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Addition to the Flora of Barak Valley of Assam, India

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Abstract

Barak Valley with its 6941.2 sq km geographical area is situated in the southern part of the Indian state of Assam and is located between 24^0 8/ and 25^0 8/ N latitude and 92^0 15/ and 93^0 15/ E longitude with an altitude of 26 – 27 m above *amsl*. There are 16 Reserve Forests and one Wildlife Sanctuary. The Borail is the only wildlife sanctuary (326.24 sq km) of this region, declared recently in 2004. Cachar is an old district of Barak valley. Survey for the herbaceous flora of Cachar district of Barak Valley was undertaken during 2009 – 2013. The present investigations is compared with *Flora of Barak valley, Assam* Vol. 1 (Das *et al*. 2013) and revealed that a total of 183 species belonging to 62 families of present study were not recorded by Das et al. (2013). Hence, these plants are enumerated in the present article as additions to the flora of Barak valley.

Key words: Herbaceous flora, Cachar, Barak valley, Assam, new record

INTRODUCTION

Barak Valley with its 6941.2 sq km geographical area is situated in the southern part of the Indian state of Assam and is located between 24^0 8/ and 25^0 8/ N latitude and 92^0 15/ and 93^0 15/ E longitude with an altitude of 26 – 27 m above *amsl*. It is surrounded by N.C. Hills of Assam and Jaintea Hills of Meghalaya on the north, Mizo Hills of Mizoram on the south, on the east stand the Manipur hills and on the west Sylhet plain of Bangladesh and hills of Tripura. Barak Valley region of Assam, consist of three districts viz. Cachar, Hailakandi and Karimganj, is a heterogeneous land and has an undulating topography composed of hills, hillocks (tillas), wide plains and low-lying water logged areas (natural depression) locally called *beels*. There are 16 Reserve Forests and one wildlife sanctuary, i.e. Borail Wildlife Sanctuary. This sanctuary has been declared in 2004 through a gazette notification of Govt. of Assam, which includes Borail Reserve Forest and North Cachar Reserve Forest (vide order no. FRW-12/2001/pt/4, dated 19th June, 2004) and the sanctuary is spreading over an area of 326.24 sq km. The sanctuary with many streams, rivulets and water pits is located on a hilly terrain. Among all the forests of Assam, this forest is located on the highest altitude. Some area of the forest is located areas over 1500 meters *amsl* (Anonymous 2011). Barak is the main river of the Valley which flows in east-west direction originating from the hills of Nagaland and Manipur flowing through the middle of Cachar district and the northernmost part of Hailakandi and Karimganj districts of Southern Assam or Barak Valley.

Study Area

Cachar is an old district of Barak Valley of Assam covers an area of 3,786 sq km and geographically, the district is surrounded by North Cachar Hills and Khasi and Jaintia Hills in the north, in the east by the state of Manipur, in the south by Mizoram state and in the west by Tripura state. The area has an altitude of 26 – 27 m *amsl* and falls under 24 ^{0}8 $^{/}$ and 25 ^{0}8 $^{/}$N latitude and 92 ^{0}15 $^{/}$ and 93 ^{0}15 $^{/}$E longitude. Out of the total area of 3,786 sq km area the Reserve Forests (R.F.) cover a total area of about 82,857.5 hectare. The different reserve forests are: Borail R.F. (7302 ha), Sonai R.F. (3553 ha), Upper Jiri R.F. (3600 ha), Barak R.F. (20,203 ha), Katakhal R.F. (640 ha), Inner line part (49,568 ha) and the recently declared Borail Wildlife Sanctuary (BWS; 326.24 sq km). The BWS (24°58' – 25°05´ N, 92°46' – 52´E) is also known for its Semi-Evergreen and Tropical Moist Evergreen Forests. The low hill ranges of Borail R.F. of Cachar district are continuous with the more lofty mountainous parts of North Cachar R.F. and continuous with Borail Hill Ranges in the North Cachar Hills District. But this is only a tentative statistical account as heavy encroachment is taking place in reserve forests, open areas and even in marshy areas, due to the rapid urbanization and industrialization of the area. The district is important due to both of its unique geographical location and floristic diversity. On the north, east and south it is shut in by ranges of purple hills whose forests are seamed with beautiful landscapes. The Bhuban range on the eastern frontier covers a considerable area having peaks over 915 m *amsl*. While the high lands are planted with tea, the lower areas are covered with rich crops of waving paddy. The river Barak flows from east to west through the plain centre of the valley. Although Barak is the main river of Cachar, a number of its tributaries, namely Jiri, Chiri, Madhura and Jatinga are in the North and Sonai, Dholeswari and Katakhal are on the South. The soil type is alluvial. Soil texture is sandy, loamy and silt type depending on their on their silt and sand contents. The pH of the soil varies from 5.0 to 6.5 or around neutral. The climate of the district is quite warm with dry and cold seasons. The average temperature of the district lies in between 15 – 35^{0} C. The average annual rainfall of the district is around 3000 mm and average atmospheric humidity is 75 – 85 % (Anonymous 2011).

