

## NINETEEN NEW RECORDS OF URTICACEAE FROM BANGLADESH

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*Keywords:* Urticaceae; Nineteen new records; Bangladesh.

### Abstract

Nineteen species of Urticaceae belonging to seven genera are reported here as new records for Bangladesh viz. *Boehmeria aspera* Weddell; *B. clidemioides* Miquel; *B. hamiltoniana* Weddell; *B. manipurensis* Friis & Wilmot-Dear; *Elatostema dissectum* Weddell; *E. ellipticum* Weddell; *E. griffithii* Hook.f.; *E. obtusum* Weddell; *E. procridioides* Weddell; *E. subincisum* Weddell; *Laportea bulbifera* (Siebold & Zuccarini) Weddell; *Neodistemon indicum* (Weddell) Babu & Henry; *Pellionia heteroloba* Weddell; *P. heyneana* Weddell; *P. repens* (Loureiro) Merrill; *Pilea anisophylla* Weddell; *P. bracteosa* Weddell; *P. insolens* Weddell and *Phenax mexicanus* Weddell. Among these seven genera, *Neodistemon* Babu & Henry, *Pellionia* Gaudichaud-Beaupré and *Phenax* Weddell are also new generic records for the country. Updated nomenclature, important synonyms, description, phenology, ecology, distribution and specimen citation are provided for each species.

### Introduction

Bangladesh National Herbarium (BNH) has been involving in a number of botanical surveys throughout the country and publishing the series of 'Flora of Bangladesh' since its establishment. Thus resulting in the compilation of 72 angiosperm families of the country in 60 number of fascicles 'Flora of Bangladesh'. However, taxonomic accounts of 134 angiosperm families of the country still to be completed. The family Urticaceae is one of them and no attempt has been so far made to prepare an inventory on the family. The family Urticaceae consists of about 47 genera and 1300 species, most numerous in wet tropical regions, extending into temperate regions (Chen, 2003). Ullah *et al.* (2009) recorded 21 species under 10 genera of this family from Bangladesh based on available information. However, no comprehensive revisionary work on the family has been done in Bangladesh. Therefore, a program has been taken to collect specimens and to complete a revisionary work on the family Urticaceae of Bangladesh.

### Materials and Methods

The paper is based on the herbarium specimens collected from present Bangladesh territory and stored at Bangladesh National Herbarium (BNH), Central National Herbarium, Howrah, India (CAL), Eastern Regional Centre Herbarium at Shillong, India (ASSAM) and the Royal Botanic Gardens Kew (K). The first author has also made effort to collect fresh materials from different areas of Bangladesh during the period from 2000 to 2014 through repeated field trips under botanical survey work of BNH. During those field trips, photographs of some species have been taken and collected fertile specimens have been preserved at Bangladesh National Herbarium (DACB). All specimens were critically examined by using Stereo Microscope. Identifications were confirmed by consulting relevant floristic literatures of Hook. f. (1888), Prain (1903), Kanjilal *et al.* (1940), Bassett *et al.* (1974), Boufford (1997), and Chen *et al.* (2003) and were also matched with the type specimens stored at CAL and K.

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## Result and Discussion

In the last decade or so, extensive field trips throughout the country have been made by the first author to collect the specimens of the family Urticaceae from different parts of Bangladesh and identified them up to species level. The authors examined herbarium specimens of above mentioned herbaria to prepare a revision on the family. During the course of this revisionary work on the family Urticaceae of Bangladesh the authors came across nineteen species namely *Boehmeria aspera* Weddell; *Boehmeria clidemioides* Miquel; *Boehmeria hamiltoniana* Weddell; *Boehmeria manipurensis* Friis & Wilmot-Dear; *Elatostema dissectum* Weddell; *Elatostema ellipticum* Weddell; *Elatostema griffithii* Hook.f.; *Elatostema obtusidentatum* W.T. Wang; *Elatostema obtusum* Weddell; *Elatostema procridioides* Weddell; *Elatostema subincisum* Weddell; *Laportea bulbifera* (Siebold & Zuccarini) Weddell; *Neodistemon indicum* (Weddell) Babu & Henry; *Pellionia heteroloba* Weddell; *Pellionia heyneana* Weddell; *Pellionia repens* (Loureiro) Merrill; *Pilea anisophylla* Weddell; *Pilea bracteosa* Weddell; *Pilea insolens* Weddell and *Phenax mexicanus* Weddell, which have not been previously recorded from the area of Bangladesh. These species are being reported here for the first time as new records for Bangladesh, since there has been no record of occurrence of these species in any floristic works of Bangladesh *viz.* Hooker (1888), Prain (1903), Heinig (1925), Raizada (1941), Datta and Mitra (1953), Sinclair (1956), Khan and Afza (1968), Khan and Banu (1972), Khan and Hassan (1984), Khan *et al.* (1994), Mia and Khan (1995), Khan and Huq (2001), Rashid and Mia (2001), Rahman (2004a & 2004b) and Ullah *et al.* (2009). Moreover, the genera *Neodistemon* Babu & Henry, *Pellionia* Gaudichaud-Beaupré and *Phenax* Weddell are being reported here as new generic records for the country also.

A detailed description with updated nomenclature, important synonyms, ecology and geographical distribution for each species are given below.

**1. *Boehmeria aspera* Weddell, Arch. Mus. Hist. Nat. 8: 349. 1856. (Fig. 1)**

*Boehmeria diversifolia* Wedd., Ann. Sci. Nat. 4 (1): 202. 1854, not Miquel, 1851.

*Boehmeria pavonii* var. *diversifolia* Wedd. in DC. Prodr. 16, pt. 1: 199. 1869, in part.

*Pouzolzia aspera* (Wedd.) Wedd., Prodr. Syst. Nat. Reg. Veg. 16 (1): 233. 1869. *nom. ill.*

*Margarocarpus asper* Wedd., Ann. Sci. Nat. Bot., sér. 4, 1: 204. 1854.

