AN ENUMERATION OF THE MEDICINAL SPECIES OF THE FABACEAE PRESUMABLY EXTINCT FROM THE FLORA OF BANGLADESH

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Abstract

Based on long-term field investigations, examination of herbarium specimens and survey of relevant floristic literature 15 medicinally important species of the family Fabaceae are assessed to have been possibly extinct from the flora of Bangladesh due to environmental degradation and depletion of ecosystems. These species could not be rediscovered from their recorded localities of the flora for about 100 years. These species are: *Crotalaria sessiliflora* L., *Dalbergia velutina* Benth., *Derris elliptica* (Wall.) Benth., *Desmodium dichotomum* (Willd.) DC., *Desmodium sequax* Wall., *Dioclea hexandra* (Ralph.) Mabberley, *Erythrina arborescens* Roxb., *Indigofera galegoides* DC., *Meizotropis buteiformis* Voigt, *Millettia caudate* Baker, *Millettia piscidia* (Roxb.) Wight and Arn., *Paracalyx scariosus* (Roxb.) Ali, *Phaseolus lunatus* L., *Sophora wightii* Baker and *Vigna umbellate* (Thunb.) Ohwi and Ohashi. An enumeration of these possibly extinct species of the Fabaceae is presented with detailed data on conservation status.

Key words: Environmental degradation, ecosystem depletion, species extinction, Fabaceae.

INTRODUCTION

The species belonging to the Family Fabaceae are widely used as health component for their potential medicinal properties. In many countries they are randomly used like China, India, Nepal, Bangladesh, Myanmar, Thailand, Saudi Arabia and other countries. China itself uses more than 50 leguminous species as sources of medicines for the treatment of about 40 ailments (Quattrocchi 2012). Likewise India itself uses about 55% species of the Fabaceae as medicines (Quattrocchi 2012). In Bangladesh, the Fabaceae is represented by 254 species (Ahmed *et al*. 2009) of which 169, *i.e*. 67% are medicinal and potentially used for the treatment of about 90 diseases (Ishrath 2015). The biodiversity in many countries, particularly under developing countries including Bangladesh, are largely facing environmental threats and depleting at a higher rate (Rahman and Hasan 2015). Many potentially valued medicinal species have also been disappearing from the flora due to environmental degradation and ecosystem depletion.

Importance of the family wise inventory of the threatened plants including medicinal species has been stated in Rahman's study (2013) and a complete inventory of 40 plant families is in progress under the project of "Advanced Research in Education" funded by the Ministry of Education. During making the inventory, we came across the fifteen medicinal species with no available data on conservation status for the past 100 years. No specimen were collected during the period (past 100 years) and preserved at DACB, Dhaka University Salar Khan Herbarium (DUSH), Bangladesh Forest Research Institute Herbarium (BFRH), Bangladesh Council for Scientific and Industrial Research Herbarium (BCSIRH), Herbarium of Chittagong University (HCU), BM, E, K and CAL. Even no published report of their occurrence is available in any local floristic studies like Khan and Afza (1968), Khan and Banu (1972), Khan *et al.* (1984), Huq and Begum (1984), Huq and Khan (1984), Naderuzzaman and Islam (1984), Alam (1988), Huq (1988), Khan *et al*. (1994), Alam (1995), Rahman and Hassan (1995), Rahman and Uddin (1997), Yusuf *et al*. (1997), Dey *et al*. (1998), Uddin *et al*. (1998), Alam and Pasha (1999), Uddin and Rahman (1999), Das and Alam (2001), Khan and Huq (2001), Rahman *et al*. (2010, 2012, 2015, 2016), Rashid and Mia (2001),Uddin *et al*. (2002), Uddin *et al*. (2003), Hossain *et al*. (2005), Alam *et al*. (2006), Momen *et al*. (2006), Islam *et al*. (2009), Tutul *et al*. (2009), Tutul *et al*. (2010), Uddin and

Hassan (2010, 2012), Arefin *et al*. (2011) and Uddin *et al.* (2013). Field study that have been conducted by the first author for a long time since 1991, the flora of Bangladesh in the localities of previous records resulted no rediscovery of the 15 Fabaceae species. Hence these species, as assessed, are recognized as possibly Extinct (EX) from the flora.