Despite the vast and varied flora of Barak valley of Assam the exact number of species occurring in the Valley is yet to be known due to inadequate exploration. *The flora of Assam* by Kanjilal *et al.* (1934 – 1940) and Bor (1940) is the foremost publication regarding flora of this region. Malakar (1995) recorded a total of 311 species and 183 genera under 64 families in his *Aquatic Angiosperms of Cachar District of Assam*. Sharma *et al*. (2002) has recorded 10 genera of Bryophytes, as many as 34 species of Pteridophytes and 165 species of Angiosperms from Cachar district. Das (2007) recorded a total of 108 species of Ferns and Fern-allies belonging to 57 genera and 36 families from Southern Assam (Barak Valley). She has also recognized ethnomedicinal utility of 70 species. Recently, Das *et al.* (2013) published the most valuable contribution on Floristic of Barak Valley of Assam as *Flora of Barak Valley, Assam with their Economic Utility, Volume 1: Herbaceous Flora of Karimganj district of Assam* and in this work they enumerated a total of 596 species, of which 83 species are Fern and Fern-allies and rest 513 are angiosperms.

Thus, it is revealed from the survey of literature that most of the works are incomplete and inadequate as compared to the total floristic resources of the valley. Cachar district of the Valley is one of such resourceful district of Barak Valley, the flora of which has not yet fully studied. Keeping in view the importance of study of the flora, a Research Program was initiated to study the *Herbaceous Flora of Cachar District of Assam* and the present communication enumerated 183 species of plants as addition to the floristic knowledge for Barak valley of Assam.