Monoecious shrubs up to 5 m tall, leafy internodes 3-20 (40) mm long, 0.8-4 mm thick, densely sericeous with appressed ascending whitish hairs 0.2-0.7 mm long; stipules 4-10 mm long, 1-2 mm broad at the base, sparsely puberulent, often persisting at the base of the inflorescences. Leaves alternate and usually very different in size and shape at adjacent nodes; petioles 1-23 mm long, minutely hirsutulous; laminae usually of 2 different sizes at adjacent nodes, the smaller one ovate, 1-3 × 0.8-1.5 cm, acute, subsessile; the larger one lanceolate to very narrowly elliptic, 4-18 × 1-3.5 cm, tapering gradually to a long acuminate apex, obtuse to rounded at the slightly unequal base, margins coarsely dentate-serrate, lamina drying stiffly chartaceous, slightly scabrous and strongly rugose with the veins deeply impressed above, lower surface densely puberulent with stiff slender whitish hairs 0.2-0.8 mm long, venation palmate with 3 primary veins, midvein with many small secondaries or with 1 or 2 pairs of more prominent secondary veins in the distal half. Inflorescences usually unisexual, the flowers numerous and clustered in dense glomerules 4-10 mm in diameter in the axils of leaves or at leafless nodes. Staminate flowers more than 20 per glomerule, densely crowded, sessile or pedicellate; perianth 4-parted, stamens 4, anthers about 0.5 mm long. Pistillate flowers densely crowded, more than 20 per inflorescence, bracts not usually

visible between the flowers, pistil about 2 mm long, style often with a slender glabrous portion below the long puberulent stigmatic part. Fruit enclosed within the persisting perianth-tube, perianth-tube about 1 mm long with erect hairs distally. Flowering and fruiting: Throughout the year.



Fig. 1. *Boehmeria aspera* (Wedd.) Blume

*Ecology*: Tropical rain forests, along streams; 200-700 m altitude.

*Distribution*: Peru, Costa Rica, Colombia, Ecuador and Panama.

*Specimen examined*: **Rangamati**: Pharu reserve forest, Bilaichari, 15 x 2008, S.N. Uddin *et al.* N3069 (DACB).

**2. *Boehmeria clidemioides* Miquel, Pl. Jungh. 1: 34. 1851. (Fig. 2)**

*Boehmeria clidemioides* var. *diffusa* (Weddell) Handel-Mazzetti, Symb. Sin. 7: 152. 1929.

*Boehmeria diffusa* Weddell, Arch. Mus. Hist. Nat. 9: 356. 1856.

*Boehmeria sidaefolla* Weddell, Ann. Sc. Nat. Ser. 4 (1): 203. 1854.

Perennial, dioecious herbs or subshrubs, diffuse or erect, much branched, up to 1.5 m tall; branchlets strigose, without stinging hairs. Leaves alternate or sometimes opposite in lower part of stems, unequal in size; leaf blade variable in shape and size, ovate, narrowly ovate, or sublanceolate, 4-14 × 2-7 cm, base often broadly cuneate, apex acuminate or caudate, margins coarsely 7-13-dentate from basal one third, papery or herbaceous, 3-nerved, secondary nerves 2 or 3 pairs along midrib, lower surface spreading-pilose, appressed pubescent along midrib and lateral nerves, upper surface strigose, often rough, cystoliths punctiform; stipules deciduous, intrapetolar,



Fig. 2. *Boehmeria clidemioides* Miquel.

free, lanceolate, 6-8 mm long; petiole 2-9 cm long, pubescent. Inflorescence an axillary glomerules, unisexual, on specialized axillary branches, usually unbranched, rarely with a few lateral branches at their base, often with a tuft of 2-4 small foliage at the apex. Glomerules 2-4 mm in diameter. Male flowers 4-merous, sessile, perianth lobes ca. 1.5 mm long, valvate, connate at base, sparsely puberulent; stamens (3 or)4; filaments inflexed in bud; rudimentary ovule ellipsoid, ca. 0.5 mm. Female flowers: perianth tubular, usually compressed, apex 2-4-toothed, enlarged and dilated into 2 acute angles or wings in fruit; staminodes absent; ovary included; stigma filiform, on a style, pilose on one side, usually persistent for some time; ovule orthotropous. Achene enclosed by marcescent perianth, fruiting perianth base often obtuse, compressed, ca. 1.5 mm long, strigose on shoulder, apex 2-toothed. Seed with endosperm; cotyledons elliptic or ovate. Flowering and fruiting: June-September.

*Ecology:* Forest margins, roadsides, often somewhat dry places in disturbed areas; between 200-1000 m altitude.

*Distribution:* Bhutan, India, Laos, Myanmar, Nepal, Vietnam and China.

*Specimen examined:* East Bengal, Collection date unknown, Griffith 4562 (CAL433793).

3. ***Boehmeria hamiltoniana*** Weddell, Ann. Sci. Nat., Bot., sér. 4, 1: 199. 1854. (Fig. 3)

*Boehmeria platyphylla* D. Don var. *hamiltoniana* (Weddell) Weddell, Prodr. 16 (1): 213. 1869.

Shrubs up to 2 m tall; branches glabrous, without stinging hairs. Leaves opposite, unequal in size; leaf blade obliquely ovate, oblong, or rarely lanceolate, 8-21 × 3.5-8.0 cm, base broadly cuneate or obliquely subrounded, apex acuminate, margin inconspicuously crenulate, herbaceous, 3-nerved, secondary veins 2 pairs along midrib, lower surface pubescent along veins, upper

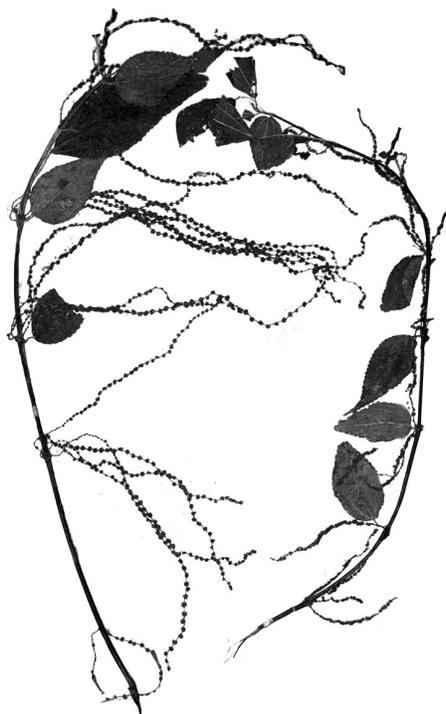


Fig. 3. *Boehmeria hamiltoniana* Weddell.

surface sparsely strigose, cystoliths punctiform; stipules intrapetiolar, subulate-lanceolate, ca. 7 mm, deciduous; petiole 1.2-7.0 cm long, strigose, glabrous. Glomerules unisexual, on long spike like inflorescences, usually with a few long basal branches, widely separated; male spikes up to ca. 18 cm long; bisexual or female spikes very slender, up to 20 cm long. Flowers unisexual; bracts and bracteoles small, scarios. Male flowers: 4-merous, sessile; perianth lobes elliptic, ca. 1.5 mm, sparsely puberulent, connate at base, valvate; stamens 4, filaments inflexed in bud; rudimentary ovary subglobose, rudimentary ovule ellipsoid, ca. 0.5 mm. Female flowers: perianth tubular, usually compressed, apex 2-toothed, in fruit sometimes enlarged and dilated into 2 acute angles, staminodes absent. Ovary included, stigma filiform, pilose on one side, ovule orthotropous. Fruiting perianth ellipsoid, compressed, ca. 1 mm long, strigose on shoulder, base sharply cuneate, stipitate, apex 2-toothed. Achene not lustrous, enclosed by marcescent perianth. Seed with endosperm, cotyledons elliptic. Flowering and fruiting: May-December.