MATERIAL AND METHODS

Inventory of the threatened medicinal taxa has been made to the family Fabaceae of Bangladesh through long-term field investigations in the flora, examination of the collected herbarium specimens and consultation of the relevant floristic literature. The filed investigations, collection of specimens and field data, determination of status of occurrence and documentation of conservation status have been made by repeated field visits throughout the flora following the method of Khan *et al*. (2001), Rahman (2013, 2013a) and Rashid *et al*. (2014). The places of occurrence of the previously recorded taxa has been documented by consulting Roxburgh (1814,1824,1832), Wallich (1828-49), Hooker (1872-1897), Kurz (1877), Prain (1903, 1903a, 1903b), Heinig (1925), Cowan (1926), Raizada (1941), Datta and Mitra (1953) and Sinclair (1956).

The previously collected specimens of the Fabaceae preserved in different herbaria of Bangladesh, *viz*., DACB, DUSH, BFRIH, BCSIRH, HCU and in international herbaria, *viz*., BM, CAL, E and K, have been examined critically to record the data of each species thought to be extinct. The relevant and up to date floristic literature published since Sinclair (1956), such as, Khan and Afza (1968), Khan and Banu (1972), Alam (1988, 1995), Khan *et al*. (1984), Huq and Begum (1984), Huq and Khan (1984), Naderuzzaman and Islam (1984), Huq (1988), Khan *et al*. (1994), Rahman and Hassan (1995), Rahman and Uddin (1997), Yusuf *et al*. (1997), Dey *et al*. (1998), Uddin *et al*. (1998, 2002, 2003), Uddin and Rahman (1999), Das and Alam (2001), Khan and Huq (2001), Rashid and Mia (2001), Uddin and Hassan (2004, 2010, 2012), Hossain *et al*. (2005), Alam *et al*. (2006), Momen *et al*. (2006), Islam *et al*. (2009), Barbhuiya and Gogoi (2010), Rahman *et al*. (2010, 2010a, 2012, 2016), Tutul *et al*. (2010), Rahman and Hasan (2015), Arefin *et al*. (2011), Uddin *et al*. (2013) have been consulted to trace the report of collection/occurrence of the taxa of the Fabaceae of Bangladesh. The assessment and determination of extinct category is based on the criteria of IUCN (IUCN 2012).

Medicinal potential values has been recorded by consulting relevant literature *e.g.*, Dunn (1912), Gillett (1958), De Kort and Thijsse (1984), Ambasta (1986), Kaur and Kapoor (1990), Jain (1991), Ghani (2003), Yusuf *et al.* (2009), Quattrocchi (2012) and Rahman and Asfaq (2012).

Enumeration of the possibly extinct taxa with detailed data on conservation status is prepared following the format as adopted in the *Red Data Book of Flowering Plants of Bangladesh* (Rahman 2013) citing each species with updated nomenclature, bangla name wherever available, potential value, status of occurrence, threat to the species, conservation status, occurrence in Bangladesh, global distribution, proposal of conservation measures, list of available consulted herbarium specimens. The abbreviation *lnc* (*loc. non. cit.*) is used wherever collection locality is not cited.

RESULTS AND DISCUSSION

Inventory of the threatened medicinal species of the Fabaceae for determining their conservation status in the flora revealed that 15 recorded species belonging to five genera could not be relocated in the field and even to their recorded localities. Examination of the herbarium specimens of the Fabaceae of Bangladesh preserved at DACB, DUSH, HCU, BFRIH, BCSIRH, BM, E, K, and CAL revealed that there is no specimen of these 15 species are available. Survey of all published relevant and local floristic literature also showed that there is no report of occurrence of these species elsewhere in Bangladesh for more than 50 to 100 years since Sinclair (1956). The result of the assessment of the status of occurrence

of the recorded taxa of the Fabaceae, revealed that these 15 species qualified to the IUCN's Extinct (EX) Category. Each species, as cited in the enumeration, revealed that the cause of threat to individual species could not be determined as there is no adequate data of occurrence for long time. All these species, recognized as possibly extinct to Bangladesh, are found to be widely distributed in many countries and highly potential for their medicinal properties and uses.

