

NOTES ON OCCURRENCE OF THE GENUS MYCETIA REINWARDT (RUBIACEAE) IN BANGLADESH

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Key words: Occurrence notes; *Mycetia*; Bangladesh.

Abstracts

This paper deals with four species of *Mycetia* Reinwardt under family Rubiaceae, which were not reported or wrongly reported from Bangladesh territory previously. They are: *Mycetia malayana* (G. Don) Craib, *Mycetia mukerjiana* Deb & Dutta, *Mycetia sinensis* (Hemsley) Craib and *Mycetia stipulata* (Hook. f.) O. Ktze. Updated nomenclature, important synonyms, description, ecology, geographical distribution and photographs are provided for each species.

Introduction

The genus *Mycetia* Reinwardt consists of about 45 species widely distributed in tropical and subtropical Asia (Chen *et al.*, 2011). Up to 2009, only one species of *Mycetia* Reinwardt namely *Mycetia longifolia* (Wall.) O. Kuntze under the family Rubiaceae was known to occur from Bangladesh territory (Rahman and Das, 2009). Later on, Das and Rahman (2010) reported another species of the genus (*i.e.* *Mycetia mukerjiana* Deb & Dutta) as a new record for Bangladesh from Sitapahar Wildlife Sanctuary under Rangamati district based on a herbarium specimens (DACB 28208) collected by Khan *et al.* and stored at Bangladesh National Herbarium. Very recently, the first author collected two unknown *Mycetia* Reinwardt species from Lawachara National Park and Madhabkundo Eco-park areas under Moulvibazar district. After a detailed taxonomic study, the species have been identified as *Mycetia sinensis* (Hemsley) Craib and *Mycetia mukerjiana* Deb & Dutta respectively. While matching with the herbarium specimen of *Mycetia mukerjiana* Deb & Dutta collected by the present authors with that of (DACB 28208) Das and Rahman, authors found no similarity. The first author also collected a number of specimens from different parts of the country and observed significant morphological variations among them. Thus leads them undertake a taxonomic revision of the genus *Mycetia* Reinwardt.

Materials and methods

The present revisionary work is based on the herbarium specimens stored at Bangladesh National Herbarium (DACB), herbarium at Royal Botanic Gardens Kew (K), the Centre National Herbarium, Howrah (CAL), herbarium at the Eastern Regional Centre, Shillong, India (ASSAM), and the fresh plant specimens collected by the first authors. Identification of the specimens was confirmed by matching with type specimens stored at above mentioned herbaria and type description of the species. Available literatures on *Mycetia* Reinwardt (*viz.* Springate, 1999; Chen *et al.*, 2011) were also consulted during the study.

Results and Discussion

The present study revealed that Das and Rahman (2010) wrongly identified and reported the herbarium specimen (*i.e.* DACB 28208) as *Mycetia mukerjiana* Deb & Dutta. After a detailed and critical study, the present authors identified that specimen as *Mycetia malayana* (G. Don) Craib.

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While observing the herbarium specimens of *Mycetia* Reinwardt collected from present Bangladesh territory and stored at the Royal Botanic Garden Kew (K), authors also found two herbarium specimens of *Mycetia stipulata* (Hook. f.) O. Ktze. subsp. *macrostachya* (Hook.f.) Deb. The present study identified a total of five species of *Mycetia* Reinwardt (*viz.* *Mycetia longifolia* (Wall.) O. Kuntze, *Mycetia malayana* (G. Don) Craib, *Mycetia mukerjiana* Deb & Dutta, *Mycetia sinensis* (Hemsley) Craib and *Mycetia stipulata* (Hook. f.) O. Kuntze) among the herbarium specimens collected from Bangladesh territory. Among them, three species (*viz.* *Mycetia malayana* (G. Don) Craib, *Mycetia sinensis* (Hemsley) Craib and *Mycetia stipulata* (Hook. f.) O. Kuntze) have not been previously reported from the territory of Bangladesh by any authors (*viz.* Kurz 1877; Hook. f., 1880; Prain, 1903; Heinig, 1925; Kanjilal *et al.*, 1939; Raizada, 1941; Sinclair, 1956; Ridsdale, 1998; Alam, 1988; Mia and Khan, 1995; Rahman, 1999; Das *et al.*, 2002, 2004; Rahman and Das 2009). Hence, these three species are being reported here as new records for Bangladesh and also introducing the correct descriptions and photographs of *Mycetia mukerjiana* Deb & Dutta. The detailed taxonomic description, illustration, ecology and geographical distribution of the species prepared from the examined specimens are provided below.

