



Research article

## Three new records of dicotyledonous plants from Bangladesh

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**Abstract:** Three dicotyledon plant species belong to three different families of angiosperm include *Symphorema involucratum* from Verbenaceae, *Miliusa balansae* from Annonaceae and *Spermacoce ocymoides* from Rubiaceae have been recorded for the first time from Bangladesh. They are collected from Chittagong and Chittagong hill tracts. Each species is presented with updated nomenclature, taxonomic description, ecology, geographical distribution, places of occurrence in Bangladesh and field photographs of these three new records are also provided.

**Keywords:** Bangladesh - Dicotyledon - Angiosperm - New records - Plants.

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### INTRODUCTION

Dicotyledons plants are the most successful and dominant plant group (Heywood 1993) having seeds with two cotyledons and an exogenous manner of growth (Cronquist 1981, Bewley & Black 1994). It is one of the classes of the great subdivision of flowering plants, the angiosperms (Wagner *et al.* 1999, McKenna *et al.* 2009). About 4,00,000 species of angiospermic plants have so far been recorded of which more than 2,50,000 are dicotyledons and the remaining are monocotyledons (Leitch & Leitch 2008). Bangladesh is endowed with about 5,000 species of flowering plants (Pasha & Uddin 2013, Rashid *et al.* 2014) of which more than two third are dicotyledonous (Khan 1972–1987). Dicot plants dominate the forests, village groves and woodlands of Bangladesh (Khan & Banu 1969, Khan & Afza 1968, Khan 1972–1987).

Here, in this paper, three dicot plant species from three different families includes Verbenaceae, Annonaceae and Rubiaceae are reported for the first time from Chittagong and Chittagong Hill Tracts for Bangladesh, placed in Indo-Burma biodiversity hotspot.

### MATERIALS AND METHODS

The plant specimens of three families include Verbenaceae, Annonaceae and Rubiaceae have been collected from different areas of Bangladesh, mainly the forest of Chittagong and Chittagong Hill Tracts (Fig. 1) through repeated field trips.

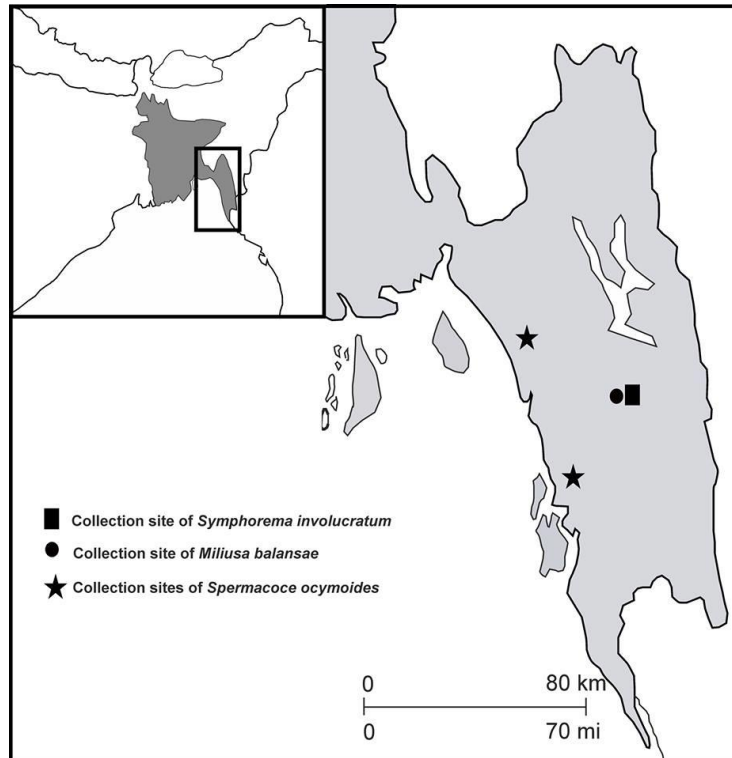
The collected specimens were preserved at Chittagong University Herbarium (CUH) and examined by using Microscope. Unnamed specimens were identified and described by consulting relevant floristic literature of Roxburgh (1805), Gamble (1921–1935), Matthew (1991), Nair *et al.* (1983), Henry *et al.* (1987, 1989), Pasha & Uddin (2013).

The photographs of fertile specimens in natural habitat were taken during field trips. A taxonomic enumeration with these three newly recorded from three families are prepared. In the enumeration, each species is cited with current nomenclature, taxonomic description, ecology, geographical distribution, occurrence in Bangladesh.

