

-Short communication

Rediscovery of *Geophila repens* (L.) I.M. Johnst. (Rubiaceae) in Bangladesh

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The genus *Geophila* D. Don of family Rubiaceae Juss. comprises 30 species widespread in tropical Africa and Madagascar. This genus is characterized by its herbaceous habit, opposite leaves, persistent stipules, bracteate cymose inflorescence, sub-sessile bisexual flowers, persistent calyx limbs, red drupaceous fruits and two pyrenes, each with one plano-convex hard seed.

After the original publication of *Geophila* by Don (1825), very limited studies have been done on this genus in Indian subcontinent (Panda *et al.*, 2008; Roy *et al.*, 2011). No species of this genus was known to be distributed in Bangladesh before Roxburgh (1832). Roxburgh (1832) reported *Psychotria herbacea* Jacq. from Sylhet which was considered by Hooker (1882) and Kanjilal *et al.* (1939) as a synonym of *Geophila reniformis* D. Don. Roy *et al.* (2011) reported it from Assam, India and included Bangladesh as one of the countries of its distribution based on Roxburgh (1832). Later on *G. reniformis* was found as a superfluous illegitimate name and *Carinta repens* (L.) Bremek. was considered as its accepted name by Bremekemp (1963) and *Geophila repens* (L.) I. M. Johnst. by Standley & Williams (1975), and Flora of China Editorial Committee (2011). But Steyermark (1972) established *C. repens* (L.) Bremek. as a synonym of *G. repens* (L.) I. M. Johnst. Thus *P. herbacea*, *C. repens* and *G. reniformis* have been established as the synonyms of *Geophila repens* (L.) I.M. Johnst. (Steyermark, 1972; Standley & Williams, 1975; Flora of China Editorial Committee, 2011).

This species has been included in Ahmed *et al.* (2009) but any information on its distribution in Bangladesh or citation of its any specimen has not been provided in addition to the recitation of Roxburgh (1832)'s record. Therefore, after Roxburgh (1832) nobody rediscovered this species from Bangladesh and no specimen of this species has been found to be deposited in any herbarium of this country. Recently, while working on the flora of Narsingdi district, the first author collected some specimens of *Geophila* (Fig. 1) from moist, shady and humus-rich habitats in the bamboo bushes of Belabo and Monohordi upazilas).

After a critical study, these specimens have been identified as *Geophila repens*. As this species has never been recorded from Bangladesh within the last 186 years since its first report by Roxburgh in 1832, therefore, this species has been reported here as a

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rediscovery for Bangladesh to confirm its present occurrence and distribution in this country.

The representative specimens of *G. repens* were collected using standard herbarium technique (Heyland, 1972). The characteristics of this specimen were examined in Plant Systematics and Biodiversity Laboratory of Jahangirnagar University. Taxonomic identification was confirmed based on its key characters described in the recent taxonomic literatures (e.g., Tao *et al.*, 2011) and the type images available in the web pages of international herbaria (e.g., Kew Herbarium Catalogue, Geneva Herbarium Catalogue). Nomenclatural information was collected from IPNI (2016), Rashid & Rahman (2016), The Plant List (2017) and TROPICOS (2017). The voucher specimens have been deposited in Bangladesh National Herbarium (DACB) and Jahangirnagar University Herbarium (JUH). A detailed taxonomic description for the species has been given below.

Geophila repens (L.) I. M. Johnst., *Sargentia* 8: 281-282 (1949). TYPE: Johnston. I. M. s.n. India (K!). D. Don., *Prodr. Fl. Nepal*, 136 (1825); Hooker, J. D., *Fl. of Brit. Ind.* 3: 177-178 (1882); Kanjilal *et al.*, *Fl. Assam*, 3: 532 (1939); Ahmed *et al.*, *Encycl. Fl. Fauna Bangladesh*, 10: 59 (2009).

Rondeletia repens L. *Syst. Nat.* (ed. 10) 2: 928 (1759); *Geocardia cordata* (Miq.) Standl., *Contr. U.S. Natl. Herb.* 17(5): 445 (1914); *G. repens* (L.) Baker f., *Bekn. Fl. Java*, 144 (1956); *Geophila gracilis* (Ruiz and Pav.) DC., *Prodr.*, 4: 537 (1830); *G. herbacea* (Jacq.) K. Schum., *Nat. Pflanzenfam.* 4(4): 119 (1891); *G. reniformis* D. Don, *Prodr. Fl. Nepal*, 136 (1825); *Psychotria gracilis* Ruiz and Pav., *Fl. Peruv.*, 2: 63, t. 211, f. C. (1799); *P. repens* (L.) L., *Amoen. Acad.*, 5: 377 (1759).



Fig. 1. *Geophila repens* in a natural habitat

Perennial, creeping, terrestrial herb (Fig. 2). Stems quadrate to terete, glabrous, with rooting at the nodes, 25-35 cm long, reproductive branches ascending, 10-15 cm tall.

