gowain river (locally called *Chenger Khal*) originates from mountain ranges of Meghalaya (India) and flows through the forest. This river is known as the lifeline of Ratargul swamp forest, inundated and nourished by the fresh water streams of the river and its tributaries (FRSS, 2013). As a result, the forest has created a unique floral and faunal composition than other forested areas of the country. Biodiversity of this forest enriched with wetland plants, mammals, avifauna and reptiles. During the monsoon, the forestland gets flooded by water of the river Gowain and thus this ecosystem is also inhabitant of numerous freshwater fish species. In the past these areas were allocated to "Pollarding Working Circle" under Sylhet Forest Division (Ali, 1991). In the early eighties surroundings of this area were occupied by new settlers and encouraged to set new habitations here. Therefore, the habitat was almost depleted with hardly some grassy vegetation of a few bushes of Patipata or Murta [*Schumannianthus dichotomus* (Roxb.) Gagnep.] and Koroz [*Dalbergia reniformis* Roxb.] trees scattered here and there. Later, in 1985 local forest department raised an experimental plantation of Patipata on about 3 acres' areas. Now these areas look like some sort of two storied forest. The top story consists of trees, dominated by *Barringtonia acutangula* (L.) Gaertn., *Syzygium fruticosum* DC., *Crateva religiosa* G. Forst., *Ficus religiosa* L. etc. The under story is almost covered by *Schumannianthus dichotomus* (Roxb.) Gagnep. with few others natural species like *Rosa clinophylla* Redout & Thory, *Asparagus racemosus* Willd. etc. Forest bed is covered with seasonal plant species; *Centella asiatica* L., *Polygonum hydropiper* L., *Grangea maderaspatana* (L.) Poir. etc. are during dry period and *Nymphaea nouchali* Burm.f. *Eichhornia crassipes* (Mart.) Solms, *Hygrophila ringens* (L.) R. Br. *ex* Spreng. are in rainy seasons.

Floristic surveys are essential in understanding the status, extent and assessment of plant biodiversity (WCMC, 1992). These surveys are helpful in sustainable utilization of plant resources, plant resource-based development, exploration of alternative and closely allied species, identification and conservation of threatened plant species and assessment, monitoring and mitigation of the adverse impacts of climate change on plant species. The extensive floristic exploration throughout British India conducted by J.D. Hooker (1872- 1897) included the Sylhet region of the present political boundary of Bangladesh. Kanjilal *et al.* (1934-1940) included some areas of Sylhet region too. Later on, various sporadic inventories have been completed in different areas of greater Sylhet region, such as Alam (1988); Uddin and Hassan (2010); Sobuj and Rahman (2011); Arefin *et al.* (2011); Haque *et al.* (2018); Islam *et al.* (2022) and Sultana *et al.* (2022). M.A. Islam *et al.* (2016) recorded a total of 94 fish species and M.S. Islam *et al.* (2016) reported 24 aquatic fauna species from RSF area. Besides these, Akter *et al.* (2020); Jahan and Akhter (2018); Hossain *et al.* (2020 and 2016); Afroz *et al.* (2020) have been worked on the forest on various aspects. However, details floristic survey of Raturgul swamp forest, have not yet been explored, except only biodiversity survey of the Ratargul Swamp Forest conducted by Choudhury

et al. (2004) mentioning 73 plants and 230 animal species (including 9 amphibians, 20 reptiles, 26 mammals and 175 birds), without citing representative plant specimens. Taxonomic data on the current floristic composition of RSF collected through field inventories and examination of representative plant specimens are still lacking, though such data are important for the sustainable use and conservation of plant resources and resource-based development of the area. Therefore, an inventory on the floristic composition of RSF has been conducted with the objectives to produce an annotated checklist of the vascular plant species of the area to determine the exact floristic composition of the areas; to know the distribution of threatened species of Bangladesh in this forest area; and to collect and preserve representative plant specimens for future reference.

Materials and Methods

Floristic surveys were conducted between the year 2018 to 2022 through five field trips in different seasons throughout the study area following walk through method. Exploration were done almost every part of the area covering all ecosystems such as: River side, Canal bank, Lowland and inside of the forest with vegetation and depression. Necessary field data and representative plant specimens were collected and preserved following standard herbarium techniques (Forman and Bridson, 1989). All plant specimens were preliminarily identified through consulting the experts and matching with relevant voucher specimens preserved at Bangladesh National Herbarium (DACB). Some difficult specimens were identified at Central National Herbarium, Howrah, India (CAL) during the visit of one of the authors. Identified plant specimens were verified by matching with the images of pertinent type specimens available in the websites of international herbaria and consulting taxonomic descriptions and keys available in the relevant literatures (Hooker, 1872-1897; Prain, 1903; Kanjilal *et al.* (1934-1940); Ahmed *et al.* 2008-2009, Ahmed *et al.* 2009; Siddiqui *et al.* 2007; Wu and Raven, 1994-2001; Wu *et al.* 1999-2013). Nomenclature of each taxon was verified following Flora of China (Wu and Raven, 1994-2001; Wu *et al.* 1999-2013) and the nomenclatural databases of The Plant List (2013) and TROPICOS (2017). Information on habit & habitat, ecology, flowering & fruiting time has been provided based on field observation. The local names have been cited based on Huq (1986), Pasha and Uddin (2013) and interview with the local people. The families have been arranged following Cronquist (1981) and the genera and species under each family have been arranged alphabetically. The economic uses of the species were recorded through interviews with the local people during the field surveys and consulting the relevant literatures (e.g., Ghani, 1998; van Valkenburg and Bunyaphatsara, 2002).

Results

In the present study on vascular flora of the Ratargul Swamp Forest (RSF) forest has revealed a total of 218 vascular plants species (wild and cultivated) under 161 genera and 75 families.

PTERIDOPHYTA OPHIOGLOSSACEAE

Helminthostachys zeylanica (L.) Hook., Gen. Fil., pl. 47, B 1842. Terrestrial fern, rarely occurs in the edges of the forest. Use: Medicine. RS: Sayedur 3585 (DACB).

LYGODIACEAE

Lygodium flexuosum (L.) Sw., J. Bot. (Schrader) 1800, (2): 106. 1801. *Ophioglossum flexuosum* L. LN: *Lata Dhekia*. Climber, commonly occur in edge of forests and river side scrub jungle. Use: Medicine. RS: Sayedur 3583 (DACB).

PTERIDACEAE

Pityrogramma calomelanos (L.) Link, Handbuch 3: 20. 1833. Herb, occasionally occurs in forest margins. Use: Vegetable and medicine. RS: Sayedur 3388 (DACB).

Pteris quadriaurita Retz., Obs. Bot. 6: 38-39. 179. 1848. LN: *Dhekia fern*. Herb, occasionally occurs in moist habitats. Use: Ornamental. RS: Sayedur 3301 (DACB).

POLYPODIACEAE

Drynaria quercifolia (L.) J.Sm., J. Bot. Hook. 3: 398. 1841. Herb, commonly grows on tree trunks. LN: *Pankhiraj*. Use: Medicine. RS: Sayedur 3427 (DACB).

Pyrrosia lanceolata (L.) Farwell, Amer. Midl. Naturalist. 12: 245. 1930. LN: *Atashirossi*. Epiphytic fern, occasionally occur on rocks or tree trunk. RS: Sayedur 3262 (DACB).

Pyrrosia piloselloides (L.) M.G.Price, Kalikasan 3: 176. 1975. Epiphytic fern, occasionally occurs on tree trunk. RS: Sayedur 3262 (DACB).

THELYPTERIDACEAE

Ampelopteris prolifera (Retz.) Copel., Gen. Fil. (Copeland) 144. 1947. LN: *Dhekia shak*. Herb, commonly occurs in ponds, lakes and canals. RS: Sayedur 3585 (DACB).

Christella dentata (Forssk.) Brownsey & Jermy, Brit. Fern Gaz. 10(6): 338. 1973. LN: *Bish dhekia*. Herb, occasionally occurs in moist shady areas. RS: Sayedur 3261 (DACB).

Thelypteris nudata (Roxb.) C.V.Morton, Contr. U.S. Natl. Herb. 38(7): 352. 1974. *Pronephrium nudatum* (Roxb.) Holttum. LN: *Dhekia*. Herb, occasionally occurs in moist and shady forest floors. RS: Sayedur 3759 (DACB).

ATHYRIACEAE Alston

Diplazium esculentum (Retz.) Sw., J. Bot. (Schrader) 1801(2): 312. 1803. LN: *Dheki shak*, *Babu shak*. Terrestrial fern, commonly occurs in shady forest floors. Use: Vegetable. RS: Sayedur 3760 (DACB).

MAGNOLIOPSIDA (DICOTYLEDONS)**LAURACEAE**

Litsea monopetala (Lour.) C.B.Rob., Syn. Pl. 2: 4. 1807. LN: *Huoria*. Evergreen tree, occasionally occurs in edge of the forest and canal side. Fl. & fr.: March-November. Use: Medicine. RS: Sayedur 3572 (DACB).

NYMPHAEACEAE

***Nymphaea nouchali** Burm.f., Fl. Ind.: 120. 1768. LN: *Nil komol*, *Nil shapla*. Aquatic herb, commonly occurs in stagnant water of the forest. Fl. & fr.: June-October. Use: Vegetable and medicine.

Nymphaea rubra Roxb. *ex* Andrews, Bot. Repos. 8: t. 503 1808. LN: *Lal Shapla*. Aquatic herb, occasionally occur in the water bodies of the canal. Fl & fr: RS: Sayedur 4229 (DACB). **Fig. 40.**

RANUNCULACEAE

Ranunculus sceleratus L., Sp. Pl. 1: 551. 1753. Herb, rarely occurs in canal side during dry season. Fl. & fr.: October-February. RS: Sayedur 3571 (DACB).

MENISPERMACEAE

Cissampelos pareira L., Sp. Pl. 1031. 1753. *Cissampelos pareira* var. *hirsuta* (Buch.-Ham. *ex* DC.) Forman. LN: *Laghu pathda*. Climber, occasionally occurs at the edge of the forest. Fl. & fr.: February-July. Use: Medicine. RS: Sayedur 3625 (DACB). **Fig. 15.**

Stephania japonica (Thunb.) Miers, Ann. Mag. Nat. Hist. 18: 14. 1866. LN: *Saplata*. Woody climber, rarely occurs at the forest margins. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3575 (DACB).

Tinospora crispa (L.) Hook.f. & Thomson, Fl. Ind. 1: 183. 1855. *Menispermum crispum* L. LN: *Gulancha*. Climber, occasionally occurs in Open forest or shrubland. Fl. & fr.: January-June. Use: Medicine. RS: Sayedur 3425 (DACB).

PAPAVERACEAE

***Argemone mexicana** L., Sp. Pl.: 508. 1753. LN: *Shialkanta*. Herb, occasionally occurs in Fallow land and road sides. Fl. & fr.: February-June. Use: Medicine.

MORACEAE

Ficus benamina L., Mant. Pl. 129. 1767. LN: *Lokhkho Pakur*. Evergreen tree, rarely occurs in canal bank. Fl. & fr.: November-February. Use: Medicine. RS: 3761 (DACB). **Fig. 27.**

Ficus heterophylla L.f., Suppl. Pl. 442. 1782. *Ficus scabrella* Roxb. LN: *Bhui-dumur*, *Gaori-sheora*. Shrub, occasionally occurs in shady and marshy areas the forest. Fl. & fr.: November-February. Use: Medicine. RS: Sayedur 3272 (DACB). **Fig. 28.**

Ficus hispida L.f., Suppl. Pl. 442. 1782. LN: *Dumur*. Evergreen tree, occasionally occurs in canal sides and forest margins. Fl. & fr.: April-September. Use: Vegetable. RS: Sayedur 3363 (DACB).

