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NOTES ON THE RUBIACEAE. 3. FIVE NEW RECORDS FOR BANGLADESH

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Abstract

Critical examinations of some unnamed specimens of the family Rubiaceae collected from Sylhet, Chittagong, Cox's Bazar and Rangamati districts confirmed the identification of five species which have not been previously recorded from Bangladesh. These species are: *Argostemma sarmentosum* Wall., *Mussaenda incana* Wall. *ex* Roxb., *Mycetia mukerjiana* Deb & Dutta, *Oxyceros rugulosus* (Thwaites) Tirveng. and *Tarenna helferi* (Kurz) N.P. Balakr. The genus *Argostemma* Wall. is also a new record for Bangladesh. These species are described and illustrated along with ecology, geographical distribution and occurrence.

Introduction

Rashid *et al.* (1999) in their Checklist of the Rubiaceae of Bangladesh included a total of 127 species, 1 sub-species and 6 varieties in 47 genera. Recently Das *et al.* (2002, 2004, 2009) recorded another 8 species and 1 sub-species of the family Rubiaceae as new records for Bangladesh. Very recently Rahman and Das in Ahmed *et al.* (2009), described a total of 170 taxa of the Rubiaceae incorporating all previous records.

Examination and literature search of collected specimens of the Rubiaceae from Sylhet, Chittagong, Cox's Bazar and Rangamati districts confirmed the identification of the *Argostemma sarmentosum* Wall., *Mussaenda incana* Wall. *ex* Roxb., *Mycetia mukerjiana* Deb & Dutta, *Oxyceros rugulosus* (Thwaites) Tirveng. and *Tarenna helferi* (Kurz) N.P. Balakr. which have not been previously reported from the area (Roxburgh 1814, 1832, Wallich 1828-1849, Kurz 1877, reprt. 1974, Hook.f. 1880, Prain 1903, Brandis 1906, Heinig 1925, Cowan 1928, Kanjilal *et al.* 1939, Raizada 1941, Datta and Mitra 1953, Sinclair 1956, Khan and Banu 1972, Ridsdale 1998, Mia and Huq 1986, Kumar 1987, Alam 1988, Deb 1983, Mia and Khan 1995, Rahman and Hassan 1995, Rahman and Uddin 1997, Dey *et al.* 1998, Uddin and Rahman 1998, Uddin *et al.* 1998, Rahman 1999, Rashid *et al.* 1999, Mia and Rashid 2001, Das *et al.* 2002, 2004 and 2009, Datta and Deb 2004). The genus *Argostemma* Wall. was not previously known from Bangladesh.

In this communication, taxonomic description and illustration of each of these new records are presented. Notes on ecology, geographical distribution and the occurrence of each species in Bangladesh are also provided.

Materials and Methods

The plant specimens have been collected from the forests of Chittagong, Hill Tracts districts, Cox's Bazar and Sylhet through field trips under Aberdeen University-Chittagong University (AU-CU) Biodiversity Link Project and kept in the Herbarium of Chittagong University (HCU). The specimens of the Rubiaceae available at (DACB), CAL, Salar Khan Herbarium of Dhaka University, Bangladesh Forest Research Institute herbarium (BFRIH) and Bangladesh Council of Scientific and Industrial Research herbarium, Chittagong (BCSIRH) were also studied.

The specimens were studied at HCU using Long Arm Stereo Microscope and identified by consulting relevant literatures (Hook. f. 1880, Prain 1903, Brandis 1906, Kanjilal *et al.* 1939, Deb 1983, Dutta and Deb 2004). The identifications were confirmed by matching with the named specimens and as well as by consulting experts of ABD, BM, CAL, E, K and L.

The photographs of fertile specimens have been taken either from the field or from the herbarium specimens by using digital camera. Illustrations of some of the new records has also been done at the herbarium. The herbarium specimens are available at DACB, BFRIH, BCSIRH and HCU.

Taxonomic enumeration

1. Argostemma sarmentosum Wall. in Roxb., Fl. Ind. ed. 2: 324 (1824); Hara and Gould in Enum. Fl. Pl. Nepal 2: 199 (1979); R.R. Mill in Fl. Bhutan 2(2): 755-756 (1999). *Sonerila angustifolia auct. non* Wall.: D. Don, Prodr., Fl. Nepal 155 (1825). (**Fig. 1**)

A perennial creeping or erect suffrutescent, annual or biennial herb, up to 20 cm tall. Stems slender, fleshy, villous. Stipules interpetiolar, not fused, entire, small, broadly ovate or ellipitic, glabrous, margin not hairy, colleters present at the base, persistent to caducous. Petioles up to 10 mm long. Leaves opposite or sub-verticillate, 3 - 5 together, often anisophyllous, elliptic to obovate, lamina 2 - 14 × 2.5 - 9 cm, apex acute or obtuse, base attenuate, sparsely pilose. Cymes solitary, terminal, rarely several together or axillary, pubescent. Bracts small, ovate. foliaceous. Flowers 4-merous; calyx lobes ovate, up to 3 mm long, longer than tube, lobes ovate to oblong, up to l0 mm long; anthers tapering to apical pore, up to 8 mm long, much longer than filaments, filaments curved, inserted on rim of corolla tube; styles filiform, up to l0 mm long, stigmas entire, clavate or capitate, papillate or non-papillate, ovary bilocular, ovules 2 per locule. Fruits capsular, succulent, subglobose; crown of calyx segments present; seeds numerous, endospermic. Flowering and fruiting: June to August.