*Ecology*: Margins of secondary forests, moist places along streams; up to 700 m altitudes.

*Distribution*: Bhutan, India, Nepal, Myanmar, Thailand, Indonesia and China.

*Specimen examined*: East Bengal, Collection date unknown, Griffith 4560 (CAL434112).

4. ***Boehmeria manipurensis*** Friis & Wilmot-Dear, *Edinb. J. Bot.* 67 (3): 438-440, f.3. 2010.

(Fig. 4)

Undershrub or shrub, up to 3 m tall; branchlets and petioles pubescent or strigose; bark brownish-grey, rough, thin. Leaves alternate, ovate or oblong-lanceolate, or lanceolate, 2-12 × 1.2-5.0 cm, base obtuse or rounded, apex acuminate, margins dentate or serrate, cystoliths punctiform, membranous, dark-green, smooth or scaberulous and somewhat rough above, beneath strigose or pubescent with a grey or white tomentum, strigose on the nerve, 3-nerved; petiole 1.2-5.0 cm long.

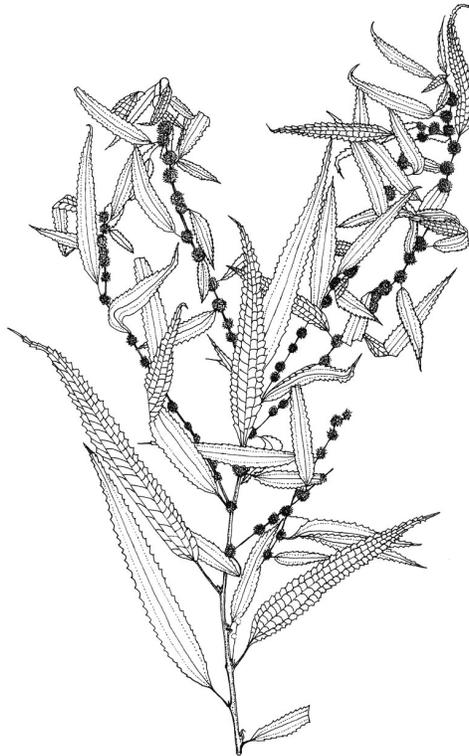


Fig. 4. *Boehmeria manipurensis* Friis & Wilmot-Dear.

Flowers in axillary clusters, pubescent or hoary, unisexual; bracts and bracteoles small, scarious. Male flowers: perianth 4 lobed or parted, segments valvate; stamens 4, filaments inflexed in bud; rudimentary ovary clavate or subglobose. Female flowers: perianth tubular, usually compressed, apex 4-toothed, in fruit sometimes enlarged and dilated into 2 acute angles or wings; staminodes absent; ovary included, stigma filiform, style pilose on one side, usually persistent for some time; ovule orthotropous. Achene ovoid, enclosed by marcescent perianth, angled, sparsely hispid towards the apex. Seed with endosperm; cotyledons elliptic or ovate. Flowering and fruiting: November-March. The leaves are eaten as vegetable and the bark yields a fibre for making coarse ropes.

*Ecology:* Hill forests on steep slopes, up to 1200 m altitude.

*Distribution:* India, Myanmar, Malaysia.

*Specimens examined:* **Rangamati:** Sapchari, 21 xi 1980, MS Khan *et al.* K6124 (DACB); Ghagra, 15 x 1978, MS Khan and Huq K5214 (DACB). **Khagrachari:** Gomoti, Panchari, 23 iv 2011, S.N. Uddin N4578 (DACB).

5. ***Elatostema dissectum*** Weddell, Arch. Mus. Hist. Nat. 9: 314. 1856. (Fig. 5)

*Elatostema paragunshanense* W.T. Wang, Acta Bot. Yunnan. Suppl. 5: 4. 1992.

Perennial, monoecious or dioecious herbs, 20-50 cm tall, glabrous. Stems from a shortly creeping base, stout and subsucculent or slender, ascending or erect, simple or rarely branched, lower stems brown furfuraceous. Leaves alternate, sessile or petioled; nanophylls absent; leaf blade obliquely or falcately oblanceolate or broadly oblong-ovate, 7-12 × 2.5-5.0 cm, obliquely cuneate or acute to the entire base, apex acuminate or cuspidate, coarsely crenate or serrate from the middle of the lower margin, upwards subentire, herbaceous, thick, green when dry, major basal



Fig. 5. *Elatostema dissectum* Weddell.

lateral veins asymmetric, 1 basal, the other arising above base, cystoliths numerous, minute, slender; stipules lateral, narrowly subulate or lanceolate, 3-5 × 0.1-0.3 mm, with cystoliths; petiole 0-1 mm long. Male receptacles solitary, simple, elliptic or nearly oblong, 1.0-2.4 × 0.8-1.0 cm, lobed or lacerate often to the base exposing the flowers; lobes fleshy, fringed with small ovate acute glabrous bracts; flowers large, 4-merous, pedicelled, 1-2 sepals spurred; peduncle 1.5-8.0 cm long; bracts connate, 2.0-2.5 mm long; bracteoles linear. Female receptacles much smaller, depressed, 5-9 mm diameter; sessile or peduncle 0-1 mm long; bracts lanceolate; bracteoles nearly linear, ciliate. Achenes ellipsoid, subcompressed, rather fleshy, not ribbed or striate. Flowering and fruiting: January-June.

*Ecology*: Hilly evergreen forests, riverine forests, or valley forests; up to 500 m.

*Distribution*: Bhutan, India, Laos, Thailand and China.

*Specimen examined*: Chittagong Hill Tracts, Mynimukh, 25 xii 1956, M.S. Khan K215 (CAL).