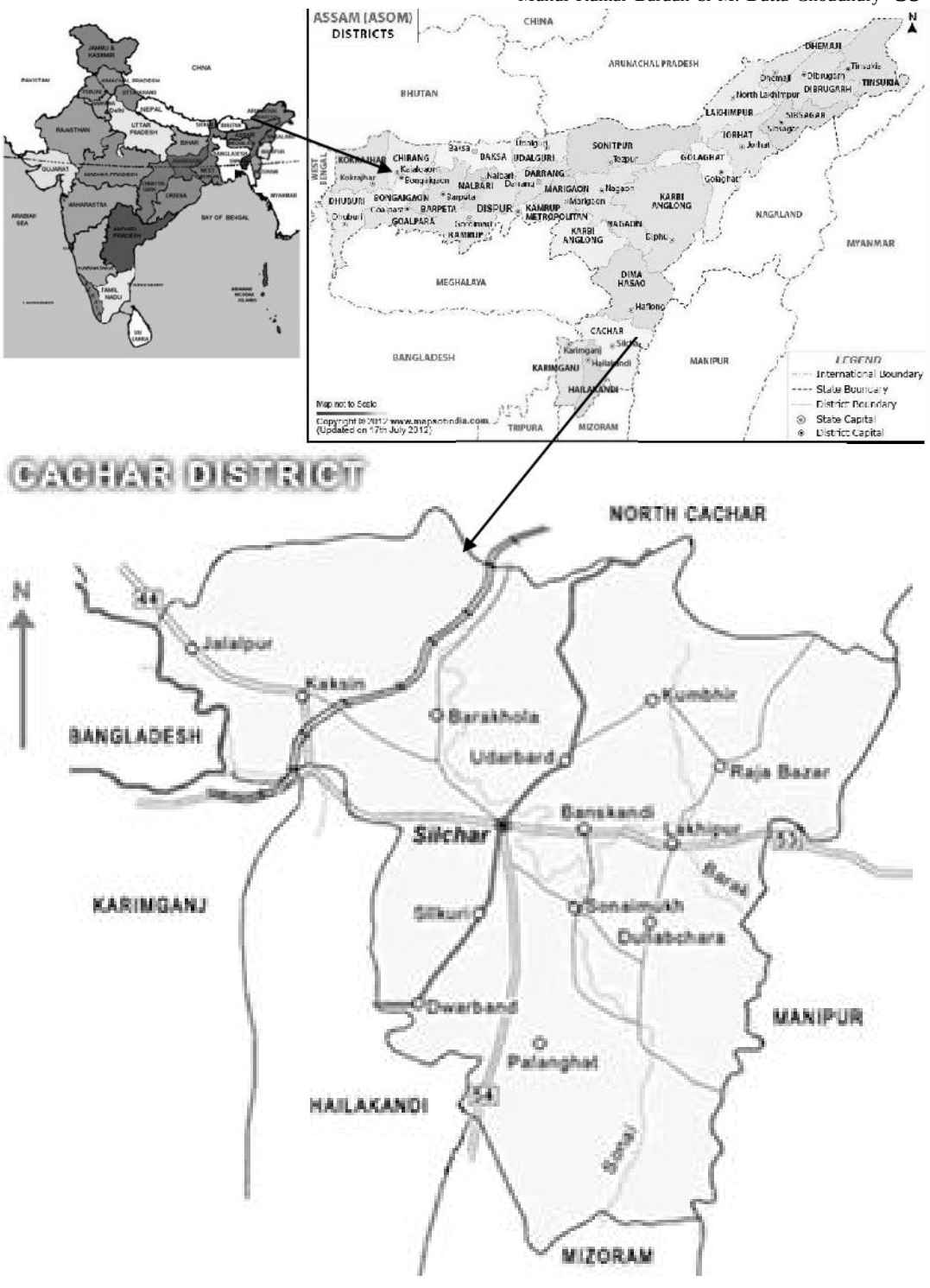

Fig. 1. Map of Cachar district of Assam showing the study area [www.mapsofindia.com]

MATERIALS AND METHODS

Extensive field surveys were made in the study area during 2009 – 2013 for botanical inventory. Collected specimens were processed into mounted herbarium sheets following Jain & Rao (1977). Plants were identified using different Floras including *The Flora of British India* (Hooker *et al* 1872 – 1897), *Flora of Assam* (Kanjilal *et al* 1934-1940; Bor 1940), *Assam's Flora: the present status of vascular plants* (Choudhury 2005), *Flora of Tripura State* (Deb 1981 & 1983), *Ferns and Fern-allies of Meghalaya State* (Baishya & Rao 1982), *Fern and Fern allies of Arunachal Pradesh* (Singh & Panigrahi 2005), *Illustrated Manual of Ferns of Assam* (Borthakur *et al* 2010), *Flora Barak Valley* (Das *et al*. 2013) etc. and finally confirmed by consulting authenticated specimens at herbarium ASSAM. For nomenclature www.theplantlist.org was consulted in most cases.

Voucher specimens will be deposited in the Herbarium of the Department of Life Science and Bioinformatics of Assam University, Silchar for references and future verification.

RESULTS

The present investigation is compared with flora of Barak valley, Assam Vol. 1 (Das *et al*. 2013) and revealed that a total of 596 herbaceous plants including Pteridophytes and Angiosperms, have been recorded from Barak valley. From the analysis it is also observed that a total of 183 species belonging to 62 families of present study was not recorded previously from the area. So these 183 species are the new additions to the flora of Barak valley. Out of these, 9 species from 6 families are Pteridophytes and 174 species of 56 families are angiosperms. The families of pteridophytes have been arranged according Pichi Sermoli (1977, 1982) and Houltum (1974) while the families of angiosperms are arranged according to Bentham & Hooker's classification (1862 – 1883) with modification in splitting of certain families as recognized by Hutchinsons (1959) and APG III system as presented in www.theplantlist.org. The genera under families and species under genera are arranged alphabetically in Table 1.

Table 1. List of species recorded as new addition to the flora of Barak valley of Assam.

Family	Name	Voucher specimen
Angiopteridaceae	***Angiopteris helferiana*** C. Presl, Suppl. Tent. Pterid. 22. 1845.	MKB-471
Polypodiaceae	***Acrostichum heterophyllum*** Linnaeus, Sp. Pl. 2: 1067. 1753.	MKB-496
	Laptochilus decurrens Blume, Enum. Pl. Javae fasc. 2: 206. 1828.	MKB-189
	Pyrrosia lanceolata (Linnaeus) Farwell, Amer. Midl. Naturalist 12: 245. 1930	MKB-102
Thelypteridaceae	***Parthelypteris glanduligera*** (Kunze) Ching, Acta Phytotax. Sin. 8(4): 303. 1963.	MKB-504
Athyriaceae	***Diplazium dilatatum*** Blume, Enum. Pl. Javae fasc. 2: 194. 1828.	MKB-003
Dryopteridaceae	***Polystichum aculeatum*** Linnaeus, Sp. Pl. 1552. 1753.	MKB-019
Tectariaceae	***Tectaria fuscipe*** (Wallich *ex.* Beddome) C. Christensen, Contr. U.S. Natl. Herb.26: 290. 1931.	MKB-038
	Tectaria vasta (Blume) Copeland, Philip. Journ. Sci. 2c. 411. 1907.	MKB-505
Menispermaceae	***Tinospora cordifolia*** (Willdenow) Miers, Ann. Mag. Nat. Hist., ser. 27: 35, 38. 1851.	MKB-231
Nymphaeaceae	***Euryale ferox*** Salisbury in Konig & Sims, Ann. Bot. 2: 73. 1806.	MKB-386