### RESULTS

#### Taxonomic enumeration

Family: Verbenaceae J. St.-Hil. 1805



**Figure 1.** Distribution of three species in Bangladesh.

Genus: *Symphorema* Roxburgh, 1805

*Symphorema involucratum* Roxburgh, 1805 (**Fig. 2A**)

A climbing shrub, with cylindrical branchlets which are hairy when young. Leaf blade is nearly elliptic to ovate, densely velvety on the underside, and somewhat smooth above. Leaf base is rounded to slightly heart-shaped, margin nearly entire to toothed. Flowers are borne in beautiful clusters carried on long, velvety stalks. The bracts just below the flowers are oblong, enlarged in fruit. Sepal cup is tube-like, velvety outside. Flowers are white, with 6-8 narrowly oblong petals. Fruit is nearly round.

*Flowering:* March–April.

*Ecology:* Forests or scrub in valleys.

*Geographical distribution:* India, Myanmar, Sri Lanka and Thailand.

*Occurrence in Bangladesh:* It was collected from Recha jhiri (22°10'56.4"N 92°11'18.0"E), Meghla, Sadar upazila, Bandarban district, Bangladesh.

Family: Annonaceae Juss., 1789

Genus: *Miliusa* Leschenault ex Alph. de Candolle, 1832

*Miliusa balansae* Finet & Gagnepain, 1906 (**Fig. 2B**)

A shrub about 2–5 m tall, branchlets slightly pubescent. Leaves petiolate, leaf blade elliptic, elliptic-oblong, or oblong, membranous, glabrous or sparsely puberulent on midvein and secondary veins but glabrescent, secondary veins 10–12 on each side of midvein, base cuneate to rounded and oblique, apex acuminate to shortly acuminate. Inflorescences axillary, flowers solitary. Pedicel filiform, pendulous, glabrous. Sepals ovate, slightly pubescent. Petals red; outer petals slightly longer than sepals; inner petals ovate, apex reflexed. Anthers ovoid to obovoid. Carpels oblong to lens-shaped, slightly pubescent; ovules 2 or 3 per carpel; stigmas terete, puberulent. Fruiting peduncle slender; monocarpis globose. Seeds 1–3 per monocarp.

*Flowering:* April–July; *fruiting:* July–December.

*Ecology:* Forests or scrub in valleys.

*Geographical distribution:* China and Vietnam.

*Occurrence in Bangladesh:* The plant species was collected from Dulu jhiri (22°11'01.7"N 92°11'24.0"E), Meghla, Sadar upazila, Bandarban district, Bangladesh

Family: Rubiaceae Juss., 1789

Genus: *Spermacoce* L., 1753

*Spermacoce ocymoides* Burm. f., 1768 (Fig. 2. C & D)

An annual herb, stem erect rarely prostrate, hairy. Leaves are oppositely arranged. It should be relatively easy to differentiate from other species with its broadly elliptic (sometimes lanceolate) leaves which have depressed venation, either hairless or with scattered hairs on veins below and margin. Flower clusters appear at the end of branches or in leaf axils. Sepals are narrowly triangular, length variable on individual flowers. Flowers are white, petals much longer than the tube. Stamens protrude out, but are much shorter than the petals. Style does not exceed the stamens.

*Flowering*: April–August.

*Ecology*: Plain land along roads, hill slopes and forest periphery.

*Geographical distribution*: Tropical Africa, Mauritius, India, Myanmar, Java, Peninsular Malaysia and Philippines.

*Occurrence in Bangladesh*: This species was collected from two regions; one is Chittagong University Kata Pahar road side (22°28'15.4"N 91°47'23.5"E), Hathazari, Chittagong, Bangladesh and another collection place is Toitong High School road side (21°53'00.2"N 91°58'22.5"E), Pekua, Cox's Bazar, Bangladesh.



Figure 2. A, *Symphorema involucratum*; B, *Miliusa balansae*; C & D, *Spermacoce ocymoides*.

## DISCUSSION AND CONCLUSION

We have reported three species from three highly diverged families comprising several numbers of species. The family Verbenaceae consists of about 100 genera and 2600 species mostly pantropical, a few are limited to temperate regions. In Bangladesh, this family is represented by 19 genera and 68 species (Ahmed *et al.* 2009).

Annonaceae family consists of about 130 genera and 2300 species are very largely confined to tropical regions, 15 genera and 42 species in Bangladesh (Ahmed *et al.* 2008). Rubiaceae includes about 450 genera and 6500 species occur in tropical and subtropical regions, in Bangladesh it has 56 genera and 170 species (Ahmed *et al.* 2009).

Herein we report three species which were available in other neighboring countries of Bangladesh. Our findings may increase the possibility of finding more species which were reported from neighboring countries.

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