**6. *Elatostema ellipticum* Weddell, Prodr. 16 (2): 186. 1868.**

**(Fig. 6)**

Annual or perennial, dioecious herbs, up to 60 cm long, without stinging hairs. Stem slender, creeping, rooting at branches, quite glabrous. Leaves alternate, simple; nanophylls absent; leaf blade fleshy, elliptic-ovate or ovate, 1.2-4.0 × 1.2-2.5 cm, base nearly equilateral, rounded or subcordate, tri-nerved, apex acute or obtuse, margins quite entire, rigid when dry; cystoliths minute on the upper surface only; stipules 2, small, ovate-lanceolate; petiole 2-5 mm long. Inflorescences usually pedunculate, mostly many-flowered discoid capitula, capitula usually 2-valved, each valve with several glomerules of several flowers and subtended by a few bracteoles;



Fig. 6. *Elatostema ellipticum* Weddell

unisexual. Male receptacles solitary, ovoid, 8 mm diameter, shortly peduncled; female ones with discoid receptacle and bracteoles along margin. Male flowers: perianth lobes 4, elliptic, connate at base, usually corniculate or short horned below apex; stamens as many as and opposite to perianth lobes; filaments of stamens inflexed in bud; rudimentary pistil small. Female flowers: perianth lobes 4, free or connate at base, not corniculate at apex; staminodes 4, linear. Ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achenes ellipsoid, slightly flattened, mostly longitudinally ribbed. Flowering and fruiting: throughout the year.

*Ecology*: Shady and wet rocks, in primary evergreen forests; up to 500 m altitude.

*Distribution*: India.

*Specimen examined*: East Bengal, Collection date unknown, Griffith 4583 (Holotype K000741065).

7. ***Elatostema griffithii*** Hook.f., Fl. Brit. India 5: 569. 1888.

(Fig. 6)

Perennial, dioecious herb, up to 20-30 cm tall, without stinging hairs. Stem glabrous, stout, erect from a densely matted fibrous root, probably fleshy. Leaves subsessile, alternate, distichous; nanophylls absent; leaf blade obliquely oblanceolate, 12-15 cm long, base narrowly acute, asymmetric, 3-veined, apex acuminate, margins obtusely serrate from near the base penninerved, coriaceous, green when dry, basal nerves reaching about half-way; cystoliths minute, abundant above and on the nerves beneath; stipules 2, linear, 1.0-1.5 mm long, acute, hyaline. Inflorescences usually pedunculate, mostly many-flowered discoid capitula, capitula usually 2-valved, each valve with several glomerules of several flowers and subtended by a few bracteoles.



Fig. 7. *Elatostema griffithii* Hook.f.

Male receptacles 2.5-4.0 cm diameter; bracts confluent in a fleshy disk, with crenulate margins, branching nerves; peduncles 2.5-6.5 cm long; bracteoles ciliate, membranous, outer broadly oblong, inner narrower or subspathulate, those towards the disk deformed very short; female receptacles long-peduncled, large fleshy, irregularly lobed with crenulate ciliate margins. Male flowers: perianth lobes 4, elliptic, connate at base; stamens 4, opposite to perianth lobes; filaments of stamens inflexed in bud; rudimentary pistil small. Female flowers: female flowers very shortly pedicelled, perianth lobes 4, free or connate at base; staminodes 4, linear. Ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achene ellipsoid, acute at both ends, mostly longitudinally 6-8-ribbed. Flowering and fruiting: July-November.

*Ecology*: Hilly evergreen forests, along streams; up to 600 m altitude.

*Distribution*: India.

*Specimen examined*: East Bengal, Collection date unknown, Griffith 4537 (K000741067).

**8. *Elatostema obtusum* Weddell, Ann. Sci. Nat., Bot., sér. 4, 1: 190. 1854. (Fig. 8)**

Perennial, dioecious herbs, 10-50 cm tall, without stinging hairs. Stems ascending or creeping, branched or simple, nearly glabrous, very sparsely retrorse-hirtellous, or crispately strigose. Leaves alternate; nanophylls absent; stipules 2, lanceolate-linear,  $2-3 \times 0.1-0.2$  mm, glabrous, without cystoliths; petiole 0-1.5 mm; leaf blade obliquely obovate, obliquely obovate-elliptic, or oblong-obovate,  $0.5-1.5$  (-3)  $\times$   $0.5-1.2$  (-1.6) cm, herbaceous, 3-veined, major basal lateral veins both arising at base of leaf blade, both surfaces glabrous or adaxial surface sparsely strigillose;



Fig. 8. *Elatostema obtusum* Weddell

cystoliths conspicuous or obscure, dense; base asymmetric, with broader half cordate, margin dentate, apex obtuse or rounded. Inflorescences usually pedunculate, mostly many-flowered or rarely 1-3-flowered discoid capitula, capitula usually 2-valved, each valve with several glomerules of several flowers and subtended by a few bracteoles. Male inflorescences solitary, simple, 4-7 mm in diameter; peduncle 0.2-2(-6.5) cm; receptacle very small; bracts connate, ca. 2.5 mm; bracteoles absent. Female inflorescences solitary, 1(or 2)-flowered, 2-3 mm in diam., sessile; receptacle absent; bracts lanceolate; bracteoles absent. Male flowers: perianth lobes 4 or 5, elliptic, connate at base, usually corniculate or short horned below apex; stamens as many as and opposite to perianth lobes; filaments of stamens inflexed in bud; rudimentary pistil small or absent. Female flowers: perianth lobes 4 or 5, or reduced, less than half length of ovary, free or connate at base, not corniculate at apex; staminodes 3-5, linear. Ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achenes narrowly ovoid, slightly flattened, smooth. Flowering and fruiting: June-September.

*Ecology*: Hilly forests, rocky place along the stream; up to 700 m altitude.

*Distribution:* Bhutan, India, Nepal, Philippines, Thailand and China.

*Specimen examined:* East Bengal, Collection date unknown, Griffith 4534 (CAL433418).

9. ***Elatostema procridioides*** Weddell in Candolle, Prodr. 16 (1): 180. 1869. (Fig. 9)

*Elatostema beshengii* W. T. Wang, Acta Phytotax. Sin. 28: 319. 1990.

*Elatostema treutleri* J. D. Hooker, Fl. Brit. India 5: 571. 1888.

Perennial, dioecious herbs, 30-80 cm tall, glabrous, without stinging hairs. Stems ascending or erect, simple. Leaves alternate, nanophylls absent; leaf blade obliquely oblong or obliquely obovate-oblong, 8-19 × 3-7 cm, base asymmetric, obliquely cuneate, margin denticulate, apex acuminate, papery, 3-veined, two lateral veins sometimes inserted above the base, cystoliths



Fig. 9. *Elatostema procridioides* Weddell

conspicuous, dense; stipules 2, lanceolate-linear, 14-22 × 2-3.5 mm, with cystoliths; petiole 2-6 mm long. Inflorescences usually pedunculate, mostly many-flowered or rarely 1-3-flowered discoid capitula, capitula usually 2-valved, each valve with several glomerules of several flowers and subtended by a few bracteoles, unisexual. Male inflorescences solitary, simple, 14-17 × 10-12 mm; peduncle 13-25 mm long; receptacle oblong or broadly elliptic, 13-15 × 5-8 mm; bracts connate, 6-10 mm; bracteoles linear. Female inflorescences solitary, 7-13 × 4-7 mm; peduncle ca. 4 mm long; receptacle elliptic, 7-12 × 4-6 mm; bracts ovate or triangular; bracteoles oblanceolate-linear. Male flowers: perianth lobes 4, elliptic, connate at base, usually corniculate or short horned below apex; stamens as many as and opposite to perianth lobes; filaments of stamens inflexed in bud; rudimentary pistil small or absent. Female flowers: perianth lobes 4 or reduced, less than half length of ovary, free or connate at base, not corniculate at apex; staminodes 4, linear. Ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achenes ellipsoid, slightly flattened, 6-ribbed. Flowering and fruiting: January-April.