Family	Name	Voucher specimen
Brassicaceae	***Capsella bursa-pastoris*** (Linnaeus) Medikus, Pflanzengatt. 1: 85. 1792.	MKB-111
	Rorripa indica (Linnaeus) W.P. Hiern, Cat. Afr. Pl. Welwitch 1: 26. 1896.	MKB-186
Polygalaceae	***Salomonia cantoniensis*** Loureiro, Fl. Cochinch. 14. 1790.	MKB-183
Malvaceae	***Hibiscus surattensis*** Linnaeus, Sp. Pl. 696. 1753.	MKB-382
	Malvastrum coromandelianum (Linnaeus) Garcke, Bonplandia (Hanover) 5: 295-297. 1857.	MKB-524
Tiliaceae	***Corchorus capsularis*** Linnaeus, Sp. Pl. 529. 1753.	MKB-525
Vitaceae	***Cissus repens*** Lamarck, Encycl. 1: 31 1783.	MKB-237
Papilionaceae	***Aeschynomene indica*** Linnaeus, Sp. Pl. 713. 1753.	MKB-526
	Codariocalyx gyroides (Link) Hasskarl, Flora 25 (2, Beibl.): 49. 1842.	MKB-321
	Crotalaria pallida Aiton, Hort. Kew.3: 20-21. 1789.	MKB-116
	Desmodium heterocarpon (Linnaeus) DC, Prodr. 2: 337. 1825.	MKB-312
	Desmodium laxiflorum de Candolle, Ann. Sci. Nat. (Paris) 4: 100. 1825.	MKB-217
	Melilotus indica (Linnaeus) Allioni, Fl. Pedem. 1: 308. 1785.	MKB-466
	Pisum sativum Linnaeus, Sp. Pl. 727. 1753.	MKB-472
	Tephrosia purpurea (Linnaeus) Persoon, Synopsis Plantarum 2(2): 329. 1807.	MKB-027
	Trigonella foenum-graecum Linnaeus, Sp. Pl. 777. 1753.	MKB-469
Mimosaceae	***Neptunia oleracea*** Lourerio, Fl. Cochinch. 2: 654.1790.	MKB-482
Rosaceae	***Duchesnia indica*** (Andrews) Teschemacher, Hort. Reg. & Gard. Mag. 1(12): 460. 1835.	MKB-075
Melastomaceae	***Osbeckia stellata*** Buchanan-Hamilton *ex* Ker Gawler, Bot. Reg. 8: t. 674. 1822.	MKB-081
	Sonerila maculata Roxburgh, Fl. Ind. 1: 180. 1820.	MKB-016
Passifloraceae	***Passiflora edulis*** Sims, Bot. Mag. 45: pl. 1989. 1818.	MKB-106
Cucurbitaceae	***Coccinia grandis*** (Linnaeus) Voigt, Hort. Suburb. Calcutt. 59. 1845.	MKB-234
	Melothria heterophyla (Lourerio) Cogniaux, Monogr. Phan. 3: 628. 1881.	MKB-387
Begoniaceae	***Begonia burkillii*** Dunn, Bull. Misc. Inform. Kew 110. 1920.	MKB-122
	Begonia hatacoa Buchanan-Hamilton *ex* D. Don, Prodr. F. Nepal. 223. 1825.	MKB-147
	Begonia palmata D. Don, Prodr. Fl. Nepal. 223. 1825.	MKB-028
	Begonia sylhetensis (A. DC.) Clarke, Fl. Brit. India 2: 636. 1879.	MKB-151
Araliaceae	***Hydrocotyle javanica*** Thunberg, Symb. Sin. 7 (3): 707	MKB-295
	Hydrocotyle sibthorpioides Lamarck, Encycl. 3: 153. 1789.	MKB-253
Rubiaceae	***Dentella repens*** (Linnaeus) J. R. Forster & J. G. A. Forster., Char. Gen. Pl. 26, t. 13. 1775.	MKB-137
	Geophila reniformis D. Don, Prodr. Fl. Nepal, 136. 1825.	MKB-263
	Hedyotis corymbosa Linnaeus, Sp. Pl. 119. 1753.	MKB-121
	Hedyotis diffusa (Willdenow) Roxburgh, Fl. Ind. 1: 444. 1820.	MKB-107
	Ophiorhiza nutans Clarke *ex* Hooker f., FBI. 3: 84. 1880.	MKB-142

