

## DISCOVERY OF FOUR ANGIOSPERMIC NEW RECORDS FOR BANGLADESH FROM PHARUA RESERVE FOREST UNDER RANGAMATI DISTRICT

SARDER NASIR UDDIN<sup>1</sup>, BUSHRA KHAN AND MOMTAZ MAHAL MIRZA

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

**Keywords:** Angiosperm; New records; *Aristolochia coadunata*; *Illigera khasiana*; *Pyrenaria diospyricarpa*; *Vanilla havilandii*; Bangladesh.

### Abstract

This paper deals with four angiospermic new records for Bangladesh from Pharua reserve forest under Rangamati district. They are: *Aristolochia coadunata* Back., *Illigera khasiana* C.B. Clarke, *Pyrenaria diospyricarpa* Kurz and *Vanilla havilandii* Rolfe. Among these four genera, *Illigera* Blume and *Pyrenaria* Blume are also two new generic records for the country and *Hernandiaceae* is a new family record for the country as well. Updated nomenclature, important synonyms, description, ecology, geographical distribution and photographs are provided for each species.

### Introduction

The biodiversity and its conservation have been established as the primary indicators of environmental sustainability (Kates *et al.*, 2001), whereas the assessment of biomass and floristic diversity in tropical forests has been identified as a priority by many international organizations (Stork *et al.*, 1997). Bangladesh is small country with very rich floristic diversity. In Bangladesh, floristic survey on many areas/forests/ecosystems is yet to be completed. Bangladesh National Herbarium (BNH) has been engaged in floristic survey of the country since her establishment. The main mandatory work of BNH is to prepare an inventory of the plant resources for the country. Conducting floristic survey in an area/forest/ecosystem maximizes the likelihood of locating new species/records and special plant species that may be present. Recently a number of new species and new records were added to the list of Bangladesh flora (*i.e.* Uddin and Hassan, 2009; Khatun *et al.*, 2010; Alfasane *et al.*, 2010; Mia *et al.*, 2011; Rahman *et al.*, 2011; Uddin *et al.*, 2012; Ara and Hassan, 2012; Rahman and Yusuf, 2012 and 2013; Rahman *et al.*, 2014). Those discoveries highlight the need for making intensive efforts for locating, documenting and conserving of such species. Recently, BNH has under taken a number of floristic study programs at different forest areas of the country and Pharua Reserved Forest is one of them.

Pharua Reserved Forest is located in the eastern part of Bangladesh under Bilaichari Upazila of Rangamati district and the area is managed by Rangamati South Forest Division. It lies between 20°26' - 22°33' N and 92°19' - 92°37' E and covering an area of 7160 ha. It is a part of Upper Rainkhiong reserve forest. The area was declared as a reserved forest through a Gazette Notification no. 6458- Forest Act on 28 July 1948 (Anonymous. 1973). The topography of area is very rugged and irregular and consists of series of ridges running more or less North to South direction. From this main ridges innumerable spur branch off to form seemingly confused mass of hills and valleys drained by winding streams. The hills are generally not very high but very rugged and broken with steep slopes. The level of valley bottom ranges from 30-100 m above the sea level and the maximum elevation is 1050 m in Rainkhiong Tang in the extreme southern part of

<sup>1</sup>Corresponding author. E-mail: nsarder@yahoo.com

the reserve. Soils in the valley bottom on level ground are clay or clayey loam and are very fertile. Soils on the hills are sandy or sandy loam. The soils are impregnated with iron and have a reddish or yellowish tinge. Humus is noticed throughout the forest, but its degree of accumulation varies from place to place depending on the topography. The climate is typically subtropical, with a long dry season extending from October-May, punctuated by largely unpredictable period of rain storm. The average annual rainfall of the area is about 267 cm and average temperature varies from 12.5°C in December and 36°C in May (Ibrahim *et al.*, 2012).