Enumeration of the possibly extinct taxa of the Fabaceae of Bangladesh

Crotalaria sessiliflora L., *Sp.Pl.ed.*2:1004(1763); Yusuf *et al.* (2009).
Crotalaria anthylloides Lamk.(1786);*C. nepalensis* Link (1822); *C. eriantha* Sieb.and Zucc. (1843);
C. brevipes Cham *ex* Benth.(1852); *C. oldhamii* Miq. (1867). Bangla name: Not available.

An erect annual herb, stem and branches terete, appressed villous. Leaves simple, subsessile, lanceolate or linear- lanceolate, base obtuse, stipules setiform, long, caduceus. Inflorescence of racemes, terminal, elongated, short or rather dense, head like, 5-15 cm long, occasionally 1-2 flowered in upper leaf axils. Calyx 1.5 cm long, accrescent in fruits, deeply bilabiate. Corolla blue, limb of standard obovate. Fruit a pod, sessile, oblong, glabrous, black when mature. Seeds yellowish. *Habitat*: Open grasslands and deciduous evergreen forests. *Flower and Fruit*: September-November.
Medicinal properties: Toxic, Anti-septic (Quattrocchi 2012); *Plant part(s)*: Whole plant;
Medicinal uses: Cuts, Wounds, Headache (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Prain (1903) from East Bengal (*lnc*) and thereafter by Datta and Mitra (1953) from Dhaka (*lnc*). No other published record of its occurrence and no collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Dhaka (*lnc*), East Bengal (*lnc*).
Global distribution: Bangladesh, India, Pakistan, South East Asia to the Philippines and New Guinea;
Conservation measures proposed: The plant is to be traced in its collection locality for *in-situ* or *ex-situ* conservation management as appropriate;
Herbarium specimen: No specimens available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Dalbergia velutina Benth. In Miq., *Pl. Jungh.*1:255 (1852). Khatun (2009).
Dalbergia stipulate Wall. (1831-1832); *Amerimnon stipulatum* (Wall.) Kuntze (1891).
Bangla name: Sabanphul.

A woody, climbing shrub, branches densely rusty brown pubescent. Leaves imparipinnately compound. Inflorescence mostly axillary or corymbose. Flowers white to pink, mostly short-pedicillate. Corolla 5-8 mm long, petals 5, all clawed at the base. Fruit a pod, oblong, thin, membranous. Seeds dark brown, oblong. *Habitat*: Evergreen and mixed evergreen hilly forests. *Flower and Fruit*: February-August.
Medicinal properties: Anti-septic (Quattrocchi 2012). Plant part(s): Young leaf;
Medicinal uses: Wounds (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: Its distribution in Bangladesh was recorded by Baker (1876-1879) from Sylhet without citing any locality. Since then no other published record of its occurrence and no collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Sylhet *(lnc)*;
Global distribution: Bangladesh, India, Myanmar, Malaysia and Indonesia;

Conservation measures proposed: If it could be traced in the wild then both *in-situ* and *ex-situ* conservation measures to be taken or as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Derris elliptica (Wall.) Benth., *Journ. Linn. Soc. Suppl.* 4:111 (1860). Khatun (2009).
Galedupa elliptica Roxb. (1814); *Pongamia elliptica* Wall. (1832). Bangla name: Not available.