***Ficus religiosa** L., Sp. Pl.: 1059. 1753. LN: *Panbot*. Deciduous tree, rarely occurs in forest margins. Fl. & fr.: August-September. Use: Medicine.

Streblus asper Lour., Fl. Cochinch. 1: 615. 1790. LN: *Asshaora*, *Harbi*, *Seora*. Evergreen tree, rarely occurs in canal bank, river bank and forest thickets. Fl. & fr.: February-June. Use: Fire wood and Medicine. RS: Sayedur 3252 (DACB).

URTICACEAE

Gonostegia hirta (Blume *ex* Hassk.) Miq., Ann. Mus. Bot. Lugduno-Batavi. 4: 303. 1868. Herbs, occasionally occurs in canal bank and river bank. Fl. & fr.: August-September. Use: Fodder and Medicine. RS: Sayedur 3573 (DACB). **Fig. 31.**

Pouzolzia zeylanica (L.) Benn., Pl. Jav. Rar.: 67. 1838. *Boehmeria alienata* Willd. LN: *Kullakuri*. Herbs, commonly occurs in open dump forests and wet places along canal side. Fl. & fr.: June-November. RS: Sayedur 3298 (DACB).

AMMARANTHACEAE

Alternanthera paronychioides A.St.-Hil., Voy. Distr. Diam. 2(2): 43. 1833. LN: *Jhuli kata*. Herb, occasionally occurs in canal bank and marshy areas of the forest. Fl. & fr.: January-May. Use: Vegetable. RS: Sayedur 3636 (DACB).

Alternanthera sessilis (L.) R.Br. ex DC., Cat. Pl. Horti Monsp. 77. 1813. LN: *Chanchi, Haicha*. Herb, commonly occurs in canal bank and marshy areas of the forest, especially in damp or wet conditions. Fl. & fr.: Throughout the year. Use: Vegetable. RS: Sayedur 3612 (DACB).

Alternanthera pungens Kunth in H.B. & K., Nov. Gen. Sp. 2: 206. 1818. LN: *Kakishak*. Herb, occasionally occurs in sandy places, disturbed grounds and roadsides. Fl. & fr.: Throughout the year. Use: Medicine. RS: Image.

CHENOPODIACEAE

***Chenopodium album** L., Sp. Pl. 219. 1753. LN: *Bathwa shak*. Herb, occasionally occurs in river bank. Fl. & fr.: December-March. Use: Vegetable and medicine.

Dysphania ambrosioides (L.) Mosyakin & Clemants, krayins'k. Bot. Zhurn. 59: 382. 2002. Herb, occasionally occurs in the river bank and open spaces of the forest. Fl. & fr.: June-December. Use: Medicine. RS: Sayedur 3373 (DACB). **Fig. 24.**

MOLLUGINACEAE

Glinus lotoides L., Sp. Pl. 463. 1753. *Mollugo lotoides* (L.) Arcang. LN: *Alugash*. Herb, rarely occurs in waste and fallow lands in wet condition. Fl. & fr.: January-December. Use: Medicine. RS: Image.

Glinus oppositifolius (L.) A.DC., Bull. Herb. Boiss. 2(1): 522. 1901. LN: *Gemashak*. Herb, occasionally occurs in river side and open spaces of the forests. Fl. & fr.: January-December. RS: Sayedur 3386 (DACB).

Mollugo pentaphylla L., Sp. Pl.: 89. 1753. LN: *Khetpapra*. Herb, commonly occurs in river side and open spaces of the forest. Fl. & fr.: June-January. RS: Sayedur 3398 (DACB).

CARYOPHYLLACEAE

Polycarpon prostratum (Forssk.) Aschers. & Schweinf., Oesterr. Bot. Zeitscher. 39: 128. 1889. Herb, rarely occurs in damp and marshy places and sandy river banks. Fl. & fr.: March-September. RS: Sayedur 3397 (DACB).

Stellaria wallichiana Benth. ex Haines, Bull. Misc. Inf. Kew 1920: 66. 1920. LN: *Tara*. Herb, rarely occurs in damp waste places. Fl. & fr.: February-August. Use: Vegetable. RS: Image.

POLYGONACEAE

Ampelgynonum chinense (L.) Lindl., Edwards's Bot. Reg. 24: 62. 1838. LN: *Mohicharan shak*. Herb, occasionally occurs in the moist area specially river bank of the forest. Fl. & fr.: October-March. Use: Vegetable. RS: Sayedur 3400 (DACB). **Fig. 5.**

Chylocalyx perfoliatus (L.) Hassk. ex Miq., Fl. Ned. Ind. 1(1): 1012. 1858. LN: *Kanta Tokpata*. Herb, rarely occurs at the edge of the forest and in damp shady places along streams. Fl. & fr.: January-May. Use: Vegetable. RS: Sayedur 3367 (DACB). **Fig. 14.**

Persicaria dichotoma (Blume) Masam., Sci. Rep. Kanazawa Univ. 2(2): 82. 1954. Herb, occasionally occurs in edges of ditches and submerged in water. Fl. & fr.: May-November. RS: Sayedur 3746 (DACB).

Persicaria glabra (Willd.) M.Gómez, Anales Inst. Segunda Enseñ. 2: 278. 1896. Herb, commonly occurs in wet and marshy areas. Fl. & fr.: August-November. Use: Medicine. RS: Sayedur 3292 (DACB).

Persicaria hydropiper (L.) Delarbre, Fl. Auvergne ed. 2: 518. 1800. *Polygonum hydropiper* L. LN: *Bishkatali*. Herb, very commonly occurs in shady places along water bodies. Fl. & fr.: August-April. Use: Medicine. RS: Sayedur 3538 (DACB).

Persicaria lapathifolia (L.) Delarbre, Fl. Auvergne ed. 2: 519. 1800. Herb, occasionally occurs in the moist area of the forest. Fl. & fr.: August-November. Use: Medicine. RS: Sayedur 3293 (DACB). **Fig. 43.**

Persicaria orientalis (L.) Spach, Hist. Nat. Vég. 10: 537. 1841. *Polygonum orientale* L. LN: *Bara panimorich*. Herb, commonly occurs in moist and shallow water of the forest. Fl. & fr.: March-August. Use: Medicine. RS: Sayedur 3582 (DACB). **Fig. 44.**

Polygonum plebeium R.Br., Prodr. 420. 1810. Herb, occasionally occurs in stream banks, open spaces of the forest. Fl. & fr.: May-September. Use: Vegetable and medicine. RS: Sayedur 3558, 3531 (DACB).

***Rumex dentatus** L., Mant. Pl. 2: 226. 1771. LN: *Bon Palong*. Herb, occasionally occurs in the river bank of the forest. Fl. & fr.: January-May. Use: Vegetable.

Rumex maritimus L., Sp. Pl. 335. 1753. LN: *Agra*. Herb, occasionally occurs in the river bank and open spaces of the forest. Fl. & fr.: January-May. Use: Medicine. RS: Sayedur 3372 (DACB). **Fig. 47.**

CLUSIACEAE

Garcinia cowa Roxb. *ex* Choisy, Prodr. 1: 561. 1824. LN: *Kaufol*. Evergreen tree, rarely occurs in shady area of forest beds. Fl. & fr.: February-August. Use: Fruit edible & wild life supportive.

Hypericum japonicum Thunb., Syst. Veg. ed. 14. 702. 1784. LN: *Japani hyper*. Herbs, occasionally occurs on forest bed along the streams during dry seasons. Fl. & fr.: March-November. RS: Sayedur 3636 (DACB). **Fig. 35.**

TILIACEAE

Grewia serrulata DC., Prodr. 1: 510. 1824. LN: *Banta bicha*. Evergreen tree, occasionally occurs in river bank thickets of the forest. Fl. & fr.: May-February. RS: Sayedur 3424 (DACB). **Fig. 32.**

STERCULIACEAE

Melochia corchorifolia L., Sp. Pl. 675. 1753. LN: *Tiki-okra*. Annual herb, occasionally occurs in forest thickets specially in the river side. Fl. & fr.: March-June. Use: Medicine. RS: Sayedur 3390 (DACB). **Fig. 38.**

BOMBACACEAE

Bombax ceiba L., Sp. Pl. 511. 1753. LN: *Shimul*. Tree, occasionally occurs in forest margins. Fl. & fr.: January-April. Use: Medicine and fiber. RS: Sayedur 3749 (DACB).

MALVACEAE

Sida cordifolia L., Sp. Pl. 684. 1753. *Sida conferta* Link. LN: *Berela*. Herb, commonly occurs in the open spaces of the forest. Fl. & fr.: September-December. Use: Fibre. RS: Sayedur 4151 (DACB).

Urena lobata L., Sp. Pl. 692. 1753. LN: *Ban-okhra*. Shrub, commonly occurs in all around forest thickets. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3744 (DACB).

LECYTHADACEAE

Barringtonia acutangula (L.) Gaertn, Fruct. Sem. Pl. 2: 97. 1791. Deciduous tree, rarely occurs in the canal side of the forest. Fl. & fr.: March-June. Use: Medicine. RS: Sayedur 3390 (DACB). **Fig. 9.**

CUCURBITACEAE

Luffa cylindrica (L.) Roem., Fam. Nat. Syn. Monogr. 2: 63. 1846. *Luffa aegyptiaca* Mill. LN: *Dhundul*, *Titpola*. Herb, cultivated. Fl. & fr.: June-December. Use: Vegetable and medicine. RS: Sayedur 3277 (DACB).

SALICACEAE

Salix tetrasperma Roxb., Pl. Coromandel 1: 66. 1795. *Pleiarina tetrasperma* (Roxb.) N. Chao & G.T.Gong. LN: *Panijoma*. Deciduous tree, rarely occurs in low land at edges of ditches, ponds and river bank. Fl. & fr.: November-March. Use: Wood. RS:

CAPPARACEAE

Cleome houtteana Schltld., Linnaea 24: 669. 1851. *Cleome hassleriana* Chodat. LN: *Jharna Phul*. Herb, commonly occurs in waste places, canal side and river bank of the forest. Fl. & fr.: January-May. Use: Wood. RS: Sayedur 3278 (DACB).

BRASSICACEAE

Rorippa indica (L.) Hiern, Cat. Afr. Pl. 1: 1896. Herb, occasionally occurs along the steams during dry season. Fl. & fr.: April-October. RS: Sayedur 3527 (DACB).

EBENACEAE

***Diospyros malabarica** (Desr.) Kostel., Allg. Med.-Pharm. Fl. 3: 1099. 1834. LN: *Gab*, *Deshi Gab*. Evergreen tree, occasionally occurs in moist shady places along edges of water bodies. Fl. & fr.: May-August. Use: Fruit edible and medicine.

***Diospyros philippinensis** A.DC., Prodr. 8: 231. 1844. Evergreen tree, occasionally occurs in moist low land areas along water bodies. Fl. & fr.: May-August. Use: Wild life supportive and medicine.

MYRSINACEAE

Ardisia solanacea (Poir.) Roxb., Pl. Coromandel 1: 27. 1795. LN: *Bon-Jam*. Shrub, occasionally occurs in the canal side of the forest. Fl. & fr.: January-May. Use: Medicine. RS: Sayedur 3369 (DACB). **Fig. 4.**

ROSACEAE

Rosa clinophylla Thory, Red. Roses 1: 43. 1817. LN: *Jungli-golap*. Shrub, occasionally occurs inside forest, canal bank and river bank areas of the forest. Fl. & fr.: February-July. Use: Ornamental. RS: Sayedur 3526 (DACB). **Fig. 46.**

MIMOSACEAE

Mimosa pudica L., Sp. Pl. 1: 518. 1753. LN: *Lojjaboti*. Herb, rarely occurs in the open spaces and river bank. Fl. & fr.: February-May. Use: Medicine. RS: Sayedur 3366 (DACB).