Pharua Reserve Forest is situated in one of the most biodiversity rich area of the country. The area possesses mainly tropical wet-evergreen and semi-evergreen type of vegetations. Once there was a magnificent dense evergreen forest with a irregular top story of outstanding large and tall tree. However few remnants are left in the deep valley where the water supply is plentiful. The common tree species of the forests are *Artocarpus chaplasha*, *Dipterocarpus turbinatus*, *Tetrameles nudiflora*, *Hopea odorata*, *Mesua ferrea*, *Mangifera sylvatica*, *Pterogota alata*, *Swintonia floribunda*, *Palaquium polyanthum*, *Calophyllum polyanthum*, *Elaeocarpus robustus*, *Aphanamisis polystachya*, *Cedrella toona*, *Amoora wallichii* etc. The undergrowth is usually a tangle of shrubs in which cane, bamboo and wild banana plants are prominent. Epiphytes, aroids, ferns, mosses, orchids and climbers are also very common.

The main goal of this floristic survey was to discover new plant species for the country. This report describes the methods and results of floristic surveys conducted on the reserve by the authors.

### Material and Method

Floristic survey was conducted by the authors at different seasons between 2009 and 2010. All areas of the reserve were surveyed by walking along the forest trails and springs (*charas*) to record all species encountered. At least one set of voucher specimen of each different species encountered in flowering state was collected, pressed and transported to the BNH for drying. Collection of voucher specimens were conducted in a manner that is consistent with conservation ethics. At each collection, location, date, habit and any other notable ecological characteristics were recorded. Both fresh materials and herbarium specimens were studied to identify the species by the first author using available taxonomic resources *viz.* literatures, herbarium specimens and botanical illustrations. Digital imagery of the species was also used to supplement plant identification and document their habitats. The new records are based on 12 specimens and all of them are deposited at DACB after labeled properly.

### Results and Discussion

One thousand two hundred thirty-eight plant specimens were collected from the park area by the authors in the course of their taxonomic study during the period of 2009-2010. In the process, four angiosperm species were encountered for which no herbarium specimens had ever been collected from the country. Later on, those species have been identified as *Aristolochia coadunata* Back., *Illigera khasiana* C.B. Clarke, *Pyrenaria diospyricarpa* Kurz and *Vanilla havilandii* Rolfe. Four specific taxa in the following list belong to 4 genera and 4 families. Among these four genera, *Illigera* Blume and *Pyrenaria* Blume are also two new generic records for the country and Hernandiaceae is a new family record for the country as well. Those species are being described here to be new report for Bangladesh as they have never been mentioned in any publication on the flora covering the present territory of Bangladesh (*i.e.* Dyer, 1874; Clarke, 1878; Hooker, 1886, 1888 & 1890; Kurz, 1877; Prain, 1903; Heinig, 1925; Cowan, 1926; Cowan and Cowan, 1929; Kanjilal *et al.*, 1934 & 1940; Raizada, 1941; Sinclair, 1956; Mia and Khan, 1995; Das & Alam,

2001; Rahman 2004a & 2004b; Ullah *et al.*, 2008; Huda, 2008; Habib and Huq, 2009; Uddin, 2012)

Detailed taxonomic accounts including photographs of all the species is given below and entries are arranged in alphabetical order.

1. *Aristolochia coadunata* Back., Bull. Jard. Bot. Btzg. III, 2: 320.1920.

(Fig. 1)

**Aristolochiaceae**

Extensive, woody liana, 10-30 m long. Branches subterete or slightly flattened, 0.5-1.5 cm diameter, young parts densely pubescent, glabrescent. Leaves coriaceous, ovate-oblong to lanceolate, rarely ovate, 10-40 × 4-12 cm; apex acuminate or acute; base slightly cordate, basal lobes rounded (the sinus 0.5-1.0 cm deep, sometimes obscure); upper surface pubescent especially on midrib and nerves, glabrescent; undersurface villous or densely tomentose, glabrescent; basal nerves one pair, reaching upward to 1/3 -1/2 of the blade, lateral nerves 4-7 pairs, pinnate, veins