Family	Name	Voucher specimen
	Paederia scandens (Loureiro) Merrill, Contr. Arnold Arbor. 8: 163. 1934	MKB-527
	Richardia scabra Linnaeus, Sp. Pl. 1: 330. 1753.	MKB-133
Asteraceae	***Blumea laciniata*** (Roxburgh) DC., Prodr. 5: 436. 1836.	MKB-135
	Blumea lanceolaria (Roxburgh) Druce, Rep. Bot. Soc. Exch. Club Brit. Isles 4: 609. 1917.	MKB-139
	Calendula officinalis Linnaeus, Sp. Pl. 921. 1753.	MKB-181
	Centipeda orbicularis Lourerio, Fl. Cochinch. 493. 1790.	MKB-179
	Chrysanthemum coronarium Linnaeus, Sp. Pl. 90. 1753.	MKB-190
	Cosmos sulphureus Cavanilles, Icon. et Descriptions Plantarum 1(3): 56, pl. 79. 1791.	MKB-182
	Dichrocephala latifolia DC., Arch. Bot.2: 517. 1833.	MKB-410
	Erigeron sublyratus Roxburgh *ex* DC in Wight, Contr. Bot. Ind. 9. 1834.	MKB-114
	Eupatorium adenophorum Sprengel, Syst. Veg. 3: 420. 1826.	MKB-381
	Eupatorium wallichii DC., Prodr. 5: 179. 1836.	MKB-441
	Helichrysum luteoalbum (Linnaeus) Rchb., Sp. Pl. 850. 1753.	MKB-443
	Gnaphalium polycaulon Persoon, Syn. Pl. 2: 421. 1807.	MKB-423
	Grangea maderaspatana (Linnaeus) Poiret, Encycl. Suppl. 2(2): 825. 1812.	MKB-067
	Helianthus annus Linnaeus, Sp. Pl. 904.1753.	MKB-187
	Lactuca sagittarioides Clarke, Comp. Ind. 265. 1876.	MKB-127
	Parthenium hysterophorus Linnaeus, Sp. Pl. 988. 1753.	MKB-115
	Sonchus asper (Linnaeus) Hill, Herb. Brit. 1: 47. 1769.	MKB-068
	Sonchus brachyotus DC., Prodr. 7: 186. 1938.	MKB-070
	Sphaeranthus indicus Linnaeus, Sp. Pl. 927. 1753.	MKB-138
	Spilanthes calva DC. in Wight, Contr. Bot. Ind. 19. 1834.	MKB-084
	Syndrella nodiflora (Linnaeus) Gaertner, Fruct. 2: 456.t. 171. f. 7. 1791.	MKB-167
	Tagetes erecta Linnaeus, Sp. Pl. 887. 1753.	MKB-191
	Tagetes patula Linnaeus, Sp. Pl. 887. 1753.	MKB-192
	Vernonia saligna DC, Prodr. 5: 33. 1836.	MKB-425
Sphenocleaceae	***Sphenoclea zeylanica*** Gaertner, Fruct. 1: 113.t. 24. f. 5. 1788.	MKB-232
Apocynaceae	***Asclepias curassavica*** Linnaeus, Sp. Pl. 215. 1753.	MKB-259
Menyanthaceae	***Nymphioides hydrophyllum*** (Lourerio) O. Kuntze, Rev. Gen. Pl. 2: 249. 1891.	MKB-149
Convolvulaceae	***Ipomoea nil*** (Linnaeus) Roth, Catal. Bot. 1: 36. 1797.	MKB-315
	Ipomoea palmata Forsskal, Fl. Aegypt.- Arab. 43-44. 1775.	MKB-318
Solanaceae	***Physalis peruviana*** Linnaeus, Sp. Pl. (ed.2) 2: 1670. 1763.	MKB-494
	Solanum ferox Linnaeus, Sp. Pl. 187. 1753.	MKB-298
	Solanum sisymbriifolium Lamarck, Tabl. Encycl.2: 25. 1794.	MKB-444
	Solanum xanthocarpum Schrader & Wendland, Sert. Hannov. 1: 8. t. 2. 1795.	MKB-110