A scrambling shrub, stem black, pubescent. Leaves membranous, subcoriaceous, oblong to oblong-lanceolate. Inflorescence racemes, 23-25 cm long. Corolla rose to pink, standard orbicular, back silky, base bi-callose. Fruit a pod, oblong to lanceolate, 1-4 seeded, winged on both sutures. *Habitat*: Littoral areas. *Flower and Fruit*: March- June.
Medicinal properties: Insecticidal, Larvicidal, Poisonous to Fish, Cattle (Yusuf *et al.* 2009);
Medicinal uses: Used as fish poison (Yusuf *et al.* 2009);
Indigenous uses: Used by Malayas in Ipoh arrow-poison (Yusuf *et al.* 2009); Plant Part(s): Bark, Fruit, Leaf, Root;
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: This species was recorded only from Chittagong (*lnc*) first by Prain (1903) and thereafter by Heinig (1925). There is no other published record of its occurrence and no collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Chittagong (*lnc*);
Global distribution: Bangladesh, India and Malay Peninsula;
Conservation measures: None;
Conservation measures proposed: The plant is to be traced, if exists, in its collection locality, for *in-situ* or *ex-situ* conservation management as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Desmodium dichotomum (Willd.) DC., *Prodr.* 2:336 (1825). Khatun (2009).
Hedysarum dichotomum Willd. (1802). Bangla name: Not available.

A diffuse straggling herb or undershrub. Stem more or less woody near the base. Leaves 3 foliolate, rarely one foliolate, stipulate. Inflorescence axillary to terminalr acemes. Flowers bracteates, bracts narrowly ovate. Corolla purple to violate, standard petal obovate to broadly rounded. Fruit a pod, narrowly oblong, seeds transversely broadly oblong. *Habitat*: Hill slopes, roadsides and fallow lands. *Flower and Fruit*: Not on record.
Medicinal properties: Tonic (Quattrocchi 2012); Plant Part(s): Whole plant;
Medicinal uses: Fever, Indigestion (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was recorded by Prain (1903) from Central Bengal (*lnc*). Since then no other published report of its occurrence from elsewhere in Bangladesh is available. No collection is available at DACB, BFRIH, DUSH, HCU and BCSIRH;
Occurrence in Bangladesh: Central Bengal (*lnc*);
Global distribution: Bangladesh, India, Indonesia, Nigeria, Sudan, Ehiopia, Euratia;
Conservation measures taken: None;
Conservation measures proposed: The occurrence of the plant is to be traced in its collection locality and *in-situ* or *ex-situ* conservation measures should be taken as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Desmodium sequax Wall., *Pl. As. Rar.* 2:46 (1832). Khatun (2009).
Desmodium strangulatum Wight and Arn. var. *sinuatum* Miq. (1855), *Meibomia sequax* O. Kuntze (1891), *Dollinera sequax* (Wall.) Hochr. (1971). Bangla name: Not available.

An erect or prostrate herb or undershrub, 1- 1.5 m tall. Leaves trifoliolate, leaflets rhomboid, ovate or elliptic. Inflorescence axillary and terminal, Flowers solitary or 2 in cluster, calyx pink, crimson, purple or magenta. Fruit a pod, indented on both margin. *Habitat*: Riverine and forests, at low and medium altitudes throughout the island, grassland, roadsides, open ground and sometimes in old gardens. *Flower and Fruit*: September-December.
Medicinal properties: Aniseptic, Diaphoretic (Quattrocchi 2012); Plant Part(s): Leaf, Root;
Medicinal uses: Toothache, Wounds (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was recorded by Cowan and Cowan (1929) from North Bengal (*lnc*). No other published report of its occurrence from elsewhere in Bangladesh is available. There is no specimen from elsewhere in Bangladesh available at DACB, BFRIH, DUSH, HCU and BCSIRH;
Occurrence in Bangladesh: North Bengal (*lnc*);
Global distribution: Bangladesh, India, Myanmar, Nepal, Bhutan, Indonesia, China, Taiwan, Malesia, widely spread in tropical Asia;
Conservation measures taken: None; Conservation measures proposed: It is to be traced in the collection locality for its existence and *in-situ* or *ex-situ* conservation management should be taken as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Dioclea hexandra (Ralph.) *Bot. Hist. Hort. Malab*.: 98 (1980).
Mucuna hexandra Ralph. (1849); *Dicolea reflexa* Hook. f. (1849); *D. javanica* Benth. (1852).
Bangla name: Not available.