*Ecology:* Evergreen broad-leaved forests, along stream sides; up to 600 m altitude.

*Distribution:* India and China.

*Specimen examined:* East Bengal, Collection date unknown, Griffith 4543 (CAL0000014615).

**10. *Elatostema subincisum* Weddell, Arch. Mus. Hist. Nat. 9: 314. 1856. (Fig. 10)**

Perennial, dioecious, erect herbs, up to 30 cm tall, without stinging hairs. Stem usually slender, simple or branched, glabrous. Leaves alternate, sessile, simple; leaf blade obliquely oblong-lanceolate, 2.5-6.5 × 1.5-2.5 cm, base sub-auricled on the lower margin, apex acuminate or cuspidate, margins deeply sub-pinnatifidly crenate or serrate, hispid, membranous, nerves 3-4 pairs above the basal, cystoliths very minute, brown when dry; stipules 2, linear-lanceolate, 5-6 mm long, persistent. Inflorescences usually pedunculate, mostly many-flowered, discoid capitula,



Fig. 10. *Elatostema subincisum* Weddell..

capitula usually 2-valved, each valve with several glomerules of several flowers and subtended by a few bracteoles. Male receptacle sessile or sub-sessile, 3-7 mm in diameter, many flowered; involucre bracts oblong-ovate, hardly exceeding the flowers, outer ones stoutly mucronate, inner keeled; female ones with discoid receptacle and bracteoles along margin, bracts membranous, bracteoles ciliate. Male flowers: perianth lobes 4, elliptic, connate at base, usually corniculate or short horned below apex; stamens as many as and opposite to perianth lobes; filaments of stamens inflexed in bud; rudimentary pistil small. Female flowers: perianth lobes 4, less than half length of ovary, free or connate at base, not corniculate at apex; staminodes 3-5, linear. Ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achenes ellipsoid, ribbed. Flowering and fruiting: September-November.

*Ecology:* Hilly evergreen forests, along the streams; up to 1000 m altitude.

*Distribution:* India (Sikkim).

*Specimen examined:* Chittagong, 5 x 1870, C.B. Clarke 12686 (CAL).

**11. *Laportea bulbifera*** (Siebold & Zuccarini) Weddell, Monogr. Urtic. 139. 1856. **(Fig. 11)**

*Urtica bulbifera* Siebold & Zuccarini, Abh. Bayer. Akad. Wiss., Math.-Naturwiss. Abt. 4 (3): 214. 1846.

*Boehmeria bodinieri* H. Léveillé in Fedde, Repert. 11: 550. 1913.

*Laportea bulbifera* subsp. *latiuscula* C. J. Chen, Acta Bot. Yunnanica, 4 (4): 329. 1982.

*Laportea bulbifera* subsp. *rugosa* C. J. Chen, Acta Bot. Yunnanica, 4 (4): 330. 1982.

*Laportea dielsii* Pampanini, Nuov. Giarn. Bot. Ital. 17: 255. 1910.

*Laportea elevata* C. J. Chen, Acta Bot. Yunnanica, 4 (4): 330. 1982.

*Laportea oleracea* Weddell, Arch. Mus. Hist. Nat. 141 141 1856.

*Laportea sinensis* C. H. Wright, J. Linn. Soc., Bot. 26 (178): 474-475. 1899.

*Laportea terminalis* Wight, Icon. Pl. Ind. Orient. 6: 9, pl. 1972 9 1853.

*Laportea evitata* Wedd., Prodr. [A. P. de Candolle] 16 (1): 79. 1869.

*Urticastrum evitatum* (Wedd.) Kuntze, Revis. Gen. Pl. 2: 635. 1891.

Monoecious herbs, rarely dioecious. Stems often caespitose, slightly woody at base, 50-150 cm tall, upper stems often zigzag, 5-angled, rarely branched, 1-3 woody bulbils in axils, 3-6 mm in diameter; upper stems and petioles pubescent, armed with stinging hairs, particularly at nodes, glabrescent. Leaves crowded at stem apex or not; stipules caducous, oblong-lanceolate, 5-10 mm, apex 2-cleft up to half of length; petiole 1.5-10 cm long; leaf blade lanceolate to ovate or cordate, sometimes orbicular, 6-16 × 3-8 cm, base broadly cuneate, rounded, rarely shallowly cordate, margin crenate, dentate or serrate, apex acuminate, light green abaxially, papery, 3-nerved, lateral nerves 4-6 pairs, lower surface pubescent, veins sparsely armed with stinging hairs, particularly at base, upper surface appressed hirsute with stinging hairs, cystoliths minutely punctiform, adaxially conspicuous. Male inflorescences paniculate in proximal axils, 3-10 cm long; female inflorescences terminal or subterminal axils, 10-25 cm long, peduncle 3-10 cm long, often with flowers along one side. Male flowers: pedicellate or subsessile, bud ca. 1 mm; perianth lobes 5, oblong-ovate, puberulent; stamens 5; rudimentary ovary obpyramidal, 0.5 mm long. Female flowers: pedicel 2-4 mm long, strongly laterally winged; perianth lobes 4, almost free, strongly unequal, dorsal lobe concave, ca. 0.5 mm long, 2 lateral larger, enclosing the ovary, oblong-ovate, shorter or equal to achene, abaxially setulose with stinging hairs, ventral lobe smallest, triangular-ovate, ca. 0.3 mm long. Ovary stipitate, asymmetrically ovoid; stigma reflexed, filiform, 2-4 mm long. Achene minutely purplish spotted, broadly obovoid or semiorbicular, strongly compressed, 1.5-3.0 mm in diameter, smooth, rarely rugose-striate; fruiting pedicel winged, spatulate to obovate, stipe ca. 0.5 mm long, strongly reflexed; persistent lateral perianth lobes slightly enlarged, ca. 1.5 mm long. Flowering and fruiting: June-December.