Family	Name	Voucher specimen
Plumbaginaceae	***Dopatrium junceum*** (Roxburgh) Buchanan-Hamilton *ex* Bentham, Edwards's Bot. Reg. 21(4): sub. pl. 1770.	MKB-352
Linderniaceae	***Lindernia anagallis*** (Burman *f*.) Pennell, J. Arnold. Arbor. 24 (3) : 252-252. 1942.	MKB-328
	Lindernia crustacea (Linnaeus) Mueller, Syst. Census Austral. Pl. 1: 97. 1882.	MKB-361
	Lindernia montana (Blume) Koorders, Exk. Fl. Java. 3: 178. 1912.	MKB-330
	Torenia violacea (Azaolo ***ex*** Blanco) Pennell, J. Arnold. Arbor. 24(3): 55. 1943.	MKB-445
Lentibulariaceae	***Utricularia aurea*** Lourerio, Fl. Cochinch, 26. 1790.	MKB-379
Gesneriaceae	***Tetraphyllum bengalense*** C.B. Clarke, Monogr. Phan. 5: 137. 1883.	MKB-512
Acanthaceae	***Eranthemum strictum*** Colebrooke *ex* Roxburgh, Fl. Ind. 2(1): 114. 1820.	MKB-290
	Justicia simplex D. Don, Prodr. Fl. Nepal 118. 1825.	MKB-398
	Staurogyne argentea Wallich, Pl. Asiat. Rar. 2; 80. 1831.	MKB-530
Thunbergiaceae	***Thunbergia alata*** Bojer *ex* Sims, Bot. Mag. 52:t. 2591. 1825.	MKB-180
Verbenaceae	***Phyla nodiflora*** (Linnaeus) Greene, Pittonia 4: 46. 1899.	MKB-180
	Stachyterpheta jamaicensis (Linnaeus) Vahl, Enum. Pl. 1: 206. 1804.	MKB-001
Lamiaceae	***Anisomeles indica*** Linnaeus, Sp. Pl. 571. 1753.	MKB-373
	Leucas biflora (Vahl) R. Brown Prodr. 504. 1810.	MKB-076
	Mentha arvensis Linnaeus, Sp. Pl. 577. 1753.	MKB-194
	Mentha piperita Linnaeus, Sp. Pl. 576, 1753.	MKB-567
	Salvia coccinea Buc'hoz *ex* Etlinger, Sp. Pl. 23. 1753.	MKB-170
Amaranthaceae	***Achyranthes porphyristachya*** Wallich *ex* Moquin, Prodr. 13: 316. 1849.	MKB-086
Chenopodiaceae	***Chenopodium ambrosioides*** Linnaeus, Sp. Pl. 219. 1753.	MKB-491
Polygonaceae	***Persicaria chinensis*** (Linnaeus) H. Gross, Bot. Jahrb. Syst. 49(2): 269, in obs. 269 1913.	MKB-545
	Persicaria posumbu (Buchanan-Hamilton *ex* D. Don) H. Gross, Bot. Jahrb. Syst. 49(2): 313, in obs. 313 1913.	MKB-573
	Persicaria strigosa (R. Brown) Nakai, Rigakkwai 24: 299. 1926.	MKB-429
Piperaceae	***Piper longum*** Linnaeus, Sp. Pl. 29. 1753.	MKB-376
Balanophoraceae	***Balanophora dioica*** R. Brown *ex* Royle, Ill. Bot. Himal. Mts. 1: 330. 1839.	MKB-227
Euphorbiaceae	***Euphorbia thymifolia*** Linnaeus, Sp. Pl. 454. 1753.	MKB-519
	Pedilanthus tithymaloides (Linnaeus) Poiteau, Ann. Mus. Hist. Nat. 19: 390. pl. 19. 1812.	MKB-477
Urticaceae	***Pilea microphylla*** (Linnaeus) Liebmann, Kongel. Danske Vidensk. Selsk. Skr., Naturvidensk. Math. Afd., ser. 5. 2: 296. 1851.	MKB-475
	Pilea scripta (Buchanan-Hamilton *ex* D. Don) Weddell, Ann. Sci. Nat. Bot., ser. 4, 1: 187. 1854.	MKB-478
Orchidaceae	***Acanthephippium sylhetense*** Lindley, Gen. & Sp. Orch. 177. 1833.	MKB-220
	Bulbophyllum careyanum (Hooker *f*.) Sprengel, Syst. Veg. 3: 732. 1823.	MKB-055