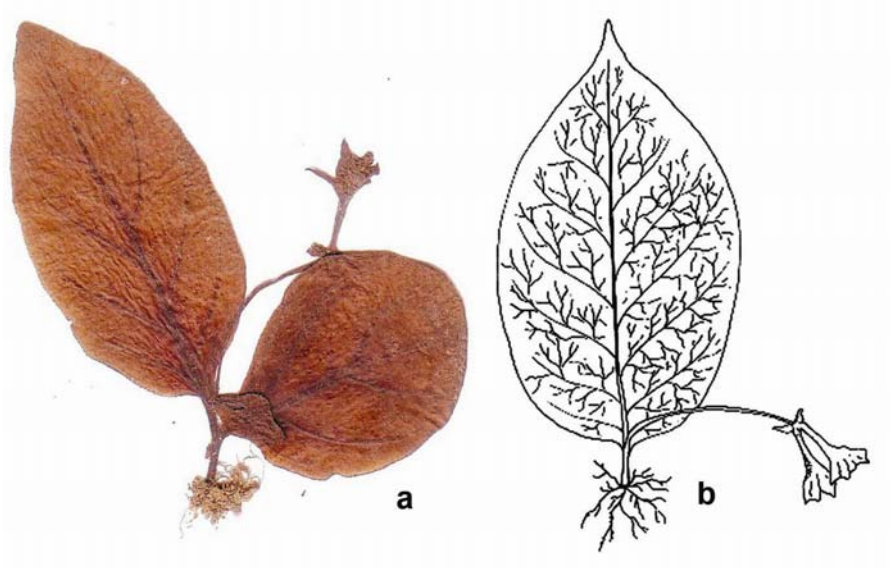

Fig. 1. *Agrostemma sarmentosum* Wall. (a) habit, (b) habit sketch with flowers.

Specimens examined: Rangamati: Shubalong, 05.09.1999, Rahman *et al.* 5666 (HCU).

Ecology: Grows in humid and shady places of deep forest.

Geographical distribution: Bhutan, Nepal, India, Myanmar and Africa.

Occurrence in Bangladesh: Shubalong of Rangamati district.

Note: The genus *Argostemma* Wall. was not previously recorded to represent in the flora of Bangladesh by any species. *Argostemma sarmentosum* Wall. is known to occur in Myanmar which is very adjacent to our site of collection.

2. Mussaenda incana Wall. *ex* Roxb., Fl. Ind. ed. 2: 229 (1824); Hook.f., Fl. Brit. Ind. 3: 87 (1880); Kanjilal *et al*., Fl. Assam 3: 46 (reprt. 1982). **(Fig. 2)**

An erect undershrub, densely clothed with adpressed and spreading hairs, up to l m tall. Stipules triangular, up to 8 mm long. Petioles up to 7 mm long. Leaves sub-sessile, usually elliptic, ovate or oblong, lamina 5 - 20 × 2 - 10 cm, apex acuminate, base acute, sub-coriaceous, thinly pilose above, densely and softly pilose beneath, veins more densely hairy. Inflorescence a clearly 2 - 3 branched terminal corymb, laterals overtopping to central branch, usually dense on each branch, comparatively few-flowered; calyx lobes filiform, tapering from base, up to 6 mm long, pilose with long silky hairs; corolla tube up to 2 cm long, adpressed pilose, lobes ovate, acute or acuminate. Berry globose, 10 - 13 mm long, pilose, eventually glabrescent, calyx persistent. Flowering and fruiting: May to August.

Fig. 2. *Mussaenda incana* Wall. (a) habit, (b) enlarged flowers.

Specimens examined: Chittagong: Sitakunda, Eco-Park area, 12.06.2009, Rahman and Sujit 6183 (HCU). Moulvi Bazar: Srimangal, Bhanugach road, 18.06.2009, Sujit and Ajoy 6568 (HCU).

Ecology: Grows on hilly slopes beside stream.

Geographical distribution: India, Bhutan and Thailand.

Occurrence in Bangladesh: Sitakunda of Chittagong and Srimangal of Moulvi Bazar districts.