1. *Mycetia malayana* (G. Don) Craib, Bull. Misc. Inform. Kew 1914: 29. 1914. (Fig. 1)

Wendlandia malayana G. Don, Gen. Hist. 3: 519. 1834.

Adenosacme malayana Wall. ex G. Don, Gen. Hist. 3: 519. 1834.

Single-stemmed, often unbranched shrub or treelet, up to 1.0 (-1.5) m tall; young parts hairy, soon becoming glabrous; bark shiny white. Leaves usually crowded near top of stem, often (slightly) anisophyllous, membranous, elliptic-lanceolate, (12-) 15-30 × (2.5-) 4-12 cm, occasionally slightly asymmetrical, gradually narrowed to the base, apex acuminate, discolorous (pale green below), with soft white hairs below; 10-20 pairs of veins; petioles 2-4 cm long, slightly winged; stipules lanceolate, 4-5 mm long. Inflorescence terminal, panicle-like, many-flowered, to ca. 4 cm in diameter; bracts minute; pedicels slender, to 2-3 mm long. Flowers 5-merous. Calyx lobes triangular, ca. 1.5 mm long, margins beset with stalked colleters. Corolla yellow, tube somewhat urceolate, mostly short-hairy outside, at least in upper part, and pilose inside, 2-3 mm long; lobes triangular, 0.8-1.2 mm long. Stamens subsessile, anthers 0.8-1.0 mm long, inserted near base of tube (long-styled morph) or below throat (short-styled morph). Ovary 2-celled, glabrous; style plus stigma lobes 2.0-2.5 mm long (long-styled morph; style much shorter in short-styled morph). Fruit white, (depressed) globose, 5-7 mm in diam., crowned by the persistent, erect calyx lobes. Seeds numerous, very small, shiny black. Flowering and fruiting: throughout the year.

Ecology: In lowland evergreen rain forest, often in damp places; altitude 50-500 m.

Distribution: Thailand and Peninsular Malaysia.

Specimens examined: **Chittagong:** Lalutia, Dohazari, 10 vi 2001, S.N. Uddin N953 (DACB).

Moulvibazar: Madhabkundo Eco-park, Barolekha, 20 v 2014, S.N. Uddin N5262 (DACB); Lathitila Forest Beat, Juri, 22 ix 2014, S.N. Uddin N5651 (DACB). **Rangamati:** Sitapahar West, Kaptai, 24 iv 1997, Khan, Yusuf, Alam & Nasir K9837 (DACB); Sitapahar West, Kaptai, 6 ix 2000, Khan & Mia K10631 (DACB); Sitapahar, Kaptai, 17 vi 2001, S.N. Uddin N1060 (DACB); Jamaichari, Sitapahar, Kaptai, 22 ix 2002, S.N. Uddin N1426 (DACB); Sitarghat, Sitapahar, Kaptai, 31 v 2003, S.N. Uddin N1969 (DACB); Sitapahar, Kaptai, 18 xii 2004, S.N. Uddin N2604 (DACB); Pharu Reserve Forest, Bilaichari, 14 x 2008, S.N. Uddin *et al.* N2985 (DACB); 14 x 2008, Bushra *et al.* B-1676 (DACB); Fring Kheong Forest Beat, Karnaphuli Forest Range, Kaptai, 15 xii 2010, S.N. Uddin *et al.* N4411 (DACB).



Fig. 1. a. *Mycetia malayana* (G. Don) Craib; b. infructescence with young fruits; c. infructescence with ripe fruits.