A large climbing shrub. Leaves pinnately trifoliolate, stipules lanceolate. Flowers fasciculately racemose on thick elongated peduncles. Petal exserted, standard orbicular or ovate. Fruit linear or oblong, few seeded. *Habitat*: Forests. *Flower and Fruit*: January-March.
Medicinal properties: Antiseptic, Stimulant, Tonic (Quattrocchi 2012). Plant Part (s): Root, Whole plant;
Medicinal uses: Heart troubles (Quattrocchi 2012);
Indigenous uses: Magic, Ritual for infants (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Baker (1876-1879) from Sylhet (*lnc*). Thereafter it was recorded by Prain (1903) and Heinig (1925) from Chittagong (*lnc*). There is no other published report of its occurrence in Bangladesh. No collection from elsewhere in Bangladesh is also available;
Occurrence in Bangladesh: Chittagong (*lnc*), Sylhet (*lnc*);
Global distribution: Bangladesh, India, Myanmar, Sri Lanka, Malaysia, tropical Afrcia and America;
Conservation measures taken: None;
Conservation measures proposed: The plant is to be traced in its collection locality for *in-situ* or *ex-situ* conservation management as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Erythrina arborescens Roxb., *Fl. Ind.* 3:256 (1832). Khatun (2009).
Bangla name: Diengson, dieng-ja-ra-song, dieng-r-song-hadem.

A small tree upto 15 m tall. Crown spreading, branchlets without prickle, bark rough. Leaflets bright green, shining and quite glabrous above. Inflorescence raceme, 20-30 cm long, standard petal orange red, ovate to elliptic, concave, emarginated, veined. Fruit a pod, oblong- ellipsoid, much curved. Seeds reniform, smooth. *Habitat*: Plain and low lands. *Flower and Fruit*: July-October.
Medicinal properties: Anthelmintic, Anti-rheumatic (Quattrocchi 2012); Plant Part(s): Bark, Twig and Seeds;
Medicinal uses: Dislocation of bones, Rheumatism, Ring worm, Skin disease, Swelling, Toothache (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Cowan and Cowan (1929) from North Bengal (*lnc*). There is no other published report of its occurrence in Bangladesh. No collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: North Bengal (*lnc*);
Global distribution: Bangladesh, India, Myanmar, Nepal, Bhutan, China and Thailand;
Conservation measures taken: None;
Conservation measures proposed: Further search is to be made to locate this plant, if found then *in-situ* or *ex-situ* conservation measures, as appropriate, to be taken;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Indigofera galegoides DC., *Prodr.*2:225 (1825). Khatun (2009).
Indigofera uncinata Roxb. (1832); *I. finlaysoniana* Grah. *ex* Ridley (1922). Bangla name: Not available.

A shrub, 3m high, branches erect, angular. Leaves imparipinnately compound. Racemes 5-12 cm long, axillary, minutely brown pubescent, densely many flowered. Fruit a pod, fustigate grouped with their apices pointing in the direction of apex of peduncles, straight. Seeds reddish-brown, faintly pitted. *Habitat*: Open deciduous forests, at altitude ranging from 190-1000 m. *Flower and Fruit*: August-March.
Medicinal properties: Toxic (Gillett 1958, De Kort and Thijsse 1984);
Medicinal uses: Used as poison (Gillett 1958, De Kort and Thijsse 1984);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Heinig (1925) from Chittagong (*lnc*) and Hill Tracts (*lnc*). There is no other published report of its occurrence in Bangladesh. No collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Chittagong (*lnc*) and Hill tracts (*lnc*);
Global distribution: Bangladesh, India, Myanmar, Cambodia, China, Indonesia, Malaysia, the Philippines, Thailand, Laos, Taiwan, Singapore, Sri Lanka and Vietnam;
Conservation measures taken: None; Conservation measures proposed: The plant is to be traced in its collection locality for *in-situ* or *ex-situ* conservation management as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Meizotropis buteiformis Voigt, *Hort. Suburb. Calc*.:239 (1845). Khatun (2009).
Butea minor Baker (1876), *Plaso minor* (Baker) Kuntze (1891), *B. buteiformis* (Voigt) Grierson and Long (1979). Bangla name: Not available.