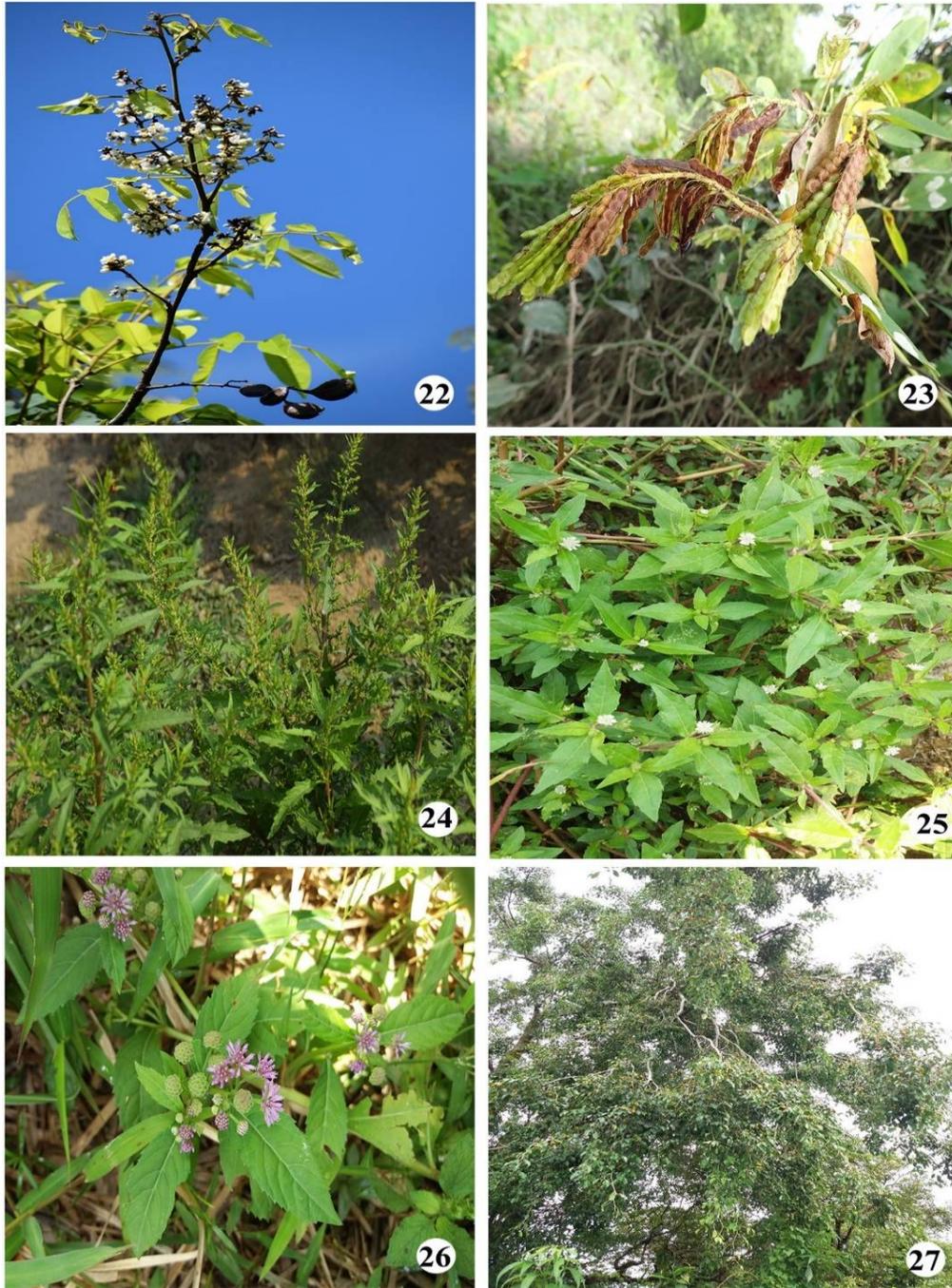
Figs. 4-9: 4. *Ampelocissus barbata* (Wall.) Planch, 5. *Ampelylonum chinense* (L.) Lindl., 6. *Aniseia martinicensis* (Jacq.) Choisy, 7. *Ardlsia solanacea* (Poir.) Roxb., 8. *Asparagus racemosus* Willd., 9. *Barringtonia acutangula* (L.) Gaertn



Figs. 10-15: 10. *Calamus guruba* Buch.-Ham. ex Mart., 11. *Calamus longisetus* Griff., 12 *Cardiospermum helicacabum* L., 13. *Cayratia trifolia* (L.) Domin, 14. *Chylocalyx perfoliatus* (L.) Hassk. ex Miq., 15. *Cissampelos pareira* L.



Figs. 16-21: 16. *Clerodendrum infortunatum* L., 17. *Combretum acuminatum* Roxb., 18. *Commelina diffusa* Burm.f., 19. *Cheilocostus speciosus* (J.Koenig) C.D.Specht, 20. *Crassocephalum crepidioides* (Benth.) S.Moore, 21. *Schumannianthus dichotomus* (Roxb.) Gagnep.



Figs. 22-27: 22. *Dalbergia reniformis* Roxb., 23. *Desmodium gangeticum* (L.) DC, 24. *Dysphania ambrosioides* (L.) Mosyakin & Clemants, 25. *Eclipta prostrata* (L.) L.. 26. *Ethulia conyzoides* L., 27. *Ficus benjamina* L.



Figs. 28-33: 28. *Ficus heterophylla* L.f., 29. *Floscopa scandens* Lour, 30. *Glochidion multiloculare* (Roxb. ex Willd.) Muell.-Arg., 31. *Gonostegia hirta* (Blume ex Hassk.) Miq., 32. *Grewia serrulata* DC., 33. *Heliotropium indicum* L.



Figs. 34-39: 34. *Hemistepta lyrata* (Bunge) Bunge, 35. *Hypericum japonicum* Thunb., 36. *Limnophila heterophylla* (Roxb.) Benth. Scroph., 37. *Lippia alba* (Mill.) Britton et Wilson 38. *Melochia corchorifolia* L., 39. *Merremia gemella* (Burm. f.) Hallier f.



Figs. 40-45: 40. *Nymphaea rubra* Roxb. ex Andrews, 41. *Nymphoides hydrophylla* (Lour.) Kuntze, 42. *Oenanthe bengalensis* (Roxb.) Kurz, 43. *Persicaria lapathifolia* (L.) Delarbre, 44. *Persicaria orientalis* (L.) Spach, 45. *Pogostemon auricularius* (L.) Hassk.



46



47



48



49



50



51

Figs. 46-51: 46. *Rosa clinophylla* Thory, 47 *Rumex maritimus* L., 48. *Smilax zeylanica* L., 49. *Syzygium fruticosum* DC., 50. *Tetrastigma bracteolatum* (Wall.) Planch. 51. *Xanthium strumarium* L.

CAESALPINIACEAE

***Senna tora** (L.) Roxb., Fl. Ind. (Roxb.) 2: 340. 1832. *Cassia tora* L. LN: *Terj, Araj*. Perennial herb, commonly occurs in open fallow areas. Fl. & fr.: August-December. Use: Medicine.

FABACEAE

Cajanus cajan (L.) Millsp., Publ. Field. Mus. Nat. Hist. Bot. Ser. 2: 53. 1900. LN: *Arhar*. Shrub, occasionally occurs in open spaces of the forest. Fl. & fr.: December-April. Use: Fruit edible. RS: Sayedur 3413 (DACB).

Crotalaria juncea L., Sp. Pl. 2: 714. 1753. LN: *Sunn hemp*. Shrub, occasionally occurs in the open spaces of the forest. Fl. & fr.: December-May. Use: Medicine. RS: Sayedur 3599 (DACB).

Crotalaria pallida Dryand. in Aiton, Hort. Kew. 3: 20. 1789. *Crotalaria striata* DC. LN: *Jhun-jhuni*. Herb, rarely occurs in the open spaces of the forest. Fl. & fr.: May-December. Use: Medicine. RS: Sayedur 3370 (DACB).

Desmodium gangeticum (L.) DC., Prodr. 2: 327. 1825. *Hedysarum gangeticum* L. LN: *Salpani*. Shrub, commonly occurs in forest bed. Fl. & fr.: April-November. Use: Medicine. RS: Sayedur 3753 (DACB).

Desmodium heterocarpon (L.) DC., Prodr. 2: 337. 1825. LN: *Karpo modi*. Shrub, occasionally occurs in grassy slopes, watersides and in thickets. Fl. & fr.: March-July. Use: Plant is used Medicine. RS: Sayedur 3757 (DACB).

Dalbergia reniformis Roxb., Fl. Ind. 3: 226. 1832. LN: *Jhun-jhuni*. Small to medium tree, commonly occur in the canal sides and inside of the forest. Fl. & fr.: February-May. Use: Medicine. RS: Sayedur 3577 (DACB). **Fig. 22.**

Pueraria phaseoloides (Roxb.) Benth., J. Linn. Soc. Bot. 9: 125. 1867. LN: *Mugi kunch*. Woody climber, occasionally occurs in forest bed and slopes. Fl. & fr.: November-March. Use: Vegetable. RS: Sayedur 3576 (DACB).

LYTHRACEAE

***Ammannia baccifera** L., Sp. Pl. 1: 120. 1753. LN: *Dadmari, Janglimendi*. Herb, commonly occurs in wet places, marshes, river banks and paddy fields. Fl. & fr.: April-September. Use: Medicine.

Cuphea carthagenensis (Jacq.) J.F. Macbr., Publ. Field Mus. Nat. Hist., Bot. Ser. 8: 124. 1930. Herb, commonly occurs in moist and wet places near the streams. Fl. & fr.: March-July. Use: Medicine. RS: Sayedur 3588 (DACB).

Lagerstroemia speciosa (L.) Pers., Syn. Pl. 2: 72. 1806. LN: *Jarul*. Deciduous tree, rarely occur in the canal bank of the forest. Fl. & fr.: April-July. Use: Ornament and timber. RS: Sayedur 3750 (DACB).

MYRTACEAE

Syzygium fruticosum DC., Prodr. 3: 260. 1828. LN: *Bon-jam, Kak-jam*. Evergreen tree, rarely occurs in sparse forests and wastelands. Fl. & fr.: May-July. Use: Fire wood and wild life supportive. RS: Sayedur 3285 (DACB). **Fig. 49.**

ONAGRACEAE

Ludwigia adscendens (L.) Hara, J. Jap. Bot. 28: 291. 1953. *Jussiaea repens* L. LN: *Keshordam*. Herb, occasionally occurs in ditches, swamps, fallow and wet paddies. Fl. & fr.: March-December. Use: Medicine. RS: Sayedur 3570 (DACB).

Ludwigia repens J.R. Forst., Fl. Amer. Sept. 6 1771. Herb, rarely occurs in shady and marshy areas. Fl. & fr.: February-December. RS: Sayedur 3405 (DACB).

COMBRETACEAE

Combretum acuminatum Roxb., Fl. Ind. 2: 228 1824. *Embryogonia acuminata* (Roxb.) Blume. LN: *Patyuni*. Small tree, rarely occurs in canal bank. Fl & fr.: Use: Medicine. RS: Sayedur 3277 (DACB). **Fig. 17.**

Terminalia arjuna (Roxb. ex DC.) Wight & Arn., Prodr. Fl. Ind. Orient. 314. 1834. LN: *Arjun*. Deciduous tree, planted. Fl. & fr.: April-October. Use: Medicine. RS: Sayedur 3562 (DACB).