Family	Name	Voucher specimen
	Calanthe biloba Lindley, Fol. Orch. 3. 1854.	MKB-531
	Coelogyne prolifera Lindley, Gen. & Sp. Orch. 40. 1833.	MKB-480
	Dendrobium acinaciforme Roxburgh, Hort. Bengal, 63. 1814.	MKB-446
	Dendrobium anceps Swartz, Kongl. Vetensk. Acad. Handl. 246. 1800.	MKB-056
	Dendrobium jenkinsii Wallich *ex* Lindley, Gen. *et*. Sp. Orch. 89. 1931.	MKB-489
	Dendrobium moschatum (Buchanan-Hamilton) Swartz, Neues J. Bot. 1: 94. 1805.	MKB-223
	Dendrobium ochreatum Lindley, Numer. List 7410. 1828.	MKB-370
	Flickingeria fugax (Reichenbach f.) Siedenfaden, Dansk. Bot. Ark. 34(1): 46. 1980.	MKB-575
	Micropera pallida (Roxburgh) Lindley, Edwards's Bot. Reg. 18.t. 1522. 1832.	MKB-509
	Phaius tankervilleae (Banks *ex* L'Heritier) Blume, Mus. Bot. 2: 177. 1856.	MKB-061
	Pteroceras suaveolens (Roxburgh) Holttum, Kew Bull.14: 271. 1960.	MKB-399
	Rhynchostylis retusa (Linnaeus) Blume, Bijdr. Fl. Ned. Ind. 7: 286. 1825.	MKB-214
	Spathoglotis plicata Blume, Bijdr. Fl. Ned. Ind. 8: 401, Pl. 76. 1825.	MKB-213
Zingiberaceae	***Alpinia galanga*** (Linnaeus) Willdenow, Sp. Pl. 1(1): 12. 1797.	MKB-060
	Alpinia nigra (Gaertner) B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 35(2): 213-214.1977.	MKB-514
	Curcuma caesia Roxburgh, Asiat. Res. 11: 335. 1810.	MKB-388
	Curcuma longa Linnaeus, Sp. Pl. 2 1753.	MKB-266
	Boesenbergia longiflora (Wallich) Kuntze, Revis. Gen. Pl. 2: 685 1891.	MKB-497
	Etlingera linguiformis (Roxburgh) R.M. Smith, Notes Roy. Bot. Gard. Edinburgh 43: 246. 1986.	MKB-485
	Globba multiflora Wallich *ex* Baker, Fl. Brit. India 6: 202. 1890.	MKB-498
	Globba racemosa J.E. Smith, Exot. Bot. 2: 115, pl. 117. 1808.	MKB-354
	Hedychium coccineum Buchanan-Hamilton *ex* J.E. Smith, Cycl. 17: 5. 1811.	MKB-356
	Hedychium gardnerianum Roscoe, Monandr. Pl. Scitam. t. 62. 1828.	MKB-499
	Hedychium spicatum Buchanan-Hamilton. ex Smith J. E., Cycl. 17:3.1811.	MKB-077
	Kaempferia galanga Linnaeus, Sp. Pl. 1:2-3. 1753.	MKB-507
	Kaempferia rotunda Linnaeus, sp. Pl. 1:3. 1753.	MKB-508
Musaceae	***Musa acuminata*** Colla, Mem. Reale Accad. Sci. Torino 25: 394. 1820.	MKB-088
	Musa balbisiana Colla, Mem. Reale Accad. Sci. Torino 25: 384-385. 1820.	MKB-015

Family	Name	Voucher specimen
	Musa velutina Wendland & Drude, Gartenflora 24: 54-67, t. 823. 1875.	MKB-063
Iridaceae	***Belamcanda chinensis*** (Linnaeus) Redoute, Lilac. 3(21): pl. 121. 1805.	MKB-339
Amaryllidaceae	***Allium hookeri*** Thwaites, Enum. Pl. Zeyl. 339. 1864.	MKB-196
	Crinum amoenum Roxburgh *ex* Ker Gawler, J. Sci. Arts.3: 106. 1817.	MKB-453
Agavaceae	***Agave americana*** Linnaeus, Sp. Pl. 1: 323. 1753.	MKB-533
Asparagaceae	***Polianthes tuberosa*** Linnaeus, Sp. Pl. 1: 316. 1753.	MKB-176
	Asparagus racemosus Willdenow, Sp. Pl. 2: 152. 1799.	MKB-323
	Chlorophytum arundinaceum Baker, J. Linn. Soc. Bot. 15: 323. 1876.	MKB-066
	Disporum cantoniense (Lourerio) Merrill, Philipp. J. Sci. 15(3): 229. 1919.	MKB-577
	Ophiopogon intermedius D. Don, Prodr. Fl. Nepal, 48. 1825.	MKB-510
Hypoxidaceae	***Curculigo orchioides*** Gaertner, Fruct. Sem. pl. 1: 63, pl. 16. 1788.	MKB-065
Stemonaceae	***Stemona tuberosa*** Lourerio, Fl. Cochinch. 2: 404. 1790.	MKB-350
Colchicaceae	***Gloriosa superba*** Linnaeus, Sp. Pl. 1: 305.1753.	MKB-536
Smilaceae	***Smilax zeylanica*** Linnaeus, Sp. Pl. 1: 1029. 1753.	MKB-226
Pontederiaceae	***Monochoria vaginalis*** (Burman *f*.) Presl, Reliq. Haenk.1: 128. 1827.	MKB-287
Commelinaceae	***Commelina diffusa*** Burman *f.*, Fl. Indica. 18, pl. 7, f. 2.1768.	MKB-281
	Commelina erecta Linnaeus, Sp. Pl. 1: 41. 1753.	MKB-517
	Cyanotis cristata (Linnaeus) D. Don, Prodr. Fl. Nepal. 46. 1825.	MKB-515
	Murdannia elata (Vahl) Bruckner, Nat. Pfl.- Syst. (ed. 2) 15a: 173. 1930.	MKB-429
Araceae	***Aglaonema hookerianum*** Schott, Bonplandia7: 30. 1859.	MKB-117
	Alocasia odora (Roxburgh) Koch, Index Sem. 1854(App.): 5. 1854.	MKB-344
	Amorphophallus bulbifer (Roxburgh) Blume, Rumphia1: 48. 1835.	MKB-345
	Amorphophallus napalensis (Wallich) Bogner & Mayo, Aroideana 8(1): 19. 1985.	MKB-346
	Arum bicolor Aiton, Hort. Kew 3: 316. 1789.	MKB-341
	Steudnera assamica Hooker *f*., Fl. Brit, India 6: 520. 1893.	MKB-347
Acoraceae	***Acorus calamus*** Linnaeus, Sp. Pl. 1: 324. 1753.	MKB-017
Alismaceae	***Sagittaria guayanensis*** Humboldt, Bonpland & Kunth, Nov. Gen. Sp. (quarto ed.) 1: 250. 1815.	MKB-279
Potamogetonaceae	***Potamogeton crispus*** Linnaeus, Sp. Pl. 1: 126. 1753.	MKB-548
Cyperaceae	***Cyperus alternifolius*** Linnaeus, Mant. Pl. 1: 28-29. 1767.	MKB-165
	Fimbristylis quinquangularis (Vahl) Kuntze, Enum. Pl. 2: 229. 1837.	MKB-578
Poaceae	***Arundinella bengalensis*** (Sprengel) Druce, Rep. Bot. Soc. Exch. Club Brit. Isles 4: 605. 1916.	MKB-185
	Brachiaria villosa (Lamarck) A. Camus, Fl. Indo-Chine 7: 433. 1922.	MKB-549