An erect perennial herb or shrub, 2-3 m tall. Stem deeply ridged and grooved, covered with grey silky tomentum. Leaflets ovate-elliptic, acute. Inflorescence panicles or racemes, flowers red, 2- 2.5 cm long, pedicillate. Corolla densely velvety. Fruit a pod, rigid, erect, sessile, cuneate at the base, densely rusty-brown tomentose. *Habitat*: Dry open hill sides and grassy hill slopes and forests. *Flower and Fruit*: June-October.
Medicinal properties: Anthelmintic (Quattrocchi 2012). Plant Part(s): Root;
Medicinal uses: Intestinal worm (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was recorded by Baker (1876-1879) from Sylhet (*lnc*). There is no other published report of its occurrence in Bangladesh. No collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Sylhet (*lnc*);
Global distribution: Bangladesh, India, Myanmar, Nepal and Bhutan;
Conservation measures taken: None; Conservation measures proposed: It is to be traced, if exists, then both *in-situ* and *ex-situ* conservation measures to be taken or as appropriate;
Herbarium specimen: No specimen is available at DACB, HCU, BFRIH, BCSIRH and DUSH.

Millettia caudate Baker in Hook. f., *Fl. Brit. Ind.* 2:109 (1876). Khatun (2009).
Pongamia caudate Grah. (1831-1832); *Otosema caudate* Benth. (1852). Bangla name: Not available.

An erect or straggling shrub. branches thin, glabrous, sparsely lenticillate, Leaflets oblong-elliptic to oblong-lanceolate or oblanceolate. Inflorescence an axillary raceme, rather lax flowered, pedicels short, Corolla 7.5-10 mm long, densely silky, standard petal auricled at the base. Fruit straight, rigidly coriaceous or semi woody. *Habitat*: Evergreen hilly forest area. *Flower and Fruit*: May-March.
Medicinal properties: Antidote (Quattrocchi 2012). Plant Part(s): Leaf;
Medicinal uses: Snakebite (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Baker (1876-1879) from Sylhet (*lnc*). There is no other published report of its occurrence in Bangladesh available. No collection from elsewhere in Bangladesh is also available;
Occurrence in Bangladesh: Sylhet (*lnc*);
Global distribution: Bangladesh, India, Myanmar;
Conservation measures taken: None; Conservation measures proposed: The plant is to be traced in its collection locality for taking *in-situ* or *ex-situ* conservation management or as appropriate;
Herbarium specimen: No specimen is available at HCU, BCSIRH, BFRIH, DACB and DUSH.

Millettia piscidia (Roxb.) Wight and Arn., *Prodr*.:263 (1834). Khatun (2009).
Galedupa piscidia Roxb. (1832). Bangla name: Dieng-soh-lyn-thein, Mohal.

A small or medium sized tree, in general appearance much resembling the litchi, bark greenish–rey to dull brown. Racemes simple, lax flowered, capillary, flowers 12.5-15.0 mm long. Corolla white, much exerted, standard petal glabrous. Fruit coriaceous, smooth but faintly reticulate at the surfaces.

Seeds laterally oblong with a horny smooth brown testa. *Habitat*: Evergreen mixed forests, bank of the lakes, usually at the shady ravines. *Flower and Fruit*: June-February.
Medicinal properties: Toxic (Ambasta 1986, Dunn 1912). Plant Part(s): fruit;
Medicinal uses: Used for poisoning (Ambasta 1986, Dunn 1912);
Status of occurrence: Possibly Extinct (EX); Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Baker (1876-1879) from Sylhet (*lnc*). There is no other published report of its occurrence in Bangladesh available. No collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Sylhet (*lnc*);
Global distribution: Bangladesh, India and Bhutan;
Conservation measures proposed: It is to be traced, if exists, in its collection locality, then *in-situ* or *ex-situ* conservation management, as appropriate, to be taken;
Herbarium specimen: No specimen is available at DACB, HCU, BFRIH, BCSIRH and DUSH.