Fig. 11. *Laportea bulbifera* (Siebold & Zuccarini) Weddell.

*Ecology*: Forest margins, thickets, roadsides, often partly shady, moist places.

*Distribution*: Bhutan, India, Indonesia, Japan, Korea, Myanmar, Russia, Sikkim, Sri Lanka, Thailand, Vietnam.

*Specimen examined*: East Bengal, Collection date unknown, Griffith 4571 (CAL432031).

**12. *Neodistemon indicum*** (Wedd.) Babu & Henry, *Taxon* 19: 651. 1970.

**(Fig. 12)**

*Distemon indicum* Wedd., *Monogr. Fam. Urtic.* 551. 1856.

*Urtica grossa* Wall., *Numer. List [Wallich]* n. 4615. 1831.

*Australina diandra* Wedd., *Monogr. Urtic.* (*Arch. Mus. Hist. Nat. Paris*, ix.) 103, 551 (1856).

Perennial, slender herbs, erect, 30-60 cm tall, scarcely branched, puberulous or sparsely hairy. Leaves alternate, unlobbed, leaf blade ovate, 5-8 × 4-5 cm, margins coarsely dentate, base shortly cuneate, apex acute to acuminate, 3 nerved at base, beneath hairy on nerves, thinly cobwebby

between, uppersurface hairy; petiole slender, 2.5-5 cm long; stipules lateral, free, lanceolate with a long setaceous apex, ca.1 cm long. Inflorescence terminal or axillary, slender leafless unbranched spike-like axes, erect, 3-12 cm long; bracts sub-amplexicaul, ovate, cordate with cuspidate tip.



Fig. 12. *Neodistemon indicum* (Wedd.) Babu & Henry.

Small monoecious flowers, yellowish, clusters of 3 flowers, arranged along same axils, ca. 1 mm long. Staminate flowers 2-merous; calyx sub-infundibuliform, bipartite; segments equal entire shortly acuminate; stamens 2-3, exserted; rudimentary ovary linear lanate. Female often 2-nately concrete; calyx tubular-ventricose, limb very small, ovoid, denticulate, 2-toothed, closely investing the compressed oblong-lanceolate ovary; ovules suberect, funicle very short, style linear, articulate at base, soon deciduous, sometimes stigmatose-papillose from base to apex. Achene 2.5

mm long, broadly ovoid, beaked, included in thickened perianth, pericarp fragile. Seed erect, cotyledons of albuminous embryo quadrate-rotundate, longer than conical radicle. Flowering and fruiting: August-September.

*Ecology*: Grows in rocky places under shade; up to 1000 m altitude.

*Distribution*: India, Myanmar and Indonesia.

*Specimens examined*: **East Bengal**: Locality & collection date unknown, Griffith 4581 (CAL434894). **Moulvibazar**: Madhabkundo Eco-park, 21 ix 2014, S.N. Uddin N5558(DACB). **Rangamati**: Rampahar, Kaptai, 30 ix 2002, S.N. Uddin N1646 (DACB).

**13. *Pellionia heteroloba* Weddell, Arch. Mus. Hist. Nat. 9: 283. 1856. (Fig. 13)**

*Elatostema griffithianum* (Weddell) H. Hallier, Ann. Jard. Bot. Buitenzorg 13: 316. 1896.

*Elatostema henryanum* Handel-Mazzetti, Symb. Sin. 7: 144. 1929.

*Pellionia griffithiana* Weddell, Prodr. 16 (1): 165. 1869.

*Pellionia heteroloba* var. *minor* W.T. Wang, Bull. Bot. Lab. Forest. Inst., Harbin 6: 60.1980.

*Pellionia keitaoensis* Yamamoto, Icon. Pl. Formosan., Suppl. 1: 15-17, pl. 1, 1925.

*Pellionia menglianensis* Y.Y. Qian, Acta Phytotax. Sin. 37 (5): 523-525, pl. 1, 1999.



Fig. 13. *Pellionia heteroloba* Weddell.

Perennial, dioecious herbs, without stinging hairs. Stems erect or ascending, usually simple, glabrous or pubescent. Leaves alternate, distichous; stipules 2, subulate,  $2-8 \times 0.1-0.3$  mm; petiole 3-8 mm; leaf blade herbaceous or papery, obliquely oblong, obliquely lanceolate, or oblanceolate,

(4-) 8-15 × (1.5-) 2.5-5.7 cm, 3-veined, major lateral veins asymmetric to almost absent, base asymmetric, broader outer half auriculate, margin crenate or serrate, apex cuspidate, acuminate; cystoliths obscure or conspicuous; nanophyll absent. Inflorescences axillary, cymes of unisexual flowers; male inflorescences 1.0-4.5 cm in diameter, peduncle 1-9 cm long; female inflorescences 5-9 mm in diameter, peduncle 1-15 mm long; bracteose, rarely with discoid receptacle and involucre. Male flowers: tepals 5, elliptic, connate half of length, slightly valvate, apex usually corniculate; stamens 5, opposite to perianth lobes, filaments inflexed in bud; rudimentary pistil obscure. Pistillate flowers: perianth lobes 4-5, distinct, longer than or same as ovary, usually unequal, apex usually corniculate; staminodes 4-5, opposite to perianth, scale-like; ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achenes narrowly ellipsoidal, slightly flattened, tuberculate. Flowering and fruiting: October-February.

*Ecology*: Hilly forests, shady and wet rocks, along streams; between 600-1000 m altitude.

*Distribution*: Bhutan, India, Myanmar, Laos, Vietnam and China.

*Specimen examined*: **East Bengal**: Locality & collection date unknown, Griffith 4544 (CAL0000014571 & K000741062).

**14. *Pellionia heyneana*** Weddell, Arch. Mus. Hist. Nat. 9: 287. 1855.

(Fig. 14)

*Elatostema heyneanum* (Weddell) A. Haller., Ann. Jard. Bot. Buitenzorg 13: 316 1896.