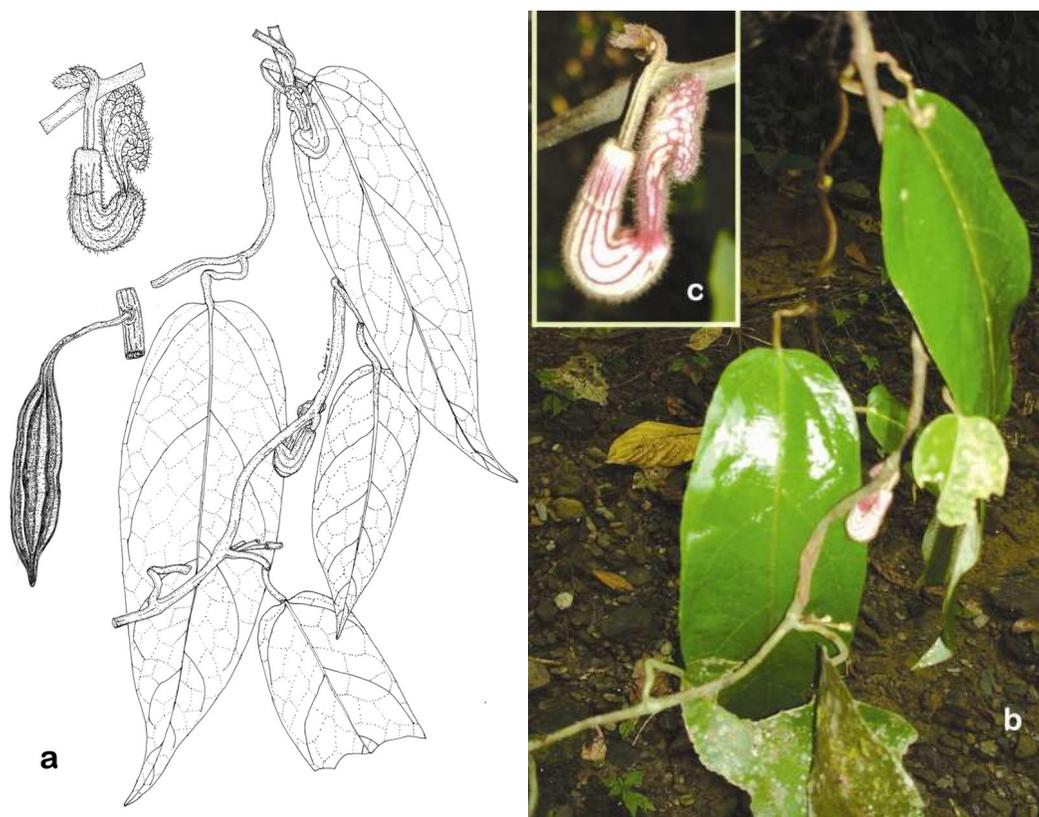


Fig. 1. *Aristolochia coadunata* Back.

rather closely reticulate; both nerves and veins elevated beneath, distinct or faint; petiole 3-6 cm long, pubescent. Inflorescences in older stem or axils of foliage leaves, solitary or fasciculate, racemiform, up to 2 cm long, pubescent; bracts ovate, ca. 1.5 mm long, densely pubescent or tomentose. Pedicel and ovary 4-12 mm long, pilose. Perianth dark purple with yellow stripes,

throat yellow, geniculate, sigmoid, pubescent outside, venation obscure; utricle ovoid-tubular, 2.5-3.0 × 0.5-0.8 cm, apical part bent backward, hairy at the lower half inside; tube cylindrical, 3.0-4.5 × 0.6 cm, closely laterally in contact with the utricle, the basal part inside slightly projecting into the utricle cavity, almost glabrous inside; limb rim like, 1.5-3.0 cm diameter, the rim 0.5-1.0 cm wide, very obliquely positioned on the tube, obscurely 3-lobed. Stamens 6; filaments short; anthers oblong, 2-2.5 mm long. Ovary inferior, 5-6 locular, style 5-6, connect in a column, column 5-7 mm long; lobes 3, triangular, ca. 1 mm long. Capsule dry, dehiscent, fusiform, 6-ridged, 10-15 × 3-4 cm, apex acute, base attenuate, glabrous. Seeds flattened and rounded, winged, funicle with membranous extension covering the upper surface. *Flowering and fruiting*: April-November.

*Distribution*: Indonesia and Malaysia.

*Ecology*: In primary and secondary hilly forests; between 500-800 m altitude.

*Specimens examined*: **Rangamati**: Pharu reserve forest, Bilaichari; 15 x 2008, S.N. Uddin N3086 (DACB); 23 vii 2009, S.N. Uddin N3798 (DACB).