Paracalyx scariosus (Roxb.) Ali, *Univ. Stud. (Karachi)* 5(3): 95 (1968). Naderuzzaman (2009).
Cylista scariosa Roxb. (1795). Bangla name: Not available.

A twining herb, leaves pinnately 3 foliolate, dotted beneath with resinous glands, leaflets ovate or sub rhomboidal. Flowers in axillary racemes, pedicels short, bracts membranous, hyaline, large, deciduous. Sepals connate in a campanulate tube, lobes obtuse, scarious.Petals yellow, included, subequal. Fruit a small, oblique pod, 1 seeded. *Habitat*: Hilly areas. *Flower and Fruit*: November to March.
Medicinal properties: Astringent, Vermicidal (Quattrocchi 2012); Plant Part(s): Leaf, Root;
Medicinal uses: Antidote to snakebite, Cure fracture, Dysentery, Leucorrhea, Stomachache, Skin diseases (Quattrocchi 2012).
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Prain (1903) from Central Bengal (*lnc*). There is no other published report of its occurrence in Bangladesh. No collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Central Bengal (*lnc*);
Global distribution: Bangladesh, India, Myanmar, Pakistan and Thailand;
Conservation measures proposed: Location of its occurrence is to be traced for *in-situ* or *ex-situ* conservation management as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Phaseolus lunatus L., *Sp. Pl.*: 724 (1753). Khatun (2009).
Phaseolus bipunctatus Jacq. (1770); *P. limensis* Macfad. (1837). Bangla name: *Ban Barboti*.

Usually an annual or occasionally perennial climber or sometimes sub-shrubby. Leaves trifoliolate, compound, alternate, stipulate, leaflets ovate to lanceoate. Inflorescence axillary racemes, 15-25 cm long, with many nodes, corolla exserted. Fruit oblong-lanceolate or oblong-sickle shaped, 2-valved. Seeds kidney shaped. *Habitat*: Grown in low land, prefers well drained soils at altitudes of 200-250m. *Flower and Fruit*: November-February.
Medicinal properties: Astringent, Antifungal, Antiparasitic, Antibacterial, Anti-proliferative, Hypolipidemic, Sedative, Toxic (Quattrocchi 2012). Plant Part(s): Raw bean, Seed, Leaf;

Medicinal uses: Excess amount fatal, causes Dysentery, Headache, Purging, Vomiting. Cure Cough (Quattrocchi 2012);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Roxburgh (1814) from Bengal (*lnc*). Thereafter it was recorded by Prain (1903) from Central Bengal (*lnc*). There is no other published report of its Occurrence in Bangladesh: No collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: Central Bengal (*lnc.*);
Global distribution: Bangladesh, India, Myanmar, native of tropical Central America, Peru, the Philippines, Indonesia, Mauritius, Brazil, Africa, Peruvian Coast, Madagascar;
Conservation measures proposed: The occurrence of the plant is to be traced in its collection locality, if located then *in-situ* or *ex-situ* conservation measure, as appropriate, is to be taken;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Sophora wightii Baker in Hook. f., *Fl. Brit. Ind.* 2: 250 (1878). Khatun (2009).
Sophora heptaphylla Wight (1846); *S. acuminata* Benth. *ex* Baker (1878). Bangla name: Not available.