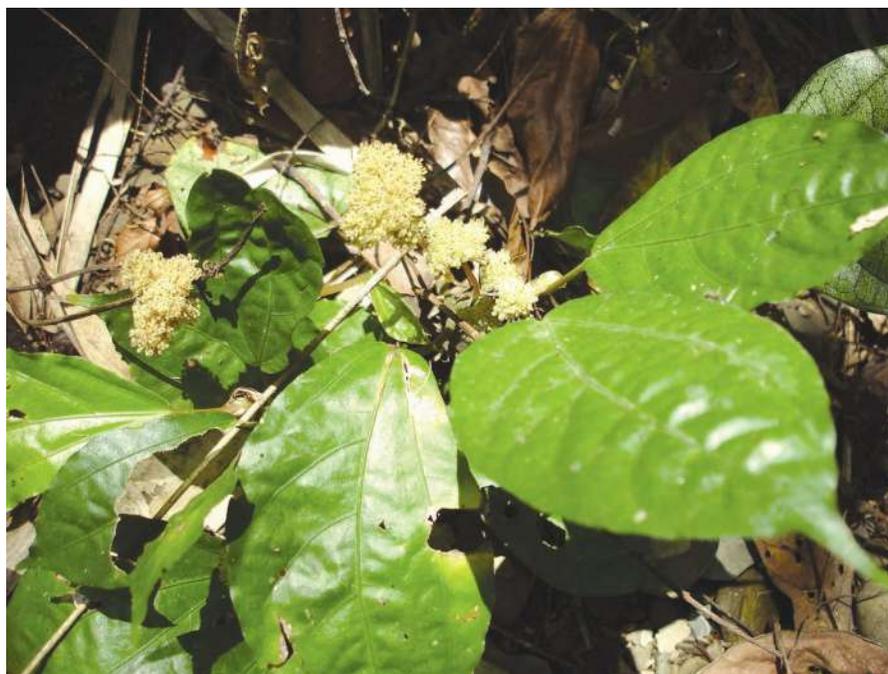


Fig. 14. *Pellionia heyneana* Weddell.

Perennial herbs or undershrubs, monoecious or dioecious. Stems woody, ascending or erect, branched or simple, strigose. Leaves alternate or subopposite, with one of the pair smaller, falcate; blades obliquely elliptic, elliptic-ovate, or obovate, 5-15 × 2-7 cm, papery, glabrous or nerve

beneath pilose, base 3-nerved, major lateral veins symmetric, narrowed and unequally cordate, margins entire, apex acuminate or caudate; cystoliths slightly conspicuous, dense; nanophylls opposite to normal leaves, narrowly ovate, 3-4 mm long; stipules 2, narrow ensiform, aristate, ca. 1.2 cm long; petiole 0.5-2.0 cm. Inflorescences axillary cymes of unisexual flowers; male inflorescences usually pedunculate, 1.5-3.5 cm in diameter, female ones pedunculate or sessile, 6-8 mm in diameter. Male flowers: tepals 5, elliptic, connate 1/2 of length, slightly valvate, apex usually corniculate; stamens 5, opposite to perianth lobes, filaments inflexed in bud; rudimentary pistil subulate. Female flowers: tepals 5, as long as ovary, usually unequal, apex usually corniculate; staminodes as many as and opposite to perianth, scale-like; ovary straight, ellipsoid, style absent, stigma penicillate, ovule orthotropous. Achenes ovoid or narrowly ovoid, slightly flattened, tuberculate. Flowering and fruiting: May-August.

*Ecology*: Evergreen hilly forests, along streams and other damp places; between 400-600 m altitude.

*Distribution*: India, Sri Lanka, Thailand, Cambodia, Indonesia and China.

*Specimens examined*: **Rangamati**: Pharuachara chara, Pharu Reserve Forest, Bilaichari, 19 iv 2009, S.N. Uddin N3536 (DACB); 19 iv 2009, B. Khan B1488 (DACB).

**15. *Pellionia repens*** (Loureiro) Merrill, Lingnan Sci. J. 6 (4): 326. 1928. **(Fig. 15)**

*Polychroa repens* Loureiro, Fl. Cochinch. 2: 559. 1790.

*Elatostema gibbosum* Kurz, Jour. As. Soc. Beng. 42 (2): 104. 1873.

*Elatostema pulchrum* A. Hallier f., Ann. Jard. Buitens. 13: 316. 1896.

*Elatostema repens* (Loureiro) A. Hallier, Fedde, Repert. Beih. 83 (2): 25. 1936.

*Pellionia annamica* Gagnepain, Bull. Soc. Bot. France, 1928, 75: 918. 1929.

*Pellionia daveauana* N. E. Brown, Gard. Chron. 2: 262. 1880.

*Pellionia pulchra* N. E. Brown, Gard. Chron. 2: 712. 1882.

*Procris gibbosa* Wallich, Cat. n. 7273. 1832.

*English name*: Weavy Watermelon Begonia

Perennial herbs, monoecious or dioecious, attains up to 10 cm tall but spreads to 60 cm long. Stems prostrate, branch terete, pubescent or glabrescent, fleshy, greenish-pink. Leaves alternate; leaf blade obliquely elliptic or obovate, 2-8 × 1-3 cm, papery, variable gray-green, with dark green along the edges and variably sized light green to silver patches in the middle, major lateral veins asymmetric, one basal, the other arising above base, broader outer half auriculate, margins undulate, undulate-crenate or nearly entire, apex obtuse, rounded; cystoliths conspicuous, dense; nanophylls ovate or nearly linear, ca. 1 mm long; stipules triangular, 4-10 × 2-5 mm long; petiole 1.5-5.0 mm long. Inflorescences axillary, cymes of unisexual flowers, male inflorescences 0.6-3.0 cm in diameter, peduncle 2-12 cm long, female inflorescences ca. 3 mm in diameter, sessile. Flowers small, greenish, inconspicuous. Male flowers: tepals 5, broadly elliptic or elliptic, slightly valvate, connate in lower half, apex usually corniculate; stamens 5, opposite to perianth lobes, filaments inflexed in bud; rudimentary pistil subulate. Female flowers: tepals 5, usually unequal, apex usually corniculate; staminodes as many as and opposite to perianth, scale-like, ovary straight, ellipsoid; style absent; stigma penicillate; ovule orthotropous. Achenes ovoid or ellipsoid, slightly flattened, tuberculate. Flowering and fruiting: May-October.



Fig. 15. *Pellionia repens* (Loureiro) Merrill.

*Ecology:* Valley forests, shady and damp places on rocks; between 800-1000 m altitude.

*Distribution:* India, Bhutan, Myanmar, Thailand, Vietnam, Cambodia, Laos, Indonesia, Malaysia, Philippines and China.

*Specimens examined:* **Dhaka:** Baldha Garden, 15 i 1975, M.K. Alam and Nasrin 213 (DACB).