Stipules interpetiolar, broadly ovate, 1.5 mm long, 2.0 mm wide, persistent. Leaves opposite; petioles 2.4-6.8 cm long, with lines of ciliate trichomes; lamina broadly ovate, 1.8-2.5 cm long, 2.5-3.8 cm wide, basally cordate, marginally entire, apically rounded, membranaceous when dry, glabrescent on both surfaces, secondary veins 3-4 pairs. Inflorescence 2-3 flowered cymes, puberulent to glabrescent; peduncles 2-3.4 cm long; bracts 2, lanceolate to narrowly triangular, 5-6 mm long. Flowers bisexual, actinomorphic; pedicels 1.5-2.0 mm long; calyx puberulent to glabrescent, sepals 5, 3-4 mm long, linear to narrowly lanceolate, ciliate; corolla white, finely puberulous to glabrescent outside, glabrous inside, corolla tube 9-10 mm long, lobes 5, 5-6 mm long, narrowly ovate to widely lanceolate, acute. Stamens 5, anthers dorsifixed, 2

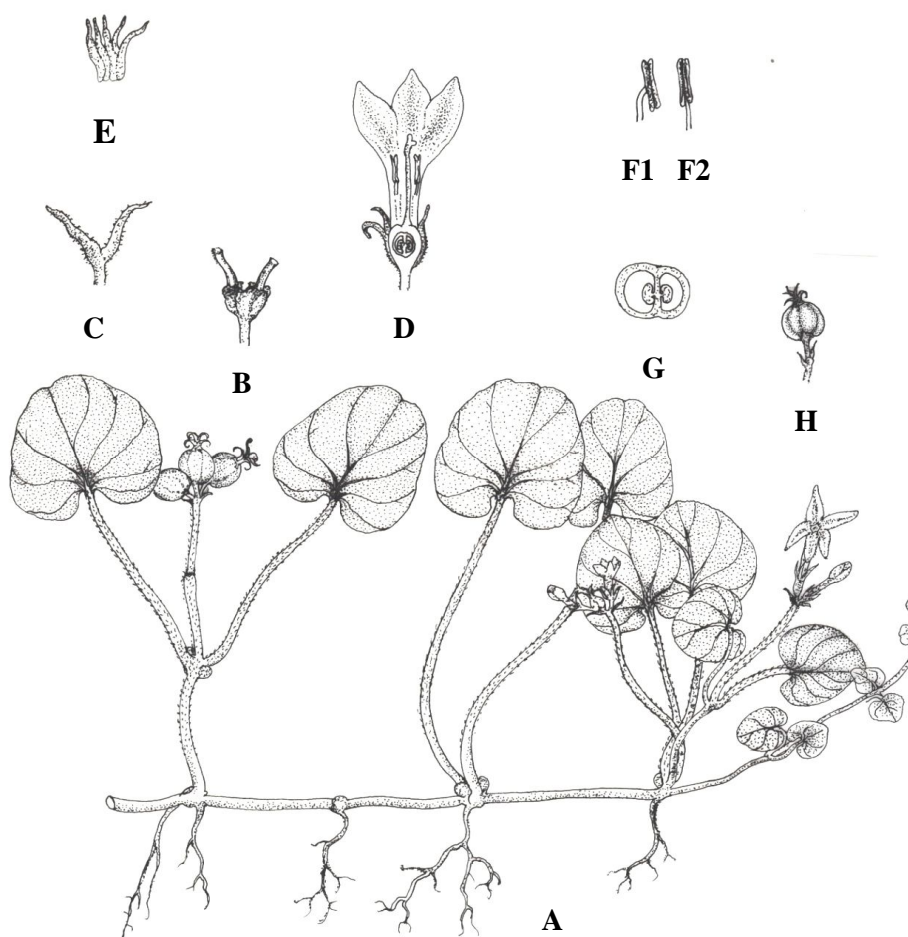


Fig. 2. *Geophila repens*. A = Habit ($\times 1$); B = Stipule ($\times 5$); C = Bract ($\times 4$); D = L.S. of flower ($\times 2.5$); E = Calyx ($\times 3.5$); F = Anther ($\times 5.5$, F1 = Lateral view and F2 = Front view); G = T.S. of ovary ($\times 8.5$); H = Fruit ($\times 2$)

mm long, inserted in corolla tube (Fig. 2). Ovary ellipsoid, 1.5-2.0 mm in diam., 2 celled, ovule 1 in each cell, style 5-6 mm long, stigma discoid. Fruits red drupes, globose, fleshy, with persistent calyx limbs, 5-7 mm in diam., pubescent to glabrescent; pyrenes hard, plano-convex, dorsally smooth to shallowly rugulose, ventrally with a medium ridge and 2 sub-marginal longitudinal grooves, seeds medium-sized, testa membranaceous, endosperm corneous.

Flowering and Fruiting: May-September.

Habitat: In moist shady floor, rich in humus under the deep bamboo bushes in low sunlight (Fig.1).

Distribution: Tropical Africa, South America, Central America, North America, Madagascar, Polynesia, India, Myanmar, Malay Archipelago, South China, Sri Lanka and Bangladesh.

The species *Geophila repens* seems to be confined to some localities of Belabo and Monohordi Upazila of Narsingdi district with poor natural regeneration. The current occurrence of this species in Sylhet region could not be confirmed. No specimen was found in the national and local herbaria of Bangladesh.

Representative specimens examined: NARSINGDI: Belabo, 8 July 2017, *Robayda* 2120 and 2121 (JUH); Monohordi, 15 August 2017, *Robayda* 2500 and 2501 (JUH).

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