MELASTOMATACEAE

Melastoma malabathricum L., Sp. Pl. 1: 390. 1753. *Melastoma affine* D. Don, Mem. Wern. Nat. Hist. Soc. 4: 288. 1823. LN: *Bon tejpata*, *Tejbohol*. Shrub, rarely occurs in open places, thickets and near streams. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3269 (DACB).

LORANTHACEAE

***Macrosolen cochinchinensis** (Lour.) Tiegh., Bull. Soc. Bot. France 4: 122. 1894. *Loranthus cochinchinensis* Lour. LN: *Rema*, *Renda*, *Chota Banda*. Parasite, occasionally grows on shrubs and tree as parasite or semi-parasite. Fl. & fr.: Throughout the year. Use: Trapping birds.

EUPHORBIACEAE

Croton bonplandianus Baill. in Adanson. 4: 339. 1864. *Croton sparsiflorus* Morong. LN: *Banlanka*. Shrub, rarely occurs in the open spaces of the forest. Fl. & fr.: January-December. Use: Medicine. RS: Sayedur 3371 (DACB).

Euphorbia thymifolia L., Sp. Pl. 454. 1753. LN: *Shwetkerui*. Herb, occasionally occurs in waste ground, open spaces of the forest. Fl. & fr.: January-July. Use: Medicine. RS: Sayedur 3414 (DACB).

Flueggea virosa (Roxb. ex Willd.) Voigt, Hort. Suburb. Calcutta: 152. 1845. *Phyllanthus virosus* Roxb. ex Willd. LN: *Khauka*. Shrub, occasionally occurs in forest margins and river bank. Fl. & fr.: April-September. RS: Sayedur 3617 (DACB).

Glochidion multiloculare (Roxb. ex Willd.) Muell.-Arg., Linnaea 32: 59. 1863. LN: *Aniatori*, *Keotomi*. Shrub, occasionally occurs in scrub forests. Fl. & fr.: July-January. Use: Timber. RS: Sayedur 3280 (DACB). **Fig. 30.**

***Mallotus repandus** (Rottler ex Willd.) Muell.-Arg., Linnaea 34: 197. 1865. LN: *Akus*. Scandent shrub, rarely occurs in open scrub forest near stream. Fl. & fr.: January-June. Use: Medicine.

Phyllanthus reticulatus Poir., Encycl. 5: 298. 1804. LN: *Chitki*, *Pasnjuli*. Shrub, occasionally occurs on the canal bank and river bank of the forest. Use: Medicine. Fl. & fr.: March-October. RS: Sayedur 3282 (DACB).

Phyllanthus urinaria L., Sp. Pl. 982. 1753. *Diasperus urinaria* (L.) Kuntze. LN: *Hazarmani*. Herb, rarely occurs in the waste places and open spaces of the forest. Fl. & fr.: April-October. Use: Medicine. RS: Sayedur 3376 (DACB).

Trewia nudiflora L., Sp. Pl.: 1193. 1753. LN: *Bhatam*, *Bhetul*. Shrub, occasionally occur near the streams. Fl. & fr.: February-August. Use: Medicine. RS: Sayedur 3364 (DACB).

***Vicia sativa** L., Sp. Pl.: 736. 1753. LN: *Ankari*, *Hatka*. Herb, occasionally occur in high lands and cultivated areas. Fl. & fr.: February-August. Use: Fodder.

RHAMNACEAE

***Ziziphus jujuba** (L.) Gaertn., Fruct. Sem. Pl. 1: 203. 1788. *Ziziphus mauritiana* Lam. LN: *Kul, Boro*. Evergreen tree, planted. Fl. & fr.: March-September. Use: Ripe fruits edible and wild life supportive.

***Ziziphus oenoplia** L., Gard. Dict. 1768. LN: *Bon Boro*, *Sialkul*. Scanted shrub, commonly occurs in roadside forests and thickets. Fl. & fr.: August-December. Use: Medicine.

VITACEAE

Ampelocissus barbata (Wall.) Planch. in DC., Monogr. Phan. 5: 372. 1887. *Vitis barbata* Wall. LN: *Jarila-lahari*. Climber, occasionally occurs on bushy thickets towards the river bank. Fl. & fr.: June-October. Use: Fruit edible. RS: Sayedur 3360 (DACB). **Fig. 4.**

Cayratia trifolia (L.) Domin, Biblioth. Bot. 89: 370. 1927. *Causonis trifolia* (L.) Raf. LN: *Amol lata, Anal lata*. Climber, very commonly occurs in forest beds on other plants. Fl. & fr.: February-July. Use: Medicine. RS: Sayedur 3615 (DACB). **Fig. 13.**

Tetrastigma bracteolatum (Wall.) Planch., Monogr. Phan. A.DC. & C.DC. 5(2): 428. 1887. *Vitis bracteolata* Wall. LN: *Golgoli lata*. Climber, occasionally occurs in forest, associated with other plants. Fl. & fr.: July-January. Use: Medicine. RS: Sayedur 3581 (DACB). **Fig. 50.**

SAPINDACEAE

Cardiospermum halicacabum L., Sp. Pl. 366. 1753. *Cardiospermum acuminatum* Miq. LN: *Lataphutki*. Climber, commonly occurs in moist thickets and waste ground. Fl. & fr.: May-November. Use: Medicine. RS: Sayedur 3540 (DACB). **Fig. 12.**

Lepisanthes senegalensis (Poir.) Leenh., Blumea 17: 85. 1969. LN: *Gotaharina*. Shrub, rarely occurs along the canal bank of the forest. Fl. & fr.: July-April. Use: Fire wood. RS: Sayedur 3634 (DACB).

RUTACEAE

***Glycosmis pentaphylla** (Retz.) DC., Prodr. 1: 538. 1824. *Limonia arborea* Roxb. LN: *Datmajani, Motkila*. Shrub, commonly occurs in scrub forest, hill slopes. Fl. & fr.: Throughout the year. Use: Medicine.

OXALIDACEAE

Oxalis corniculata L., Sp. Pl. 435. 1753. LN: *Amrul, Chuka tripati, Amboli*. Herb, commonly occurs in shady moist area of the forest. Fl. & fr.: September-May. Use: Medicine. RS: Sayedur 3377 (DACB).

APIACEAE

Centella asiatica (L.) Urban, Fl. Bras. 11(1): 287. 1879. *Hydrocotyle asiatica* L. LN: *Thankuni, Adamoni*. Herb, occasionally occurs in shady and marsh places of the forest. Fl. & fr.: March-December. Use: Medicine and Vegetable. RS: Sayedur 3559, 3410 (DACB).

Hydrocotyle sibthorpioides Lamk., Enc. 3: 153. 1769. LN: *Gimashak*. Herb, commonly occurs in wet damp or shady areas. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3542 (DACB).

Oenanthe bengalensis (Roxb.) Kurz, J. Asiat. Soc. Bengal 2: 115. 1877. Aquatic herb, occasionally occurs in marshy area besides the canal of the forest. Fl. & fr.: April-August. Use: Vegetable. RS: Sayedur 3621 (DACB). **Fig. 42.**

Oenanthe javanica (Blume) DC., Prodr. 4: 138. 1830. LN: *Pan-turasi*. Herb, occasionally occurs in marshlands, wet grasslands and shallow water areas. Fl. & fr.: March-December. Use: Medicine. RS: Sayedur 3428 (DACB).

APOCYNACEAE

***Hemidesmus indicus** (L.) R. Br. *ex* Schult., Syst. Veg. 6: 126. 1820. Shrub, occasionally occurs in shady moist areas. Fl. & fr.: July-December. Use: Medicine.

ASCLEPIADACEAE

Hoya verticillata (Vahl) G. Don, Gen. Hist. 4: 128. 1837. *Hoya parasitica* (Wall. *ex* Hornem.) Wight. LN: *Mom phul*. Parasitic climber, occasionally occurs on tree trunk. Fl. & fr.: June-February. Use: Ornamental. RS: Sayedur 3596 (DACB).

SOLANACEAE

Nicotiana plumbaginifolia Viv., Elench. Pl. Hort. Dinero: 26. 5. 1802. LN: *Bon tamak*. Herb, occasionally occurs in waste place and river bank of the forest. Fl. & fr.: March-December. Use: Medicine. RS: Sayedur 3598 (DACB).

Physalis minima L., Sp. Pl. 1: 183. 1753. LN: *Fotka*. Herb, occasionally occurs along the river bank of the forest. Fl. & fr.: Throughout the year. RS: Sayedur 3603 (DACB).

Solanum americanum Mill., Gard. Dict. ed. 8, 5. 1768. LN: *Tit begun*. Herb, commonly occurs in open space of the forest. Fl. & fr.: February-August. RS: Sayedur 3402 (DACB).

Solanum sisymbriifolium Lamk., Illust. 2: 25. 1797. LN: *Kanta Begoon*. Herb, occasionally occurs in the open spaces towards the river bank of the forest. Fl. & fr.: January-December. RS: Sayedur 3392 (DACB).

CONVOLVULACEAE

Aniseia martinicensis (Jacq.) Choisy, Mem. Soc. Phys. Geneve. 8: 66. 1838. LN: *Dhol kolmi*. Herb, rarely occurs in thickets. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3299 (DACB). **Fig. 6.**

Evolvulus nummularius (L.) L., Sp. Pl. ed. 2: 391. 1762. LN: *Bhui akra*. Herb, rarely occurs in open spaces of the forest. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3395 (DACB).

Ipomoea aquatica Forssk., Fl. Aegypt.-Arab. 44. 1775. *Ipomoea repens* Roth. LN: *Kalmi Shak*. Climber, occasionally occurs in wet lowlands, of the forest. Fl. & fr.: January-December. Use: Vegetable. RS: Sayedur 3596 (DACB).

Ipomoea fistulosa Mart. *ex* Choisy in DC., Prodr. 9: 349. 1845. LN: *Dhol kolmi*. Shrub, commonly occurs in moist places of the forest. Fl. & fr.: Throughout the year. Use: Firewood, Hedge plant. RS: Sayedur 3391 (DACB).

Merremia gemella (Burm. f.) Hallier f., Bot. Jahrb. Syst. 16: 552, in obs. 1893. *Convolvulus gemellus* Burm. f. LN: *Nil kolmi*. Climber, commonly occurs in the thickets. Fl. & fr.: December-February. RS: Sayedur 3406 (DACB). **Fig. 39.**

Merremia hederacea (Burm. f.) Hallier f., Bot. Jahrb. 18: 118. 1894. LN: *Kaladana*. Climber, rarely occurs in thickets and open grasslands. Fl. & fr.: October-January. Use: Medicine. RS: Sayedur 3571, 3288 (DACB).

MENYANTHACEAE

Nymphoides cristata (Roxb.) Kuntze, Revis. Gen. Pl. 2: 429. 1891. Aquatic herb, commonly occurs in stagnant water. Fl. & fr.: August-October. Use: Vegetable. RS: Sayedur 3765 (DACB).

Nymphoides indica (L.) Kuntze, Revis. Gen. Pl. 2: 429. 1891. LN: *Chandmalla*. Floating herbs, commonly occurs in margins of lakes and Jheels. Fl. & fr.: October-February. Use: Medicine. RS: Sayedur 3433 (DACB).

CUSCUTACEAE

Cuscuta reflexa Roxb., Pl. Cor. 2: 3. Pl. 104. 1798. *Cuscuta elatior* Choisy. LN: *Swarnalata*. Parasitic climber, occasionally occurs in on the hedge plants. Fl. & fr.: August-March. Use: Medicine. RS: Sayedur 3614 (DACB).