Note: The genus *Mussaenda* L. was previously known to represent in the flora of Bangladesh by 7 species, and these are: *M. erythrophylla* Schum. *et* Thorn., *M. frondosa* L., *M. glabra* Vahl, *M. macrophylla* Wall. *ex* Roxb., *M. roxburghii* Hook.f., *M. treutleri* Stapf. and *M. uniflora* Wall. *ex* Roxb.

3. Mycetia mukerjiana Deb & Dutta in Ind. For. 91(5): 272, t.1 (1965) and in Sci. Cult. 33: 60 (1967); Deb, Bull. Bot. Surv. India 28(1-4): 114-132 (1986). **(Fig. 3)**

A small shrub or undershrub, up to 60 cm tall; stems terete, glabrous, glossy with spongy bark. Stipules oblong, obtuse, glabrous, 8 - 10 × 7 - 8 mm. Petioles up to 3 cm long. Leaves elliptic or lanceolate, lamina 10 - 28 × 3 - 9 cm, membranous, glabrous, apex acuminate, base attenuate. Inflorescence on leafless nodes, pedunculate, conjested, dichasial cyme or divaricate; peduncles up to 3 cm long; bracts small, ovate, lanceolate, up

Fig. 3. Habit of *Mycetia mukerjiana* Deb & Dutta.

to 6 mm long. Flowers up to 1.8 cm long, pedicels up to 4 mm long, stout; calyx lobes 5, persistent, chartaceous, lanceolate, acute to acuminate; corolla salver-shaped, yellow or whitish below, glabrescent at the back, villous within up to throat, tube up to 15 mm long, lobes thick, short, orbicular-ovate, acute; stamens 5, anthers situated at the throat (in short styled flowers) or at the base (in long styled ones) of the corolla tube, up to 3 mm long, oblong, dorsifixed, longitudinally dehiscent; stigma 2 lobed, about 2.5 mm long, lobes diverging, narrowly elliptic, style up to 8 mm long, ovary hemispheric, glabrescent, bilocular, ovules very numerous on axil. Fruit a small hemispheric berry, 2-chambered; seeds many, minute, angled. Flowenng and fruiting: June to July.

Specimen examined: Rangamati: Kaptai, Sitapahar Wildlife Sanctuary, 24.04.1997, Khan *et al*. K 9837 (DACB 28208).

Ecology: Grows mostly in shaded and moist areas.

Geographical distribution: India.

Occurrence Bangladesh: Kaptai of Rangamati district.

Note: The genus *Mycetia* Reinw. was previously known to represent in Bangladesh by a single species, *Mycetia longifolia* (Wall.) O. Kuntze which was initially named and reported by its basionym, *Rondeletia longiflora* Wall. by Wallich from Sylhet (Wall. Cat. 6280: type).

4. Oxyceros rugulosus (Thw.) Tirveng. in Nordic Jour. Bot. 3(4): 466 (1983). *Griffithia rugulosa* Thw., Enum. Pl. Zeyl. 159 (1859). *Randia rugulosa* (Thw.) Bedd., For. Man. Bot. 133 (1871); Hook.f., Fl. Brit. Ind. 3: 113 (1880); Trimen, Handb. Fl. Ceylon 2: 331 (1894). *Aidia rugulosa* (Thw.) Tirveng., Ceylon Jour. Biol. Sci. 14: 3 (1981). *Aidia rugulosa* (Thw.) Swamin. in Biol. Mem. 2 (1-2): 67 (1977). Bangla name: *Kutmal* **(Fig. 4)**

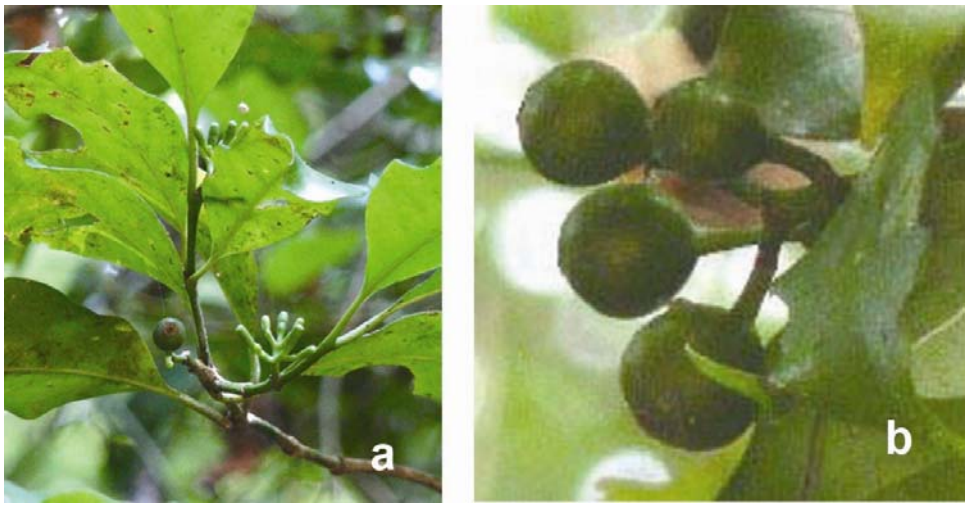

Fig. 4. *Oxyceros rugulosus* (Thw.) Tirveng. (a) habit and (b) fruits.