*Note*: *Aristolochia* Linnaeus is a genus of about 400 species distributed tropical, subtropical, temperate regions of the Old World, and also in Australia (Shumei *et al.*, 2003). From Bangladesh, Ullah *et al.*, (2008) listed four species (*viz.* *Aristolochia elegans* Mast., *Aristolochia indica* L., *Aristolochia saccata* Wall. and *Aristolochia tagala* Cham.) under the genus.

2. ***Illigera khasiana*** C. B. Clarke in Hook.f., Fl. Brit. India 2: 461. 1879.

(Fig. 2)

#### **Hernandiaceae**

An extensive climber, up to 40 m long; branchlets striate. Leaves 3-foliolate; petiole 5-12 cm long, sometimes coiling like tendrils around the supports; leaflets: petiolules 0.5-1.5 cm long, slightly channeled above, villous; blade oblanceolate, elliptic-ovate or lanceolate-elliptic, 7-15 × 3-8 cm, base often unequal at the base, obtuse to rounded or cordate, apex acuminate, acumen 0.7-1.0 cm long, olive-brown when dry, leathery, glabrous above, glabrous beneath except pilose on midrib, lateral nerves 4-6-paired. Inflorescence in axillary and terminal, lax paniculate cymes, 10-25 cm long, peduncle and pedicels pubescent; bracteole solitary, small, ovate or elliptic. Flowers bisexual, buds ovoid, 5-8 mm diameter. Prianth of two whorls of 5 segments each, oblong-lanceolate, acuminate, 7-12 mm long, pale reddish-brown, segments connate in a constricted tube above the inferior ovary; outer tepals tri-nerved, thinly pubescent; inner tepals densely grey pubescent, uni-nerved, each often subtending a minute gland. Stamens 5, epigynous, filaments glandular, pubescent, each with two white staminodes on each side near the base which are obovate-oblong in outline, clawed, emarginate, excavate at apex, anther narrowly ovate, ca. 3.5 mm long, membranous, abaxially with open mouth. Ovary brownish tomentose, style 1, filiform, stigma undulate. Fruit 3-5 × 0.7-0.9 cm, 2-winged with a sharp longitudinal ridge on either face, wings brown, rounded, nearly glabrous with horizontal striations, large wings 2.5-3.0 cm wide. Flowering and fruiting: October- February.

*Ecology*: Evergreen hilly forests; between 700-1000 m altitude.

*Distribution*: India, Myanmar, China and Malaysia.

*Specimen examined*: **Rangamati**: Pharu reserve forest, Bilaichari, 15 x 2008, S.N. Uddin N3053.

*Note*: *Illigera* Blume is a genus of about 30 species occurring mainly in tropical regions of Africa and Asia (Xi-wen *et al.* 2008). From Bangladesh, no species has been reported under the genus and family.

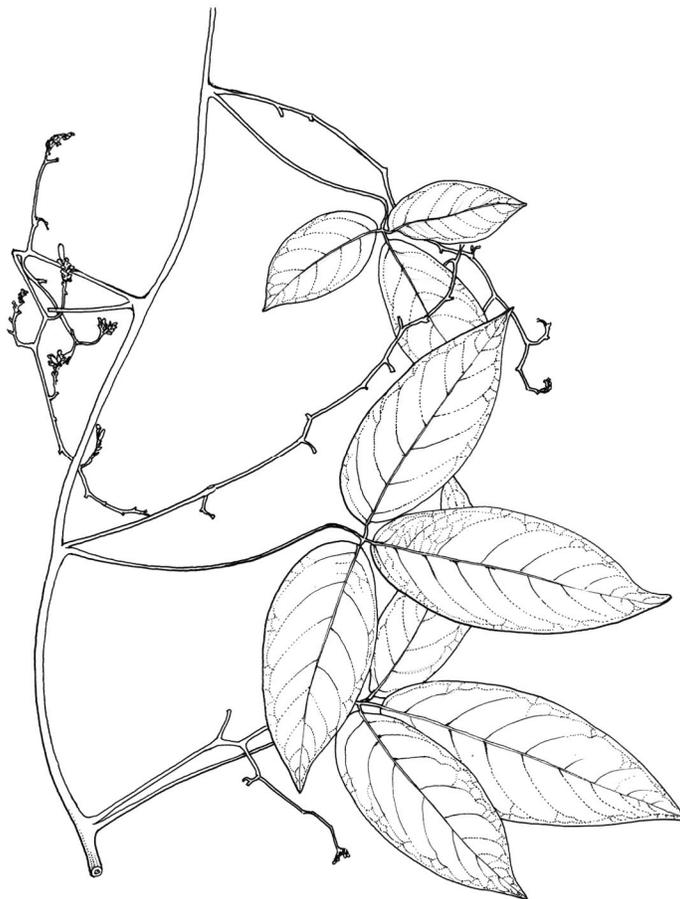


Fig. 2. *Illigera khasiana* C. B. Clarke.