MENYANTHACEAE

Nymphoides hydrophylla (Lour.) O. Kuntze, Rev. Gen. Pl. 2: 429. 1891. Aquatic herb, occasionally occurs in the margins of lakes and water bodies. Fl. & fr.: October-February. Use: Fodder. RS: Sayedur 3616 (DACB). **Fig. 41.**

BORAGINACEAE

Coldenia procumbens L., Sp. Pl. 1: 125. 1753. LN: *Tripukshi*. Herb, occasionally occurs in open grassland of the forest. Fl. & fr.: March-July. Use: Medicine. RS: Sayedur 3561 (DACB).

Cordia dichotoma Forst. f., Fl. Ins. Austr. Prodr. 18: 110. 1876. LN: *Bohal*, *Bohary*, *Bohari*, *Bahubara*. Deciduous tree, rarely occurs in scrub forests. Fl. & fr.: February-August. Use: Fiber, fodder, medicine and fire wood. RS: Sayedur 3755 (DACB).

Heliotropium indicum L., Sp. Pl. 139. 1753. *Heliotropium foetidum* Salisb. LN: *Hatisur*. Herb, commonly occurs in open waste places of the forest. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3627 (DACB). **Fig. 33.**

VERBENACEAE

Lippia alba (Mill.) Britton *et* Wilson, Sci. Surv. Puerto Rico. Vergin 6: 141. 1925. LN: *Pichas-lakri*. Shrub, commonly occurs in the canal bank and river bank of the forest. Fl. & fr.: Throughout the year. Use: Soil binder. RS: Sayedur 3427 (DACB). **Fig. 37.**

Clerodendrum infortunatum L., Sp. Pl. 637. 1753.. *Clerodendrum viscosum* Vent. LN: *Vhat*. Woody herb, occasionally occurs towards the river bank and edge of the forest. Fl. & fr.: January-July. Use: Medicine. RS: Sayedur 3545 (DACB). **Fig. 16.**

LAMIACEAE

***Anisomeles indica** (L.) Kuntze, Rev. Gen.: 512. 1891. *Nepeta indica* L. LN: *Gobura*, *Shipri gach*. Annual herb, occasionally occurs near forest trails. Fl. & fr.: October-July. Use: Medicine.

Anisomeles heyneana Wall. *ex* Benth. in Wall., Pl. As. Rar. 1: 59. 1830. Herb, rarely occurs in the open spaces of the forest. Fl. & fr.: October-December. RS: Sayedur 3600 (DACB).

Pogostemon auricularius (L.) Hassk., Tijdschr. Naturl. Gesch. Physiol. 10: 127. 1843. *Mentha auricularis* L. Herb, occasionally occurs in the open spaces of the forest. Fl. & fr.: September-January. RS: Sayedur 3375 (DACB). **Fig. 45.**

Pogostemon benghalensis (Burm. f.) O. Kuntze, Rev. Gen. Pl. 2: 529. 1891. LN: *Pachuli*. Shrub, occasionally occurs in forest bed mainly in dry areas. Fl. & fr.: January-May. Use: Vegetable. RS: Sayedur 3542 (DACB).

Salvia plebeia R. Br., Prodr. Fl. Nov. Holl.: 500. 1810. LN: *Bhuti tulsi*. Herb, commonly occurs in waste places along the bank of rivers. Fl. & fr.: March-June. Use: Medicine. RS: Sayedur 3421 (DACB).

Stachys melissifolia Benth., Labiat. Gen. Spec. 538. 1834. Herb, occasionally occurs in wet areas in forests and lake margins. Fl. & fr.: July-August. RS: Sayedur 3754 (DACB).

BUDDLEJACEAE

Buddleja asiatica Lour., Fl. Cochinch. 72. 1790. *Buddleja neemda* Buch.-Ham. ex Roxb. LN: *Badbhota*, *Neemda*. Shrub, rarely occurs in open places at edge of open forests. Fl. & fr.: January-June. Use: Medicine. RS: Sayedur 3407 (DACB).

SCROPHULARIACEAE

Linnophila heterophylla (Roxb.) Benth., Scroph. Ind. 25. 1835. LN: *Patakutra*. Herb, rarely occur in the open space of the forest. Fl. & fr.: February-October. Use: Medicine. RS: Sayedur 3399 (DACB). **Fig. 36.**

Lindernia anagallis (Burm. f.) Pennell, J. Arnold Arbor. 24: 252. 1943. Herb, commonly occurs in the moist places of the forest. Fl. & fr.: March-November. Use: Medicine. RS: Sayedur 3532 (DACB).

***Lindernia antipoda** (L.) Alston, Handb., Fl. Ceylon 6 (Suppl.): 214. 1931. *Ruellia antipoda* L. LN : *Jai ghas*. Herb, occasionally occurs in tanks and ponds, rice fields and moist places. Fl. & fr.: Throughout the year.

Lindernia crustacea (L.) F. Muell., Census Austral. Pl. 1: 97. 1882. LN: *Chapra gas*. Herb, commonly occurs in moist places and open spaces of the forest. Fl. & fr.: April-December. Use: Medicine. RS: Sayedur 3623, 3568 (DACB).

Lindernia rotundifolia (L.) Alston in Trimen, Hand. Fl. Ceylon 6: 214. 1931. Herb, occasionally occurs in moist places, ditches and edges of waterbodies. Fl. & fr.: Throughout the year. RS: Sayedur 3618 (DACB).

Mazus pumilus (Burm.fil.) Steenis, Nova Guinea, n. s., 9(1): 31. 1958. Herb, occasionally occurs in the open spaces of the forest. Fl. & fr.: Almost throughout the year. RS: Sayedur 3626 (DACB).

Mecardonia procumbens (Mill.) Small, Fl. Southeast U.S.: 1338. 1905. Herb, occasionally occurs in the open space of the forest. Fl. & fr.: February-June. RS: Sayedur 3384 (DACB).

Scoparia dulcis L., Sp. Pl. 116. 1753. LN: *Ban dhone*. Shrub, commonly occurs in open places and forest margins. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3265 (DACB).

Torenia violacea (Azaola ex Blanco) Pennell, J. Arnold Arbor. 24: 255. 1943. Herb, occasionally occurs in moist places, roadsides, open forests and old walls. Fl. & fr.: August-November. RS: Sayedur 3381 (DACB).

ACANTHACEAE

Dicliptera bupleuroides Nees in Wall., Pl. As. Rar. 3: 111. 1832. Herb, rarely occurs near canal bank and shady places. Fl. & fr.: March-May. RS: Sayedur 3362 (DACB).

Hygrophila polysperma (Roxb.) T. Anders., Journ. Linn. Soc. Bot. 9: 456. 1867. Herb, commonly occurs in the open spaces of the forest. Fl. & fr.: December-July. RS: Sayedur 3380 (DACB).

***Hygrophila ringens** (L.) R.Br. *ex* Spreng., Syst. Veg. 2: 828. 1825. *Hygrophila salicifolia* (Vahl) Nees. LN: *Kakmasha*. Herb, occasionally occurs in moist and marshy places. Fl. & fr.: November-March.

Lepidagathis incurva Buch.-Ham. *ex* D.Don, Prodr. Fl. Nepal: 119. 1825. Herb, commonly occurs in moist damp areas. Fl. & fr.: March-May. RS: Sayedur 3530 (DACB).

***Nelsonia canescens** (Lam.) Spreng., Syst. Veg. 1: 42. 1824. LN: *Paramul*. Herb, commonly occurs in forest bed mainly dry areas. Fl. & fr.: October-February.

CAMPALUNACEAE

Lobelia zeylanica L., Sp. Pl.: 932. 1753. Herb, commonly occurs in open spaces and river bank of the forest. Fl. & fr.: December-July. RS: Sayedur 3382 (DACB).

Wahlenbergia marginata (Thunb.) A. DC., Monogr. Camp.: 143. 1830. Herb, occasionally occurs in moist grasslands, canals and riverside of the forest. Fl. & fr.: throughout the year. Use: Medicine. RS: Sayedur 3549 (DACB).

RUBIACEAE

Dentella serpyllifolia Wall. *ex* Craib, Fl. Siam. Enum. 2: 27. 1932. LN: *Bhuiapat*. Herb, rarely occurs in moist places mainly in saline soils. Fl. & fr.: Throughout the year. RS: Image.

Dentella repens (L.) J.R.Forst. & G.Forst., Char. Gen. Pl. 13. 1775. LN: *Bhuiapat*. Herb, commonly occurs in wet places towards the river bank of the forest. Fl. & fr.: December-July. RS: Sayedur 3632 (DACB).

***Oldenlandia corymbosa** L., Sp. Pl. 1: 119. 1753. *Hedyotis corymbosa* (L.) Lam. LN: *Bhutitida*. Herb, occasionally occurs in waste lands, grass fields and in scrub jungles. Fl. & fr.: Throughout the year. Use: Medicine.

Oldenlandia diffusa (Willd.) Roxb., Hort. Bengal. 11. 1814. *Hedyotis diffusa* Willd. Herb, commonly occurs in wet places towards the river bank of the forest. Fl. & fr.: July-December. RS: Sayedur 3251 (DACB).

Oldenlandia herbacea (L.) Roxb., Hort. Bengal. 11. 1814. Herb, occasionally occurs in marshy and humid grounds. Fl. & fr.: January-April. Use: Medicine. RS: Sayedur 3755 (DACB).

ASTERACEAE

Acmella calva (DC.) R.K. Jansen, Syst. Bot. Monogr. 8: 41. 1985. *Spilanthes calva* DC. in Wight. LN: *Nag phul*, *Surja kannya*. Perennial herb, occasionally occurs in open areas of the forest. Fl. & fr.: Throughout the year. RS: Sayedur 3420 (DACB).

Ageratum conyzoides L., Sp. Pl.: 839. 1753. LN: *Ochunti*, *Fulkuri*. Herb, occasionally occurs in open areas of the forest. Fl. & fr.: November-June. Use: Medicine. RS: Sayedur 3404 (DACB).

Centipeda minima (L.) A. Br. & Aschers., Ind. Sem. Hort. Berol. App. 6. 1867. LN: *Machitti*. Shrub, occasionally occurs in Fallow lands, open lands and riversides. Fl. & fr.: February-June. Use: Medicine. RS: Sayedur 3620 (DACB).

***Chromolaena odorata** (L.) R.M. King & H. Rob., Phytologia 20: 204. 1970. *Eupatorium odoratum* L. LN: *Jarman lata*, *Tofaina lata*. Herb, commonly occurs throughout the forest areas. Fl. & fr.: November-May. Use: Medicine.

Cotula hemispherica (Roxb.) Wall. *ex* C.B. Clarke, Comp. Ind.: 150. 1876. *Artemisia hemisphaerica* Roxb. LN: *Kacha gash*. Herb, occasionally occurs in the moist land of the forest. Fl. & fr.: December-March. RS: Sayedur 3415 (DACB).

Crassocephalum crepidioides (Benth.) S. Moore, J. Bot. 1: 211. 1921. LN: *Samapao*. Annual herb, occasionally occurs in the river bank of the forest. Fl. & fr.: September-May. RS: Sayedur 3418 (DACB). **Fig. 20.**

***Cyanthillium cinereum** (L.) H. Rob., Proc. Biol. Soc. Wash. 103. 252. 1990. *Vernonia cinerea* (L.) Less. LN: *Kuksim*. Herb, occasionally occurs in dry exposed slopes, waste places and open forests. Fl. & fr.: Throughout the year. Use: Fodder.