A large unarmed climber. Stipules triangular, up to 4 mm long. Leaves elliptic, lamina 6 - 12 × 3 - 5 cm, coriaceous above, glabrous beneath, apex acute, base cuneate, lateral nerves 5 - 7 pairs, petioles up to 1.5 cm. Inflorescence up to 6 cm long; calyx and hypanthium 5 mm, covered with adpressed brown hairs calyx campanulate, 2 mm, minutely denticulate; corolla tube 5 mm, lobes oblong, 8 mm, glabrous, reflexed; filaments short, 0.5 mm, anthers linear, 5 mm, reflexed; style 7 mm, stigma clavate, 4 mm. Fruits globose. Flowering and fruiting: February to December.

Specimens examined: Chittagong: Hazarikhil, 06.10.1997, Rahman and Sujit 1970 (HCU); Dhopachari Reserve forest, 25.07.1999, Rahman *et al.* 5173 (HCU). Cox's Bazar: Teknaf, 10.05.1984, Das and Alam 5191 (BFRIH); Ramu, Upper Rezu reserve forest, 08.10.1997, Uddin 2012 (HCU); Ukhia, Madhur Chara, 30.01.1999, Rahman and Sujit 4261b (HCU). Rangamati: Pablakhali, 02.04.1965, Das *s. n.* (BFRIH). Sylhet: Jafflong, 04.10. 1983, Huq *et al.* H 6361 (BFRIH, DACB).

Ecology: Evergreen forests.

Geographical distribution: Sri Lanka and India.

Occurrence in Bangladesh: In the forests of Chittagong, Cox's Bazar, Rangamati and Sylhet districts.

Note: The genus *Oxyceros* Lour. was previously known to represent in the flora of Bangladesh by only one species, *Oxyceros kunstleri* (King & Gamble) Tirveng.

5. Tarenna helferi (Kurz) N.P. Balakr. in Bull. Bot. Surv. India 22(1-4): 175 (1982). *Webera helferi* Hook.f., Fl. Brit. Ind. 3: 107 (1880). *Ixora helferi* Kurz in Jour. Asiat. Soc. 2: 316 (1872). Marma name**:** *Rachi pouchi.* (**Fig. 5)**

Fig. 5. *Tarenna helferi* (Hook.f.) Balakr. (a) habit, (b) habit sketch with flowers and (c) fruits.

A large shrub or small tree, up to 1.5 m tall; branches slender glabrous. Stipules triangular-lanceolate, ovate, acuminate, glabrous. Petioles up to 5 cm long. Leaves elliptic-lanceolate or oblanceolate, lamina 12 - 40 × 3 - 6 cm, apex caudate-acuminate, base salver-shaped, membranous, glabrous, blackish when dry, narrowed into the short petiole. Peduncles long slender, up to 15 cm long, glabrate or pubescent, cymes inclined or drooping; bracts linear-subulate, lower pair leafy. Flowers 5-merous, yellowish; calyx-teeth subulate, shorter than the tube; corolla puberulous, corolla-tube up to 3 cm long, lobes broadly oblong, throat glabrous, tube slender much longer than the short broad lobes; stigma shortly exerted, slender, fusiform, style fusiform, slender; ovule 1 in each locule. Fruits purplish black, globose, pulpy. Flowering and fruiting: April to November.

Specimens examined: Rangamati: Betbunia, Mahajan para, 20.11.1999, Yusuf and Wahab 1247 (CLH). Chittagong Hill Tracts, locality and date unknown, 1876, J.L. Lister (CAL 204853, 204855). Moulvi Bazar: Adampur, 17.08.1976, Khan *et al.* K 4360 (DACB 17090); Srimangal, Lawachara forest, 20.04.1979, Bazlur Rahman B 13 (DACB).

Ecology: Grows on plain land or hill slopes.

Geographical distribution: India and Myanmar.

Occurrence in Bangladesh: Adampur and Lawachara forests of Moulvi Bazar district and Betbunia of Rangamati district.

Note: The genus *Tarenna* Gaertn. was previously known to represent in the flora of Bangladesh by 4 species, and these are: *T. campaniflora* (Hook.f.) N.P. Balakr.,*T. disperma* (Hook.f.) Pitard, *T. odorata* (Roxb.) Rabin. and *T. scandens* Good.

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