A large shrub or small tree, up to 8 m tall. Leaves imparipinnately compound, bright green, glabrous above, very glaucous with a thin coating of bright brown pubescence, especially on the midrib beneath. Inflorescence axillary, lax panicles, shortly peduncled. Flowers 2.5 cm long, bright yellow. Corolla much excerted, petals white, standard narrowly obovate. Fruit distinctly moniliform, glabrous, strongly veined. Seeds ellipsoid. *Habitat*: Hilly forest area. *Flower and Fruit*: June-December.
Medicinal properties: Immuno-stimulatory (Internet). Plant Part(s): Leaves;
Medicinal uses: Recorded as medicinal by Jain (1991) and Sarwar (2015). It is endemic to India and used in formulation of many traditional medicines;
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: Baker (1876-1879) first recorded it from East Bengal (*lnc*). No other published report of its occurrence in Bangladesh is available. No collection from elsewhere in Bangladesh is available. This species is endemic to India. It was declared as Endangered by 2010 IUCN Red List of Threatened species;
Occurrence in Bangladesh: East Bengal (*lnc.*);
Global distribution: Bangladesh, India, South Asia, Bhutan, Nepal and China. Endemic to Western Ghats;
Conservation measures proposed: Intensive search is to be made to locate this plant, if exists, then appropriate conservation measure is to be taken;
Herbarium specimen: No specimen is available at DACB, BFRIH, DUSH, HCU and BCSIRH.

Vigna umbellata (Thunb.) Ohwi and Ohashi, *Journ. Jap. Bot.* 44: 31 (1969). Khatun (2009).
Dolichos umbellatus Thunb. (1794); *Phaseolus calcaratus* Roxb.(1814), *Azukia umbellata* (Thunb.) Ohwi (1953). Bangla name: Not available.

An annual or perennial, climbing or sub-erect herb. Stem sparsely to densely spreading or stiffy deflexed hairy. Leaves trifoliate compound, stipulate, leaflets variable in shape. Inflorescence an axillary peduncled raceme, conical, few flowered. Flowers yellow, 1.2-1.4 cm long. Fruit linear oblong, glabrous or slightly appressed hairy. Seeds yellow, brown, black or speckled. *Habitat*: In open grasslands. *Flower and Fruit*: September-December.
Medicinal properties: Anti-nutritive (Kaur and Kapoor 1990) and Antioxidant. Plant Part(s): seeds;

Medicinal uses: Indigestion, Cytoprotective effect;
Indigenous uses: The red type of rice bean is used in traditional Chinese medicine, sometimes in combination with *Angelica sinensis* (www.wikipedia.org);
Status of occurrence: Possibly Extinct (EX);
Threat to the species: Data not available. Possibly habitat loss;
Conservation status: It was first recorded by Prain (1903) from North and East Bengal (*lnc*). Thereafter, it was recorded by Heinig (1925) from Chittagong (*lnc*). There is no other published report and no collection from elsewhere in Bangladesh is available;
Occurrence in Bangladesh: North and East Bengal (*lnc.*), Sylhet (*lnc.*);
Global distribution: Bangladesh, India, Sri Lanka, Nepal, Bhutan, China, Indo-China, Malaysia, Pakistan, Sikkim, Taiwan, native of tropical America;
Conservation measures proposed: The plant is to be traced in its collection locality for *in-situ* or *ex-situ* conservation management as appropriate;
Herbarium specimen: No specimen is available at DACB, BFRIH, HCU, BCSIRH and DUSH.

Botanical explorations and collections of plant specimens to make complete inventory of the flora have been conducting since independence of Bangladesh by the National Herbarium as well as by the botany department of the universities like Dhaka and Chittagong. Floristic surveys to different plant rich localities under different post-graduate research projects of the university botany departments have also been made. Plant specimens collected specially from south east part of Bangladesh are available at DACB, HCU, BFRIH and BCSIRH. Rediscoveries of some species were made in the recent investigations. The result of examination, determination of all collected specimens of the Fabaceae and survey of local floristic literature although suggested 15 species under IUCN's Extinct Category (EX), further survey (either extensive or intensive) is to be conducted throughout the Bangladesh. Thus may result either rediscovery or reconfirmation of their extinction. The present study therefore recommends to continue more survey of the flora for re-determining their status of occurrence and to undertake appropriate conservation management.

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