3. ***Pyrenaria diospyricarpa*** Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 42: 60. 1873. (Fig. 3)  
Theaceae

*Pyrenaria garrettiana* W. G. Craib, Kew Bull. 1924: 87. 1924.

*Pyrenaria brevisepala* H.T. Chang, Acta Sci. Nat. Univ. Sunyatseni 1983 (3): 63. 1983.

*Pyrenaria burmanica* T. K. Paul & Nayar, J. Jap. Bot. 64 (1): 8. 1989.

*Pyrenaria cheliensis* Hu, Bull. Fam. Mem. Inst. Biol., Peiping Bot. Ser. 8: 140. 1938.

*Pyrenaria yunnanensis* Hu, Bull. Fam. Mem. Inst. Biol., Peiping Bot. Ser., 8: 137. 1938.

*Sinopyrenaria cheliensis* (Hu) Hu, Acta Phytotax. Syn. 5: 281. 1956.

*Sinopyrenaria garrettiana* (Craib) Hu, Acta Phytotax. Syn. 5: 282. 1956.

*Sinopyrenaria yunnanensis* (Hu) Hu, Acta Phytotax. Syn. 5: 281. 1956.

*Stewartia longibracteata* H.T. Chang, Acta Sci. Nat. Univ. Sunyatseni 1982 (4): 76. 1982.

*Stewartia yunnanensis* H.T. Chang, Acta Sci. Nat. Univ. Sunyatseni 1982 (4): 77. 1982.

Evergreen trees, 5-12 m tall; year-old branchlets with persistent indumentum, current year branchlets pubescent. Leaves oblong to elliptic-lanceolate, 6-15 × 2.5-5.0 cm, papery, beneath

pale green, sparsely pubescent, above dark green, yellowish when dry, midrib elevated beneath, impressed above, lateral nerves 8-10 pairs, base cuneate, margin undulate-serrulate, apex acute to acuminate; petiole 0.6-1.0 cm long, pubescent. Flowers axillary, solitary, 1-2 cm in diameter. Pedicel 3-5 mm long, bracteoles 2, green, oblong or lanceolate. Sepals 5, unequal, ovate, 2-5 mm,



Fig. 3. *Pyrenaria diospyricarpa* Kurz

persistent, green. Petals 5 or 6, white, orbicular-ovate, 10-12 × 5-8 mm, basally connate for 2-3 mm long, pubescent outside, glabrous inside. Stamens numerous, 6-8 mm long, glabrous, filaments basally connate and adnate to petals. Ovary globose, ca. 3-4 mm in diameter, villous, 3-6-loculed, apex slightly 6-lobed from carpels being incompletely connate; styles 6, distinct, ca. 5 mm, basally velutinous. Fruit drupaceous, indehiscent, oblate-obovoid, 2-3 × 1.8-2.5 cm, crowned with stigmatic heads at tip and sepals and bracts at base, 3-loculed, 1 seeds per locule; pericarp ca. 5 mm thick and fleshy when fresh, becoming brown, 1-2 mm thick, and leathery when dry. Seeds brown, depressed globose, ca. 1 × 1 × 0.4 cm. Flowering & Fruiting: May-November.

*Ecology:* Slopes and valleys of hill forests; between 300-600 m altitude.

*Distribution:* India (Assam), Myanmar, Thailand, Vietnam and China.

*Specimen examined:* Rangamati: Jamunachara, Pharu reserve forest, Bilaichari, 22 vii 2009, S.N. Uddin N3797 (DACB).