2. *Mycetia mukerjiana* Deb & Dutta in Ind. For. 91(5): 272, t.1. 1965. (Fig. 2)

Shrubs or small tree, up to 2 m high; stem terete, glabrous, glossy with spongy bark and considerable pith, sometimes glandular pubescent in tender parts. Leaves opposite, anisophyllous, 10-25 × 3-9 cm, elliptic or lanceolate, membranous, glabrous, apex acuminate, base attenuated; lateral nerves 10-20 pair, alternate, subparallel, arching at the apex; petiole 2-3 cm long, stipules interpetiolar, oblong, obtuse, glabrous, 7-10 × 6-8 mm long. Inflorescence from stem base or leafless nodes, pedunculate, congested dichasial cyme or divaricate; peduncle up to 3 cm long, having 1-3 sterile unistyle involucre whorls of bracts connate at the base, branches usually short; bracts small, ovate, lanceolate, up to 6 mm long. Flowers 1.0-1.8 cm long, pedicellate, heterostylous; pedicels up to 4 mm long, stout. Calyx glabrescent or downy, part of the tube protruding above the ovary; lobes 5, persistent, chartaceous, 6-10 × 2.0-2.5 mm, lanceolate, acute to acuminate, sometimes dissimilar, distantly veined. Corolla salver form, yellow or whitish, valvate in bud, glabrescent or scarcely hispidulous at the back, villous within up to throat, tube 8-15 mm long; lobes thick, short, orbicular-ovate, acute. Stamens 5, in short styled flowers anthers situated at the throat or at the base in long styled ones of the corolla tube, about 2.5-3.0 mm long, oblong, dorsifixed, introrse, obtuse at the apex, 2 lobed, 4 loculed, longitudinally dehiscent; pollen grains finely reticulate, spheroidal in shape, dimorphic, filament villous, about 2 mm long, flattened in short styled flowers. Ovary 1.5-2.0 mm long, hemispheric, glabrescent or downy, 2 partite; ovules numerous, axile placentation, fleshy placentas; stigma bi-lobed, 2.0-2.5 mm long, lobes diverging, narrowly elliptic, with papillate receptive surface; style solitary, villous, longer ones about 8 mm long, shorter ones about 2.5 mm long. Fruit a small hemispheric berry, 2 celled.

Seeds minute, numerous, angled, smaller than 0.5 mm across. *Flowering and fruiting*: June-October.

Ecology: Grows on calcareous mud, in primary hill forests, along shady water courses; upto 100 m altitude

Distribution: India (Assam and Mizoram).



Fig. 2. a. Habit of *Mycetia mukerjiana* Deb & Dutta; b. infructescence; c. inflorescence

Specimens examined: Moulvibazar: Madhabkundo Eco-park, Barolekha, 21 v 2014, S.N. Uddin N5319 (DACB); Madhabkundo Eco-park, Barolekha, 21 ix 2014, S.N. Uddin N5529 (DACB).

3. *Mycetia sinensis* (Hemsley) Craib, Bull. Misc. Inform. Kew. 1914: 29. 1914. (Fig. 3)

Adenosacme longifolia (Wallich) J. D. Hooker var. *sinensis* Hemsley, J. Linn. Soc., Bot. 23: 379. 1888.

Mycetia oligodonta Merrill, Lingnan Sci. J. 11: 56. 1932.

Shrubs or subshrubs, 0.2-0.5 (-1) m tall; branches densely hirtellous or strigillose to glabrous. Leaves isophyllous or slightly anisophyllous; petiole 0.2-2.0 cm long, hirtellous or strigillose to glabrous; blade drying submembranous, usually pale, and slightly grayish green, oblong-lanceolate to elliptic-oblong, ovate, or elliptic, 8-20 × 3-5 cm, adaxially sparsely hispid to glabrous, abaxially glabrous or puberulent, hirtellous, or hispidulous at least on veins, base obtuse to cuneate then usually long decurrent, apex acute to acuminate; secondary veins 5-20 pairs; stipules usually persistent, elliptic-oblong, obovate, or suborbicular, markedly contracted to stipitate at base, 3-18 mm long, sometimes veined, hispidulous, hirtellous, or glabrous, obtuse or rounded. Inflorescences terminal, laxly cymose, many flowered, glabrous, deflexed to pendulous; peduncles 3.5-7.0 cm long; branched portion 2-7 × 2-16 cm; bracts elliptic, obovate, reniform, or stipuliform, sometimes fused in pairs, 1-3 mm long, marginally entire or with stipitate glands; pedicels 1.0-2.5 mm long. Flowers pedicellate. Calyx glabrous; hypanthium portion subglobose to obconic, 1-2 mm long; limb deeply lobed; lobes lanceolate, spatulate, or triangular, 1-2 mm long, entire or with 1-3 pairs of stipitate glands. Corolla white, tubular, outside glabrous; tube 5-7 mm long, inside apparently glabrous; lobes ovate, 1.5-2 mm long. Berries subglobose, 4.0-4.5 mm in diameter, glabrous. Flowering and fruiting: July-November.