Eclipta prostrata (L.) L., Mant. Pl. 1771. *Eclipta alba* (L.) Hassk. LN: *Kalokeshi*. Herb, commonly occurs in the moist area of the forest. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3537 (DACB). **Fig. 25.**

Ethulia conyzoides L., Sp. Pl. ed. 2: 1171. 1762. Herb, rarely occurs in the moist and shady area of the forest. Fl. & fr.: January-May. Use: Medicine. RS: Sayedur 3546 (DACB). **Fig. 26.**

Grangea maderaspatana (L.) Poir., Encycl. [J. Lam. & al.] Suppl. 2. 825. 1812. Herb, rarely occurs in damp and waste places. Fl. & fr.: January-August. Use: Leaf-sap is used to treat earache. RS: Sayedur 3594 (DACB).

Gymnanthemum extensum (Wall. *ex* DC.) Steetz, Naturw. Reise Mossambique [Peters] 6(Bot., 2): 337. 1864. *Vernonia extensa* DC. Shrub, occasionally occurs in open forests or thickets in slopes. Fl. & fr.: November-January. Use: Medicine. RS: Sayedur 3281 (DACB).

Hemistepta lyrata (Bunge) Bunge, Dorp. Jahrb. Litt. 1: 222. 1833. Herb, occasionally occurs in forest margins and river bank. Fl. & fr.: February-May. Use: Medicine. RS: Sayedur 3595 (DACB). **Fig. 34.**

Laphangium luteoalbum (L.) Tzvelev, Byull. Moskovsk. Obshch. Isp. Prir. Otd. Biol. 98(6): 105. 1993. LN: *Bara Kamra*. Herb, rarely occurs in moist area of the forest. Fl. & fr.: March-August. RS: Sayedur 3409 (DACB).

Mikania cordata (Burm.f.) B.L. Rob., Contr. Gray Herb. 104: 65. 1934. LN: *Assam lata*. Climber, occasionally occurs inside forest and canal bank associated with other plants. Fl. & fr.: October-February. Use: Medicine. RS: Sayedur 3389 (DACB).

Parthenium hysterophorus L., Sp. Pl. 988. 1753. Herb, rarely occurs in Fields and roadsides. Fl. & fr.: April-August. This Alien Invasive species rarely occurs to the edge of the forest towards the boat station. Use: Medicine. RS: Sayedur 3408 (DACB).

Sphaeranthus indicus L., Sp. Pl. ed. 2: 1314 (1762). LN: *Chagul-nadi, Murmuri*. Herb, commonly occurs in moist areas of the forest. Fl. & fr.: throughout the year. Use: Medicine and oil. RS: Sayedur 3391 (DACB).

Spilanthes acmella (L.) L., Syst. Veg. (ed. 13) 610. 1774. *Spilanthes calva* DC. LN: *Surja Kanna, Akarkara*. Herb, commonly occurs in open sunny places of the forest. Fl. & fr.: December-March. Use: Medicine. RS: Sayedur 3391 (DACB).

Thespis divaricata DC. in Guill. Arch. Bot. 2: 517. 1833. Herb, occasionally occurs in moist lands on the edges of canals and ponds. Fl. & fr.: March-June. RS: Sayedur 3604 (DACB).

Xanthium strumarium L., Sp. Pl. 987. 1753. *Xanthium indicum* J. Konig. *ex* Roxb. LN: *Ghagra, Khagra*. Herb, rarely occurs in the river bank of the forest. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3555 (DACB). **Fig. 51.**

LILIOPSIDA (MONOCOTYLEDONS)**ARECACEAE**

Calamus guruba Buch.-Ham. *ex* Mart., Hist. Nat. Palm. 3: 211. 1838. Shrub, occasionally occurs along the canal bank and river bank. Fl. & fr.: October-July. Use: Walking sticks and furniture frame. RS: Sayedur 3256 (DACB). **Fig. 10.**

Calamus longisetus Griff., Calcutta J. Nat. Hist. 5: 36. 1845. *Calamus tigrinus* Kurz. LN: *Uddumbet*. Shrub, occasionally occurs in canal bank and river bank of the forest. Fl. & fr.: October-June. Use: Walking sticks, bird-trap, furniture frame. RS: Sayedur 3274 (DACB). **Fig. 11.**

ARACEAE

Colocasia esculenta (L.) Schott, Melet. Bot. 18. 1832. *Arum chinense* L. LN: *Mukhikachu*. Annual herb, occasionally occurs in forest thickets. Fl. & fr.: May-October. Use: Vegetable. RS: Sayedur 3435, 3334 (DACB).

Pistia stratiotes L., Sp. Pl. 2: 963. 1753. Herb, occasionally occurs as floating on water body. Fl. & fr.: May-November. Use: Medicine and fodder. RS: Sayedur 3433 (DACB).

Pothos scandens L., Sp. Pl. 968. 1753. *Pothos angustifolius* (Raf.) C. Presl. LN: *Sunat, Sundad, Batilata*. Climber, occasionally occur creeping on trees or on rocks. Fl. & fr.: January-December. Use: Medicine. RS: Sayedur 3361 (DACB).

Tragia lassa Radcl.-Sm. & Govaerts, Kew Bull. 52: 480. 1997. *Lasia spinosa* (L.) Thw. LN: *Kanta kachu*. Herb, occasionally occurs in shady and moist places. Fl. & fr.: January-November. Use: Medicine. RS: Sayedur 3592 (DACB).

COMMELINACEAE

***Commelina benghalensis** L., Sp. Pl.: 41. 1753. LN: *Dholpata, Kanchira*. Herb, occasionally occurs in sandy loam on turfs and moist clayey soils. Fl. & fr.: December-January. Use: Vegetable.

Commelina diffusa Burm.f., Fl. Ind.: 18, 1790. *Commelina nudiflora* L. LN: *Kanchira*. Herb, occasionally occurs in moist ground. Fl. & fr.: December-January. Use: Vegetable. RS: Sayedur 3758 (DACB). **Fig. 18.**

Floscopa scandens Lour., Fl. Cochinch. 193. 1790. Prostrate herb, rarely occur at the edge of the canal. Fl. & fr.: July-November. Use: Medicine. RS: Sayedur 3316 (DACB). **Fig. 29.**

CYPERACEAE

Carex jackiana Boott, Proc. Linn. Soc. London 1: 260. 1845. Herb, occasionally occurs in marshes, swamps and grassy plains. Fl. & fr.: May-November. Use: Fodder. RS: Sayedur 3533 (DACB).

Cyperus rotundus L., Sp. Pl.: 45. 1753. LN: *Mutha, Bhadailla*. Herb, commonly occurs in cultivated fields, waste areas and roadsides. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3387 (DACB).

Cyperus tenuispica Steud., Syn. Pl. Glumac. 2: 11. 1854. Herb, commonly occurs in sparse forests, along trails, wet places and paddy fields. Fl. & fr.: September-November. Use: Medicine. RS: 3259 (DACB).

***Cyperus compressus** L., Sp. Pl. 46. 1753. Herb, commonly occurs in grasslands, salt marshes, along trails and lake margins. Fl. & fr.: July-December.

***Eleocharis acutangula** (Roxb.) Schult., Mant. 2: 91. 1824. Herb, occasionally occurs in flooded fields and moist areas. Fl. & fr.: June-September

***Fimbristylis schoenoides** (Retz.) Vahl, Enum. Pl. 2: 286. 1805. Herb, occasionally occurs in wet places ditches, roads and paddy field. Fl. & fr.: August-November.

Fimbristylis squarrosa Vahl, Enum. Pl. Obs. 2: 289. 1805. Herb, occasionally occurs near watersides and wet places. Fl. & fr.: August-October. Use: Medicine. RS: Sayedur 3631 (DACB).

Fimbristylis aestivalis Vahl, Enum. Pl. Obs. 2: 288. 1805. Herb, commonly occurs in grasslands marshy places and paddy fields. Fl. & fr.: May-August. RS: Sayedur 3255 (DACB).

Fimbristylis complanata (Retz.) Link, Hort. Berol. 1: 292. 1827. Herb, commonly occurs in Wet places in valleys, grasslands, streamsides, open fields, slopes, ditches, swampy places. Fl. & fr.: January-October. RS: Sayedur 3589 (DACB).

Kyllinga brevifolia Rottb., Descr. Icon. Rar. Pl. 13. 1773. *Cyperus brevifolius* (Rottb.) Hassk., Cat. Hort. Bot. Bogor. Alt.: 24. 1844. Herb, commonly occurs in forest beds. Fl. & fr.: Throughout the year. RS: Sayedur 3528 (DACB).

Kyllinga nemoralis (J.R.Forst. & G.Forst.) Dandy *ex* Hutch. & Dalziel, Fl. W. Trop. Afr. 2: 487. 1936. Herb, occasionally occurs in shady wet places. Fl. & fr.: June-September. RS: Sayedur 3378 (DACB).

Pycneus sanguinolentus (Vahl) Nees, Linnaea 9: 283. 1834. Herb, occasionally occurs in sparse forest margins, meadows, swamps and lake margins. Fl. & fr.: July-December. RS: Sayedur 3253 (DACB).

POACEAE

Arthraxon lancifolius (Trin.) Hochst., Flora 39: 188. 1856. Herb, occasionally occurs in damp rocky places. Fl. & fr.: September-November. RS: Sayedur 3602 (DACB).

***Axonopus compressus** (Sw.) P. Beauv., Ess. Agrost. 12 : 154. 1412. LN: *Carpet Ghash, Balla Ghash*. Herb, occasionally occurs in weedy places on moist ground, or sandy meadows and roadsides. Fl. & fr.: Throughout the year. Use: Soil binder. RS: Previously recorded from this locality, not found in the present survey.

Brachiaria kurzii (Hook.f.) A.Camus, Fl. Indo-Chine 7: 438. 1922. Herb, occasionally occurs in open and shady places of the forest. Fl. & fr.: January-December. Use: Fodder grass. RS: Sayedur 3297 (DACB).

Chrysopogon zizanioides (L.) Roberty, Bull. Inst. Franç. Afrique Noire, A 22: 106. 1960. Herb, rarely occurs in open forests, banks of rivers. Fl. & fr.: August-December. Use: Fodder grass. RS: Sayedur 3751 (DACB).

Cynodon dactylon (L.) Pers., Syn. Pl. 1: 85. 1805. Herb, commonly occurs in roadsides, field margins. Fl. & fr.: Throughout the year. Use: Medicine. RS: Sayedur 3273 (DACB).

***Cyrtococcum patens** (L.) A.Camus, Bull. Mus. Natl. Hist. Nat. 27: 118. 1921. *Panicum patens* L. LN: *Patcocca grass*. Herbs, commonly occurs in moist places along watercourses. Fl. & fr.: September-February. Use: Soil binder.

Echinochloa crus-galli (L.) P.Beauv, Ess. Agrostogr. 53. 1812. Herb, rarely occurs in damp weedy places, streams sides and rice fields. Fl. & fr.: May-August. RS: Sayedur 3534 (DACB).

***Eleusine indica** (L.) Gaertn., Fruct. 1: 8. 1788. LN: *Chapra*. Herb, occasionally occurs in waste place and river bank. Fl. & fr.: June-August. Use: Fodder.

Eragrostis uniolooides (Retz.) Nees *ex* Steud., Syn. Pl. Glumac. 1: 264. 1854. Herb, occasionally occurs in grasslands, roadsides. Fl. & fr.: August-October. RS: Sayedur 3602 (DACB).

Paspalum distichum L., Syst. Nat. ed. 10, 2: 855. 1759. Herb, occasionally occurs in ditches and other disturbed places. Fl. & fr.: March-September. Use: Cattle fodder. RS: Sayedur 3258 (DACB).