*Note: Pyrenaria* Blume is a genus of about 26 species occurring in China, India, Indonesia, Japan, Malaysia, Myanmar, Philippines, Thailand, Vietnam (Tianlu and Bartholomew, 2007). From Bangladesh, Habib and Huq (2009) listed no species under the genus.

4. *Vanilla havilandii* Rolfe, Bull. Misc. Inform. Kew 1918: 236. 1918.

(Fig. 4)

**Orchidaceae**

Vines, climbing, herbaceous, to several meters long. Stems profusely branched, leafy, thick, 5-8 mm diameter, terete, smooth. Roots usually 1 per node, aerial portions 1-2 mm diameter. Leaves persistent; blade flat, oblong-elliptic to linear-elliptic, equal or longer than internodes, 10-16 × 1.5-2.3 cm, fleshy-leathery, apex acute to long-acuminate, margins entire; petiole 5-8 mm long. Inflorescences axillary, congested, 8-12 flowered spikes or racemes, ca. 2 cm long including



Fig. 4. *Vanilla havilandii* Rolfe.

peduncle, peduncle very short; floral bracts broadly triangular-ovate, 2-3 × 1-2 mm, leathery. Flowers very small, resupinate, pendent apparently with flared tepals: Sepals and petals similar, free, spreading, yellowish-green, oblanceolate, 2.5-3.5 × 2.1-2.5 mm, margins straight, apex

obtuse to rounded, fleshy, rigid; often joined to sides of column with its basal margin, yellow-green, becoming dark yellow toward apex, trumpet-shaped, free part often dilated, cuneate, rhomboid, 4-5 × 3 mm, spurless, with apical retuse lobule; disc with central tuft of retrorse scales, several lines of short, fleshy hairs extending to apex; column short, white, slender, 2.0-2.5 mm long, slightly curved near top, adaxially bearded; anther inserted pointing downward; pollinia 2, yellow, granular-farinaceous or loosely granular, without caudicle or viscidium; rostellum often broad, below anther; pedicellate ovary 2-3 mm long. Fruit cylindrical, 10-20 × 0.8-1.2 mm, fleshy, often indehiscent. Seeds with stout testa, often black, wingless. Flowering and fruiting period: December-April.

*Ecology:* Pendulous epiphyte on old trees.

*Distribution:* Indonesia (Borneo).

*Specimen examined:* Rangamati: Monlovi chara, Pharu reserve forest, Bilaichari, 17 i 2009, S.N. Uddin N3201 (DACB).

*Note:* *Vanilla Plumier ex P. Miller* is a genus of about 70 species occurring throughout the tropics (Chen *et al.*, 2009). From Bangladesh, Huda (2008) listed only one species (*viz. Vanilla parishii* Reichb. f.) under the genus.

This study added four new and rare plant species like *Aristolochia coadunata* Back., *Illigera khasiana* C.B. Clarke, *Pyrenaria diospyricarpa* Kurz and *Vanilla havilandii* Rolfe to the flora of Bangladesh. The significance of such field research is the detection of novel additions to a floristic region, which subsequently improve our understanding of plant biogeography as well as species diversity of the country. The purpose of the survey was to gather data on the floristic diversity of the reserve, which can be used by the Forests Department for the biodiversity conservation of the area.

### Acknowledgement

The authors are grateful to the authority of Forest Department for their cooperation during field visits. They also thank the Director of Bangladesh National Herbarium for providing herbarium facilities and constant encouragement during the work.

### References

- Alfasane, M.A., Khondker, M., Islam, M.S. and Bhuiyan, M.A.H. 2010. *Egeria densa* Planchón (Hydrocharitaceae) : A new angiospermic record for Bangladesh. *Bangladesh J. Plant Taxon.* **17**(2): 209-213.
- Anonymous. 1973. Working Plan of the Chittagong Hill Tracts North and South Forest Division for the period from 1953-54 to 1972-73, Vol. 2. Working Plan Division, Forest Department, the Government of East Pakistan.
- Ara, H. and Hassan, M.A. 2012. Five new records of aroids for Bangladesh. *Bangladesh J. Plant Taxon.* **19**(1): 17-23.
- Chen, X., Cribb, P.J. and Gale, S.W. 2009. Vanilloideae. In: Wu, Z.Y., Raven, P.H. and Hong, D.Y. (eds.). *Flora of China (Orchidaceae)*, Vol. 25. Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis. p. 167.
- Clarke, C.B. 1878 (Repr. 1961). Combretaceae. In: Hooker, J.D. (ed.), *The Flora of British India*, Vol. 2. L. Reeve & Co. Ltd., The Oast House, Booke, Ashford, Kent, England. pp. 460-461.
- Cowan, J.M. 1926. The flora of the Chakaria Sundarbans. *Rec. Bot. Survey India* **11**(2): 197-225.
- Cowan, A.M. and Cowan, J.M. 1929. The trees of Northern Bengal-Including shrubs, woody climbers, bamboos, palms and tree ferns. Bengal Secretariat Book Depot., Calcutta. pp. 1-178.