Fig. 3. a. Flowering shoot of *Mycetia sinensis* (Hemsley) Craib; b. infructescence with ripe fruits.

Ecology: Streamsides or roadsides in dense forests; between 200-1000 m altitude.

Distribution: China.

Specimens examined: **Moulvibazar:** Lawachara National Park, Kamalganj, 12 v 2009, S.N. Uddin N3652 (DACB); Jenkinchara, Lawachara National Park, Kamalganj, 04 ii 2009, Bushra, Momtaz & Nasir, B1373 (DACB); Lawachara National Park, Kamalganj, 20 ix 2011, S.N. Uddin N4697 (DACB); Lawachara National Park, Kamalganj, 22 ix 2011, S.N. Uddin N4821 (DACB); Lawachara to Bhanugach, 16 viii 1976, Khan, Huq & Rahman K4334 (DACB); Lathitilla Forest Beat, Juri, 22 ix 2014, S.N. Uddin N5652(DACB).

4. *Mycetia stipulata* (Hook. f.) O. Kuntze subsp. *macrostachya* (Hook.f.) Deb, Bull. Bot. Surv. India 28: 129. 1988. (Fig. 4)

Adenosacme macrostachya Hook. f. Fl. Brit. Ind. 3: 96. 1880.

Mycetia macrostachya (Hook. f.) O. Kuntze, Rev. Gen. Pl. 1: 289. 1891.

Shrubs or undershrubs up to 3 m tall; stem striate, pubescent; bark often straw-yellow to nearly white, soft, often corky. Leaves simple, opposite, 13-24 × 6-12 cm, elliptic-lanceolate, acuminate, tapering at the base, glabrous, chartaceous, rarely coriaceous; petiole 2.0-7.5 cm long, glabrous; stipules 2.0-2.5 × 1.0-1.5 cm, interpetiolar, foliaceous, thinly pubescent. Inflorescence 5-20 cm long, terminal, corymbose cyme, pubescent; pedunculate, bracteate; bracts medium in size, glabrous; bracts in a whorl, sessile, 10-15 × 3-4 mm, ovate, acute sometimes. Flowers pedicellate,



Fig. 4. *Mycetia stipulata* (Hook. f.) O. Ktze. subsp. *macrostachya* (Hook.f.) Deb

bisexual, at least usually distylous. Calyx limb deeply 5 lobed; lobes 5.0-5.5 × 2.5-3.0 mm, frequently somewhat unequal, glabrous, oblong usually with sessile to stalked marginal glands. Corolla yellow, tubular; lobes 2.5-3.0 × 3.0 mm, shorter than the calyx cup, in bud valvate-induplicate, pubescent. Stamens 5, epipetalous, 1.5 mm long, inserted in throat or above middle of corolla tube in short-styled flowers, inserted near base of corolla tube in long-styled flowers; filament ca. 0.5 mm long, glabrous; anther 1 mm long, ovate, apiculate, dorsifixed. Ovary bilocular, 4-5 × 2.8-3.0 mm, ovules numerous in each cell on fleshy axile placentas; style 2-3 mm long, glabrous; stigma bifid, ca. 0.5 mm long, included in short-styled flowers or exerted in long-styled flowers, glabrous. Fruit white, baccate, leathery to fleshy, subglobose, with persistent calyx limb. Seeds numerous, small, angled, with testa somewhat granular. *Flowering and fruiting*: July-November.

Ecology: Stream sides or roadsides in dense forests; 200-500 m altitude.

Distribution: India (Sikkim, Arunachal) and Nepal.

Specimens examined: **East Bengal**, Collection date unknown, Griffith 2849 (K000031694 & K000031693).

Acknowledgement

The authors are grateful to the Ministry of Environment and Forests, Government of Bangladesh for the financial assistance to carry out the research and publish the bulletin. They are thankful 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.

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