Phragmites karka (Retz.) Trin. *ex* Steud., Bot. 2: 324. 1841. *Arundo karka* Retz. LN: *Nolkhagra*. Herb, commonly occurs in warm swampy areas. Fl. & fr.: Throughout the year. Use: Brooms. RS: Sayedur 3419 (DACB).

***Saccharum spontaneum** L., Mant. Alt.: 183. 1771. LN: *Kash, Kaichha*. Herb, rarely occurs in swampy areas and river banks. Fl. & fr.: July-November. Use: Soil binder and fodder.

***Saccharum ravennae** (L.) L., Syst. Veg. ed. 13 2: 88. 1774. *Andropogon ravennae* L. Herb, rarely occurs in wet places such as bank of river and pond. Fl. & fr.: August-November Use: Culms are used for making huts, fodder grass. RS: Previously recorded from this locality, not found in the present survey.

ZINGIBERACEAE

Alpinia nigra (Gaertn.) Burt., Notes Roy. Bot. Gard. Edinb. 35: 213. 1977. LN: *Tara, Taruko*. Herb, occasionally occurs in riverside and can also grow on moist land. Fl. & fr.: May-December. Use: Medicine. RS: Sayedur 3740 (DACB).

COSTACEAE

Cheilocostus speciosus (J. König) C. Specht, Taxon 55: 159. 2006. *Costus speciosus* (J. König) Sm. LN: *Keumul, Kemul, Khustha*. Perennial herb, occasionally occurs in forest thickets. Fl. & fr.: September-December. Use: Medicine. RS: Sayedur 3431 (DACB). **Fig. 19.**

MARANTACEAE

Schumannianthus dichotomus (Roxb.) Gagnep., Bull. Soc. Bot. France 51: 176. 1904. LN: *Patipata, Murta*. Shrubs, commonly occurs in shade and clay or clay-loam soil with high moisture. RS: Sayedur 3287 (DACB). **Fig. 21.**

PONTEDERIACEAE

Eichhornia crassipes (Mart.) DC., Mon. Phan. 4: 527. 1883.. LN: *Kachuripana, Dorear-pana*. Herb, commonly occurs in shallow temporary ponds, wetlands and marshes. Fl. & fr.: Throughout the year. Use: Fodder. RS: Sayedur 3593 (DACB).

LILIACEAE

Asparagus racemosus Willd., Sp. Pl. 2: 152. 1799. LN: *Shatamuli*. Herb, occasionally occurs in arshy and swampy areas. Fl. & fr.: November-March. Use: Medicine. RS: Sayedur 3591 (DACB). **Fig. 8.**

SMILACACE

***Smilax ovalifolia** Roxb., Fl. Ind. ed. 3: 794. 1832. *Smilax macrophylla* Roxb. LN: *Kumarilata*. Climber, occasionally occur in shady place of forest thickets. Use: Medicine. Fl. & fr.: November-March.

Smilax perfoliata Lour., Fl. Cochinch. 622. 1790. *Smilax prolifera* Roxb. LN: *Kumarilata*. Climber, occasionally occur in shady place of forest beds. Fl. & fr.: November-March. Use: Medicine. RS: Sayedur 3275 (DACB). **Fig. 48.**

Smilax zeylanica L., Sp. Pl.: 1029. 1753. LN: *Kumarilata*. Climber, occasionally occurs in forest bed. Fl. & fr.: Novemver-March. Use: Medicine. RS: Sayedur 3610 (DACB).

DIOSCOREACEAE

Dioscorea glabra Roxb., Fl. Indica ed. 3: 804. 1832. *Dioscorea hongkongensis* Uline ex R. Knuth. LN: *Shora-alu*. Climber, occasionally occurs in dried areas over bushes. Use: Vegetable. Fl. & fr.: September-December. RS: Sayedur 3590 (DACB).

***Dioscorea pentaphylla** L., Sp. Pl.: 1032. 1753. LN: *Kanta alu*, *Jhum Alu*. Climber, rarely occurs on bush and on tree trunk. Fl. & fr.: July-December. Fl. & fr.: September-December. Use: Tuber edible.

ORCHIDACEAE

Acampe ochracea (Lindl.) Hochr., Bull. New York Bot. Gard. 6: 270. 1910. Epiphytic perennial herb. Rarely grows on tree trunk in forest. Fl. & fr.: April-June. Use: Ornamental & Medicine. RS: Sayedur 3610 (DACB).

Vanda tessellata (Roxb.) Hook. ex G.Don., Hort. Brit. 372 1830. LN: *Rasna*. Rarely occurs on the trunks of old *Dalbergia reniformis* plants inside the forest. Fl. & fr.: Use: Ornamental. RS: Sayedur 3609 (DACB).

Abbreviations: LN= Local name; Fl. & fr.= Flowering and fruiting period; RS= Representative specimen.

Note: *mark indicates that, the species was not found during the survey, but reported by Choudhury *et al.* 2004

Discussion

Out of 217 plant species found in RSF, Dicotyledons consists of 160 species under 118 genera and 57 families; Monocotyledons consists of 46 species under 33 genera and 13 families and Pteridophyta consists of 11 species under 10 genera and 6 families. The study has revealed that Magnoliopsida (Dicot) constitutes 73.73% species while Liliopsida (Monocot) constitutes 21.20 % and Pteridophytes 5.07% of the total vascular flora of RSF (Table-1).

Table 1. Taxonomic enumeration of major plant group of the Ratargul Swamp Forest (RSF).

	Pteridophyta (Fern)	Liliopsida (Monocot)	Magnoliopsida (Dicot)	Total
Families	6	13	57	76
Genera	10	33	118	161
Species	11	46	160	217
% of species	5.07	21.20	73.73	100

In Magnoliopsida, Asteraceae with 19 species under 19 genera has been recorded as the largest family in this study area, followed by Polygonaceae with 10 species under 5 genera, Euphorbiaceae with 9 species under 8 genera and Scrophulariaceae with 9 species under 6 genera. On the other hand, *Persicaria* with 5 species is appeared as the largest dicotyledonous genus of the area followed by *Ficus*, *Lindernia* with 4 species each and *Alternanthera*, *Oldenlandia* with

three species each. Cyperaceae with 13 species is found to be the largest family in Liliopsida followed by Poaceae with 12 species. *Fimbristylis* with four species stands as the largest genus in Liliopsida followed by *Cyperus* and *Smilax* with 3 species each.

The study found that, aquatic and epiphytic plants represents only by 5.36% (11 species) and 1% (2 species) of the total flora respectively and remaining species are terrestrial. Major aquatic vegetation of the area represented by *Eichhornia crassipes* (Mart.) DC., *Nymphaea nouchali* Burm. f., *Nymphaea rubra* Roxb., *Hygrophila polysperma* (Roxb.) T. Anders., *Hygrophila ringens* (L.) R.Br., *Pistia stratiotes* L. and *Oenanthe bengalensis* (Roxb.) Kurz. Only two orchid species named *Acampe ochracea* (Lindl.) Hochr. and *Vanda tessellata* (Roxb.) Hook. were found in the forest.

Habit wise itemization of plant species shows that 68.20 % (148 species) of the total species represented by herbs, 13.36 % (29 species) by shrubs and 9.68% (21 species) by trees, 8.76% (19 species) by climbers. Hence, it can be said that, the diversity of herbaceous plants is much higher than those of trees, shrubs and climbers. The study has found 15 cultivated plant species which consist 6.91% of the total flora of the area and remaining 202 (93.09%) species are found naturally or growing wild. The diversity of wild species is higher than the cultivated one.

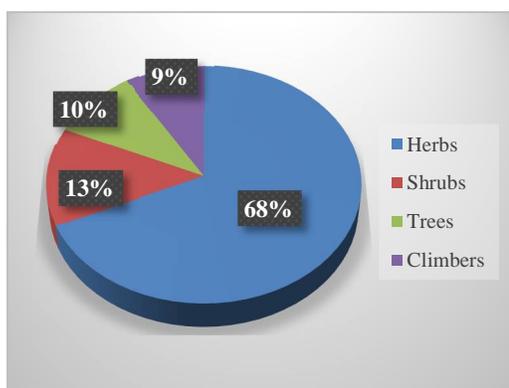


Fig. 52: Percentage of different groups of plants in the study area

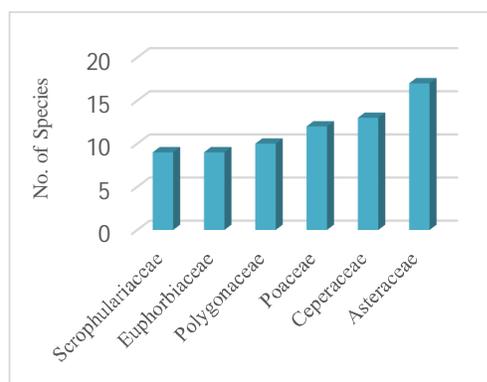


Fig. 53.: Five dominant families of the study area

IUCN Bangladesh (2023 a&b) has assessed red list status of 1000 plant species; among which 29 plant species found in Ratargul. Out of 29 plant species, 26 species assessed as LC (Least Concern) and remaining 3 species assessed as VU (Vulnerable) i.e. *Dalbergia reniformis* Roxb.; *Rosa clinophylla* Thory and *Hemistepta lyrata* (Bunge) Bunge. *Dalbergia reniformis* Roxb. is the dominant tree species covering most of the top story of the forest. The forest is one of the two natural habitats of the species *Rosa clinophylla* Thory. On the other hand, *Hemistepta lyrata* (Bunge) Bunge is only found in this forest area.

The economic importance of this forest is enormous. Shitalpati of Sylhet (part of UNESCO Intangible Cultural Heritage, ICH) is prepared from *Schumannianthus dichotomus* (Roxb.) Gagnep., (Murata) cultivated in this forest. Furthermore, a total of 157 economically important vascular species of Ratargul Swamp Forest area have been recorded during this study. Figure 3 shows that most of these species used as medicine (84 species), others can be categorized under the major economic categories as Vegetables (20 species), fodders (14 species), timbers (12 species), firewood (9 species), fruits (8 species), ornamentals (7 species) and domestic uses (4

species). Few other species have minor economical values, i.e. green manure (5 species), fibers (5 species), binder (3 species) and dye (2 species). Rest of the 51 species of the study area, that are not yet known to be useful economically.

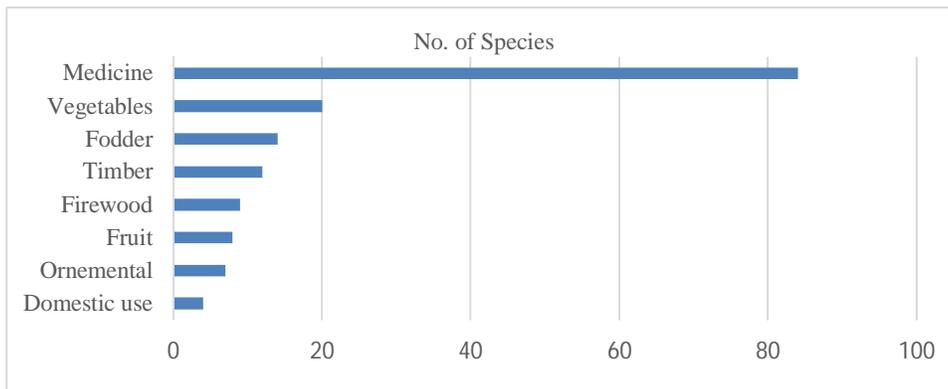


Fig. 54: Bar diagram showing major use type of the plant species of RSF.