- Das, D.K. & Alam, M.K. 2001. Trees of Bangladesh. Bangladesh Forest Research Institute, Chittagong. pp. 1-342.
- Dyer, W.T. 1874 (Repr. 1961). Ternstroemiaceae. In: Hooker, J.D. (ed.), *The Flora of British India*, Vol. 1. L. Reeve & Co. Ltd., The Oast House, Booke, Ashford, Kent, England. pp. 279-294.
- Habib, M.A. and Huq, A.M. 2009. *Theaceae*. In: Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M. and Ahmed, A.T.A. (eds.). 2009. *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 10. Angiosperms: Dicotyledons (Ranunculaceae-Zygophyllaceae). Asiatic Society of Bangladesh, Dhaka. pp. 368-375.
- Heinig, R.L. 1925. List of Plants of the Chittagong Collectorate and Hill Tracts. The Bengal Government Branch Press, Darjeeling, India. pp. 1-89.
- Hooker, J.D. 1886, 1888 & 1890 (Repr. 1954). Ariatolichiaceae and Orchidaceae. In: Hooker, J.D. (ed.), *The Flora of British India*, Vol. 5. L. Reeve & Co. Ltd., The Oast House, Booke, Ashford, Kent, England. pp. 72-77; 667-858.
- Huda, M.K. 2008. Orchidaceae. In: Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmed, M., Ahmad, A.T.A., Rahman, A.K.A. and Haque, E.U. (eds.). *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 12. Angiosperms: Monocotyledons (Orchidaceae-Zingiberaceae). Asiatic Society of Bangladesh, Dhaka. pp. 1-149.
- Ibrahim, R., Kamal, G.M., Rahman., M.M., Rahman., M.M., Sultana, S., Pasha, A.H., Parvin, A., Mondal, S.R., Alam, M.S. and Dey, A.K. (ed.). 2012. *Community Report Rangamati Zilla*. Bangladesh Bureau of Statistic, Dhaka. p. 18.
- Kanjilal, U.N., Kanjilal, P.C. and Das, A. 1934 (Repr. 1982). *Flora of Assam*, Vol. 1. A Von Book Company, Ajmeri Gate, Delhi, India. pp. 115-131.
- Kanjilal, U.N., Kanjilal, P.C., De, R.N. and Das, A. 1940 (Repr. 1982). *Flora of Assam*, Vol. 4. A Von Book Ajmeri Gate, Company, Delhi, India. pp. 26-29.
- Kates, R. W., Clark, W. C., Corell, R. and Hall, J. M. 2001. Sustainability science, *Science* **292**: 641-642.
- Khatun, B.M.R., Rahman, M.O. and Sultana, S.S. 2010. *Hydrocotyle verticillata* Thunb. (Apiaceae) - A new angiospermic record for Bangladesh. *Bangladesh J. Plant Taxon.* **17**(1): 105-108.
- Kurz, S. 1877 (Repr. 1974). *Forest Flora of British Burma*, Vol. 1. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. pp. 104-105.
- Kurz, S. 1877 (Repr. 1974). *Forest Flora of British Burma*, Vol. 2. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. pp. 309-310.
- Mia, M.M.K. and Khan, B. 1995. First list of angiospermic taxa of Bangladesh not included in Hooker's Flora of British India and Prain's Bengal Plants. *Bangladesh J. Plant Taxon.* **2** ( 1&2): 25-45.
- Mia, M.M.K., Rahman, M.O., Hassan, M.A. and Huq, A.M. 2011. Three new records of Sterculiaceae for Bangladesh. *Bangladesh J. Plant Taxon.* **18**(2): 153-157.
- Prain, D. 1903 (Indian Repr. 2004). *Bengal Plants*. Vol. 1 & 2. Bishen Singh Mahendra Pal Sing, Dehra Dun, India. pp. 247-250; 998-1034.
- Rahman, M.A. and Yusuf, M. 2012. Three new species of *Curcuma* L. (Zingiberaceae) from Bangladesh. *Bangladesh J. Plant Taxon.* **19**(1): 79-84.
- Rahman, M.A. and Yusuf, M. 2013. *Zingiber Salarkhanii* (Zingiberaceae), A new species from Bangladesh. *Bangladesh J. Plant Taxon.* **20**(2): 239-242.
- Rahman, M.O. 2004a. Second list of angiospermic taxa of Bangladesh not included in Hooker's 'Flora of British India' and Prain's 'Bengal Plants' : Series I. *Bangladesh J. Plant Taxon.* **11**( I): 77-82.
- Rahman, M.O. 2004b. Second list of angiospermic taxa of Bangladesh not included in Hooker's 'Flora of British India' and Prain's 'Bengal Plants' : Series II. *Bangladesh J. Plant Taxon.* **11**(2): 49-56.
- Rahman, M.O., Sultana, M., Begum, M. and Hassan, M.A. 2011. *Pulicaria vulgaris* Gaertn. (Asteraceae) - A new species record for Bangladesh. *Bangladesh J. Plant Taxon.* **18**(2): 205-208.
- Rahman, M.S., Hossain, G.M., Khan, S.A. and Uddin, S.N. 2014. *Colubrina javanica* Miq. (Rhamnaceae) - A new angiosperm record for Bangladesh. *Bangladesh J. Plant Taxon.* **21**(2): 199-202.
- Raizada, M.B. 1941. On the Flora of Chittagong. *Indian Forester* **67**(5): 245-254.