Family	Name	Voucher specimen
Poaceae (contd.)	***Cymbopogon citratus*** (de Candolle) Stapf, Bull. Misc. Inform. Kew 1906: 322. 357. 1906.	MKB-275
	Digitaria setigera Roth, Syst. Veg. 2: 474. 1817.	MKB-459
	Echinochloa colona (Linnaeus) Link, Hort. Berol. 2; 209. 1833.	MKB-462
	Hygroryza aristata (Retzius) Nees *ex* Wight & Arnott, Edinburg New Philos. J. 15: 380. 1833.	MKB-554
	Panicum humidorum Buchanan-Hamilton *ex* Hooker *f*., Fl. Brit. India 7(21): 53. 1897.	MKB-557
	Panicum luzonense J. Presl, Reliq. Haenk. 1: 308 1830.	MKB-559
	Paspalidium punctatum (Burman *f*.) A. Camus, Fl. Indo-Chine7: 419. 1922.	MKB-343
	Paspalum scrobiculatum Linnaeus, Mant. Pl. 1: 29. 1767.	MKB-458
	Pogonatherum crinitum (Thunberg) Kunth, Enum. Pl. 1: 478. 1833.	MKB-562
	Pseudechinolaena polystachya (Kunth) Stapf, Fl. Trop. Afr. 9: 495. 1919.	MKB-553
	Setaria palmifolia (Koenig) Stapf, J. Linn. Soc., Bot. 42(285) : 186. 1914.	MKB-436
	Vetiveria zizanioides (Linnaeus) Nash, Fl. S. E. U. S. 67. 1326. 1903.	MKB-274

CONCLUSIONS AND RECOMMENDATIONS

From the observations presented above it is found that the study area is rich in herbaceous plants in terms of the number of species recorded and appeared as one of the biologically most diverse regions in Assam and in North East India. The majority of the plant species recorded in the study area is facing the danger of loss and degradation of habitat due to the increasing demand of land for agriculture, and other developmental activities. Encroachment of forest area is the main cause of loss of forest cover. Based on Statistical Handbook, Govt. of Assam [Anonymous 2002, 2011], the forest cover of Cachar district of Assam was 82,857.5 hectare in 2002 and 55856.691 hectare in 2011, i.e. forest cover reduced from 21.88 % to 14.75 % in just nine years. Moreover, more than 10 ethnic groups of people like *Dimasa, Kuki, Khasi, Jaintea, Hmar, Rongmei naga, Phaite, Chiru, Hramkhal*, tea tribes etc. (Chakraborty *et al.* 2010), traditionally living close to nature, are totally dependent on forest products have also contributed towards the loss of forest area. Though, serious attempts have been made to protect and conserve the plant genetic resources of the country by various organizations, many reserve forests and wildlife sanctuaries have been declared, but the laws and regulations are not always enforced properly and several species are facing drastic pressure. As there is critical situation of Barak Valley of Assam where most of the wild plant species are facing threat of degradation, more attentions from the authorities is needed.

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