Ratargul Swamp Forest deserves priority conservation for its typical nature and high potential of biodiversity value. These sites have improved a lot during the last couple of decades due to the intervention of Forest Department. However, some threats still exist for the biodiversity of the area. The major threats are encroachment of forest lands for agriculture, illegal collection of wood & medicinal plants and illegal catching of fishes. Furthermore, around 20 to 23 thousand tourists visited the swamp forest in a week during rainy season (Jahan and Akhter, 2018). Most of the tourists are not aware about biodiversity conservation and they leave plastic wastage, food scraps and different undegradable materials here.

Tourism along with other multifarious anthropogenic activities causes the destruction of ecology, depletion and degradation of the biodiversity of forest. As this forest is equally important for the government and local communities, it is essential to ensure the improvement, conservation and sustainable utilization of the plant resources of the forest area. Therefore, public awareness programme for both the tourist and local community is recommended from the study. An ecosystem management plan can be adopted prioritizing sustainable consumption. In this regards, this taxonomic research finding can serve as an important guiding database to take appropriate biodiversity conservation initiatives and plant resources based socioeconomic development of the Ratargul Swamp Forest area.

Acknowledgements

The authors gratefully acknowledge the authority of the Bangladesh Forest Department for their co-operation during the field works.

References

- Afroz, T., Uddin, M.S., Talucder, M.S.A. and Islam, F. 2020. Status of the fauna of Ratargul swamp forest. *Bangladesh J. Ecol.* 2(1): 7-11.
- Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A. and Haque, E.U. (ed.), 2008a. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 6. Angiosperms: Dicotyledons (Acanthaceae-Asteraceae). Asiatic Society of Bangladesh, Dhaka, pp. 1-408.

- Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A. and Haque, E.U. (ed.), 2008b. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 7. Angiosperms: Dicotyledons (Balsaminaceae-Euphorbiaceae). Asiatic Society of Bangladesh, Dhaka, pp. 1-546.
- Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A. and Haque, E.U. (ed.), 2008c. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 12. Angiosperms: Monocotyledons (Orchidaceae-Zingiberaceae). Asiatic Society of Bangladesh, Dhaka, pp. 1-552.
- Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A. and Haque, E.U. (ed.), 2009a. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 8. Angiosperms: Dicotyledons (Fabaceae-Lythraceae). Asiatic Society of Bangladesh, Dhaka, pp. 1-478.
- Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M. and Ahmed, A.T.A. (ed.), 2009b. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 9. Angiosperms: Dicotyledons (Magnoliaceae-Punicaceae). Asiatic Society of Bangladesh, Dhaka, pp. 1-488.
- Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M. and Ahmed, A.T.A. (ed.), 2009c. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 10. Angiosperms: Dicotyledons (Ranunculaceae-Zygophyllaceae). Asiatic Society of Bangladesh, Dhaka, pp. 1-580.
- Akter, S., Islam, M.S. and Mamun, S.A. 2020. Monitoring of Nutrient Status at Ratargul Swamp Forest in Sylhet, Bangladesh. *Grassroots J. Natural Res.* 3(1): 36-49.
- Alam, M.K. 1988. *Annotated Checklist of the Woody Flora of Sylhet Forest*. Bull. 5. Plant Taxonomy Series, Bangladesh Forest Research Institute, Chittagong. pp. 1-153.
- Ali, M.Y. 1991. Towards Sustainable Development of Fisheries Resources of Bangladesh. IUCN and BRAC, Dhaka. Bangladesh. 2012. *National Encyclopedia of Bangladesh*. Asiatic Soc. Bangladesh, Dhaka.
- Arefin, M.K., Rahman, M.M., Uddin, M.Z. and Hassan, M.A. 2011. Angiosperm flora of Satchari National Park, Habiganj, Bangladesh. *Bangladesh J. Plant Taxon.* 18(2): 117-140.
- IUCN Bangladesh. 2023a. *Plant Red List of Bangladesh*, Vol. 1. Bangladesh National Herbarium, Forest Department, Ministry of Environment, Forest and Climate Change and IUCN, International Union for Conservation of Nature and Natural Resources. pp. 1-680.
- IUCN Bangladesh. 2023b. *Plant Red List of Bangladesh*, Vol. 2. Bangladesh National Herbarium, Forest Department, Ministry of Environment, Forest and Climate Change and IUCN, International Union for Conservation of Nature and Natural Resources. pp. 1-680.
- Choudhury, J.K. Biswas, S.R. Islam, M.S. Rahman, O. and Uddin, S.N. 2004. *Biodiversity of Ratargul swamp forest*, Sylhet. IUCN Bangladesh Country Office, Dhaka, Bangladesh, pp. 4-24.
- Cronquist, A. 1981. *An Integrated System of Classification of Flowering Plants*. Columbia University Press, New York. pp. 1-1262.
- Das, S.K., Roy, N.C. and Hossain, M.A. 2017. *Diversity of indigenous fish species in Ratargul freshwater Swamp Forest*, Bangladesh. *Int. J. Sci. Res. Environ. Sci.* 5(2): 28-35.
- Forman, L. and Bridson, D. (eds.). 1989. *The herbarium handbook*. Kew: Royal Botanic Gardens. pp. 1-214.
- FRSS (Fisheries Resources Survey System). 2013. *Fisheries Statistical Yearbook of Bangladesh Fisheries Resources Survey System*. Department of Fisheries, Bangladesh. 29: 1-3.
- Ghani, A. 1998. *Medicinal Plants of Bangladesh with Chemical Constituents and Uses*. Asiatic Society of Bangladesh, pp. 1-467.
- Haque, A.K.M.K., Khan, S.A., Uddin, S.N. and Shetu, S.S. 2018. An annotated checklist of the angiospermic flora of Rajkandi Reserve Forest of Moulvibazar. Bangladesh. *Bangladesh J. Plant Taxon.* 25: 187-207.
- Hooker, J.D. 1872-1897. *The Flora of British India*, Vol. 1-7 (Ind. Repr. 1973). Bishen Singh Mahendra Pal Singh, Dehra Dun, India.

- Hossain, M.Z., Hussaini, S.M., Kashem, M.A., Hasan, M.M. and Khan, M.A.A. 2020. Litter quality and nitrogen mineralization of dominant tree species in the Ratargul swamp forests, Bangladesh. *Int. J. Ecol. Environ.* **46**(2): 195-201.
- Hossain, M.Z., Khan, M.A.A. Kashem, M.A. and Hoque, S. 2016. Plant community composition relation to soil physico- chemical properties of the Ratargul swamp forest, Bangladesh. *Dhaka Univ. J. Biol. Sci.* **25**(1): 1-8.
- Huq A.M., 1986. *Plant Names of Bangladesh*. Bangladesh National Herbarium (BARC), Dhanmondi, Dhaka. pp. 1-289.
- Islam, K.K., Hoque, M.A., Rahman, N., Sarker, M.A.A and Uddin, S.N. 2022. A Checklist of the Vascular Flora of Madhabkundo Eco-Park, Moulvibazar, Bangladesh. *Bull. Bangladesh National Herb.* **8**: 1-31.
- Islam, M.A., Islam, M.J., Arefin S, Rashid, A and Barman, S.K. 2016. Factors affecting the fisheries biodiversity of Ratargul swamp forest of Sylhet district, Bangladesh. *J. Environ. Sci. Toxicol Food Technol.* **10**(1): 60-65.
- Islam, M.S., Islam, M.A., Sweety, N.A., Hossain, M.A.R. and Kabir, M.H. 2016. Assessment of aquatic faunal diversity in the Ratargul swamp forest at Sylhet in Bangladesh. *Int. J. Environ. Sci.* **9**(2): 51-64.
- Jahan M.K. and Akhter H. 2018. Impact of ecotourism on the environment, society and culture of Ratargul swamp forest in Sylhet, Bangladesh. *Asian J. Environ.* **8**(1): 1-8.
- Kanjilal, U.N., Kanjilal, P.C., De, R.N. and Das, A.K. 1934-1940. *Flora of Assam*, Vol. **1-5**. (Ind. Repr. 1982). A Von Book Company, Delhi, India.
- Khan M.S., Rahman, M.M. and Ali, M.A. (eds.). 2001. *Red Data Book of Vascular Plants of Bangladesh*. Vol. I. Bangladesh National Herbarium, Dhaka, Bangladesh, pp. 1-179.
- Manhas, R.K. Gautam, M.K. and Kumari, D. 2009. Plant diversity of a fresh water swamp of Doon Valley, India. *Am. J. Sci.* **5**(1): 1-7.
- Nabahungu, N.L. and Visser, S.M. 2011. Contribution of wetland agriculture to farmers' livelihood in Rwanda. *Ecol. Econ.* **71**: 4-12.
- Pasha, M.K and Uddin, S.B. 2013. *Dictionary of plant names of Bangladesh* (Vascular Plants). Janokalyan Prokashani, Chittagong, pp. 1-320.
- Prain, D. 1903. *Bengal Plants*. Vol. **1-2** (Ind. Repr. 1981). Bishen Singh Mahendra Pal Singh, Dehra Dun, India.
- Siddiqui, K.U., Islam, M.A. Ahmed, Z.U. Begum, Z.N.T., Hassan, M.A., Khondker, M., Rahman, A. M., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.T. and Haque, E.U. (eds), 2007a. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. **5**, Asiatic Society of Bangladesh, Dhaka. pp. 1-390.
- Siddiqui, K.U., Islam, M.A., Ahmed, Z.U., Begum, Z.N.T., Hassan, M.A., Khondker, M., Rahman, M.M., Kabir, S.M.H., Ahmed, M., Ahmed, A.T.A., Rahman, A.K.T. & Haque, E.U. (ed.), 2007b. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. **11**. Angiosperms: Monocotyledons (Agavaceae-Najadaceae). Asiatic Society of Bangladesh, Dhaka, pp. 1-399.
- Sobuj, N.A. and Rahman, M. 2011. Assessment of plant diversity in Khadimnagar National Park of Bangladesh. *Int. J. Environ. Sci.* **2**(1):79-91.
- Sultana, M., Rahman, M.S., Hoque, M.A. and Saqee, A. 2022. Vascular Flora of Khadimnagar National Park under Sylhet district in Bangladesh. *Bull. Bangladesh National Herb.* **8**: 33-76.
- The Plant List, 2013. *The Plant List, a working list of all plant species*. Version 1.1 <<<http://www.the-plantlist.org>> Rtrived on 05 January 2022.
- TROPICOS 2010. Missouri Botanical Garden. <<http://www.tropicos.org>> Missouri Botanical Garden, Saint Louis, Missouri, USA. Retrieved on 11 March 2020.
- Uddin, M.Z. and Hassan, M.A. 2010. Angiosperm diversity of Lawachara National Park (Bangladesh): a preliminary assessment. *Bangladesh J. Plant Taxon.* **17**(1): 9-22.

- Van Valkenburg, J.L.C.H. and Bunyaphatsara, N. (eds.). 2002. Plant Resources of South–East Asia No. 12 (2). Medicinal and Poisonous Plants 2. Prosea Foundation, Bogor, Indonesia, pp. 1-782.
- WCMC (World Conservation Monitoring Centre). 1992. Global Biodiversity: Status of the Earth's Living Resources. London, UK: Chapman & Hall.
- Wu, Z.Y. and Raven, P.H. (eds.). 1994-2001. *Flora of China*. Vols. **8, 15-18, 24**. Missouri Botanical Garden Press, St. Louis, USA.
- Wu, Z.Y., Raven, P.H. and Hong, D.Y. (eds.). 1999-2013. *Flora of China*. Vols. **2-7, 9-14, 19-23, 25**. Missouri Botanical Garden Press, St. Louis.
- Yongxing, Y. 2003. Forest peatland's formation development and evolution during Holocene in east Xiao Xing'an Mountain. *Oceanol. Limnol. Sin.* **34**(1): 74-81.