- Shumei, H., Kelly, L.M. and Gilbert, M.G. 2003. Aristolochiaceae. In: Wu, Z.Y., Raven, P.H. and Hong, D.Y. (eds.). *Flora of China*. Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis. p. 258.
- Sinclair, J. 1956. Flora of the Cox's Bazar, East Pakistan. *Bull. Bot. Soc. Beng.* 9(2): 84-116.
- Stork, N.E., Didham, R.K. and Adis, J. 1997. Canopy arthropod studies for the future. *Canopy arthropods*. London. pp. 551-561.
- Tianlu, M. and Bartholomew, B. 2007. *Theaceae*. In: Wu, Z.Y., Raven, P.H. and Hong, D.Y. (eds.). *Flora of China*, Vol. 12 (Hippocastanaceae through Theaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis. p. 412.
- Uddin, S.N. 2012. Floristic studies on Rampahar and Sitapahar reserve forests, Rangamati, Bangladesh. The University of Dhaka, Dhaka. Ph.D. Thesis (unpublished). pp. 1-553.
- Uddin, S.N. and Hassan, M.A. 2009. *Dianella ensifolia* (L.) DC. (Liliaceae) - a new angiospermic record for Bangladesh. *Bangladesh J. Plant Taxon.* 16(2): 181-184.
- Uddin, S.N., Khan, B. and Mirza, M.M. 2012. *Cucumis hystrix* Chakrav. (Cucurbitaceae) - a new angiospermic record for Bangladesh. *Bangladesh J. Plant Taxon.* 19(2): 205-207.
- Ullah, M.A., Rahman, M.O. and Afroz, S. 2008. *Aristolochiaceae*. In: Ahmed, Z.U., Begum, Z.N.T., Hassan, M.A., Khondker, M., Kabir, S.M.H., Ahmad, M., Ahmed, A.T.A., Rahman, A.K.A. and Haque, E.U. (eds.). *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 6. Angiosperms: Dicotyledons (Acanthaceae-Asteraceae). Asiatic Society of Bangladesh, Dhaka. pp. 212-216.
- Xi-wen, L., Li, J. and Duyfjes, B.E.E. 2008. *Hernandiaceae*. Wu, Z.Y., Raven, P.H. and Hong, D.Y. (eds.). *Flora of China*, Vol. 7 (Menispermaceae through Capparaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis. p. 255.