**16. *Phenax mexicanus* Weddell, Ann. Sci. Nat. Bot. ser. 4, Pt. 1 : 193. 1854. (Fig. 16)**

Monoecious shrubs or small trees, 2-6 (10) m tall, leafy internodes 3-25 mm long, sparsely to densely puberulent with slender hairs 0.1-0.5 mm long, drying reddish-brown and longitudinally ridged. Leaves quite variable in size, blades narrowly elliptic to lanceolate, broadest at or below the middle, 1.5-15 × 2-5 cm, long-acuminate, obtuse or rounded at subequal base, margin crenate to serrate with 3 to 6 teeth per cm, stiff-chartaceous, above glabrous or minute scattered hairs, very rarely rugose in age, sparsely puberulent on the veins beneath, venation palmate with 3 primary veins, midvein usually with 2 pairs of secondary veins in the distal half. Stipules 4-7 × 1 mm, lanceolate, deciduous or persistent. Petioles 3-18 (50) mm long, minutely appressed puberulent. Inflorescence small, 4-10 mm diameter, globose axillary clusters or glomerules often persisting at leafless nodes, brown. Male flowers 2 mm broad before anthesis, perianth parts acute or obtuse at the apex, anther about 1 mm long. Female flowers enclosed in perianth-like bracts 2 mm long, ovary about 0.5 mm long, style 3-4 mm long, minutely puberulent. Fruit about 0.7 × 0.6 mm, slightly, flattened, ovoid, smooth. Flowering and fruiting: throughout the year.

*Ecology:* Wet thickets, evergreen-rain forests, often on rocky stream banks; between 300-800 m altitude.

*Distribution:* The species ranges from southern Mexico to western Panama.



Fig. 16. *Phenax mexicanus* Weddell.

*Specimens examined: Rangamati:* Fring Kheong beat, Karnaphuli Forest Range, Kaptai, 15 xii 2010, S.N. Uddin N4429 (DACB); Karnaphuli Sadar Beat, Kaptai, 12 v 2010, S.N. Uddin N4271 (DACB); Monlovi chara, Pharu Reserve Forest, Bilaichari, 14 x 2008, S.N. Uddin N2960 (DACB); 21 vii 2009, S.N. Uddin N3752 (DACB).

**17. *Pilea anisophylla*** Weddell, Monogr. Urtic. 193. 1856.

(Fig. 17)

*Pilea anisophylla* var. *robusta* J. D. Hooker, Fl. Brit. India 5(15): 552. 1888.

*Pilea secunda* S.S. Chien, Bull. Chin, Bot. Soc. 1(1): 4. 1935.

Perennial, dioecious or monoecious, stoloniferous herbs, 20-150 cm tall. Stems ascending, simple or branched, succulent, glabrous or sparsely multicellular pubescent adaxially. stipules triangular-ovate, 1.5-2.0 mm long, herbaceous, persistent; petiole unequal in length, 0-2.5 cm long;

Leaves opposite, anisomorphic; leaf blade strongly unequal in shape and size; ovate or oblong-lanceolate,  $5-15 \times 1.5-5.0$  cm, base deeply or shallowly cordate, rarely rounded, margin entire or shallowly 1-3-serrate distally, apex caudate-acuminate; the larger blade falcate-lanceolate, pale green beneath, green above, asymmetric, membranous, 3-veined, lateral veins many, regularly transverse, reticulate, cystoliths minute, shortly fusiform, conspicuous on both surfaces, the smaller blade sessile, triangular-ovate, oblong, rarely falcate-lanceolate,  $1.5-6.0 \times 0.5-3.0$  cm, base deeply cordate, almost around stem, rarely subrounded, margin entire or 1- or 2-serrulate near



Fig. 17. *Pilea anisophylla* Weddell

apex, apex acute or acuminate. Male inflorescences spike like, somewhat coiled distally, few branched, flowers loosely arranged along one side of axis, 3-12 cm long; female inflorescences paniculate cymes, branched, 2-6 cm long, glabrous. Male flowers: ca. 1.2 mm diameter, perianth lobes 4, ovate, connate half of length, subapically corniculate, stamens 4, rudimentary ovary

minute, conic, pedicel 0-1 mm long. Female flower: perianth lobes unequal, abaxial lobe hooded, half as long as achene, lateral 2 lobes triangular-ovate, half as long as abaxial lobe, membranous. Achene brownish, ovoid, slightly oblique, ca. 1 mm long, slightly compressed, smooth, enclosed by persistent perianth. Flowering and fruiting: June-December.

*Ecology*: Hilly evergreen forests, along streams; up to 1000 m altitude.

*Distribution*: Bhutan, Nepal, India, Myanmar and China.

*Specimen examined*: **East Bengal**: Locality & collection date unknown, Griffith 4515 (K000708665-6).

**18. *Pilea bracteosa*** Weddell, Monogr. Urtic. 245. 1856.

(**Fig. 18**)

*Pilea bracteosa* var. *striolata* Handel-Mazzetti, Symb. Sin. 7(1): 137. 1929.

*Pilea obliqua* J.D. Hooker, Fl. Brit. India 5(15): 558. 1888.

Perennial, dioecious, stoloniferous herbs, up to 40 cm tall. Stems succulent on upper part, with galls on mid portion of internodes, subglabrous, bluish when dry. Leaves opposite, simple, anisomorphic; leaf blade broadly ovate or oblong, sometimes oblique, unequal in size, 3-9 × 2-4 cm, base rounded or subcordate, sometimes auriculate at base, apex acuminate or caudate-acuminate, margin crenate-serrate, paler green beneath, membranous, 3-veined, lateral veins many,



Fig.18. *Pilea bracteosa* Weddell

subtransverse, cystoliths prominent adaxially; stipules oblong, 5-8 mm long, membranous, veinless, persistent, light green; petioles unequal in length, 1-7 cm long, sparsely puberulent. Inflorescences solitary, in upper stems, a paniculate cyme, 4-15 cm long; bracts triangular, over 2 mm long. Male flowers pedicellate or sessile, rhombic-ovoid in bud, ca. 1 mm long; perianth lobes 4, connate half of length, 2 lobes subapically corniculate; stamens 4; rudimentary ovary small. Female flowers subsessile, ca. 0.5 mm in bud; perianth lobes connate at base, unequal, lower one cymbiform, longer, subapically corniculate; staminodes 3, small, scale-like, oblong. Achene broadly ovoid, ca. 0.8 mm diameter, compressed, oblique, with a raised brownish ring. Flowering and fruiting: July-October.

*Ecology*: Moist places in broad-leaved forests; up to 1000 m altitude.

*Distribution*: Bhutan, India, Nepal and China.

*Specimen examined*: East Bengal, 26 viii 1885, C.B. Clarke (K 000708633).

**19. *Pilea insolens* Weddell in Candolle, Prodr. 16(1): 118. 1869.**

**(Fig. 19)**

*Pilea anisophylla* Weddell var.  *khasiana* J. D. Hooker, Fl. Brit. India 5(15): 552. 1888.

*Pilea khasiana* (J. D. Hooker) C.J. Chen, Bull. Bot. Res., Harbin 2(3): 111. 1982.

Perennial, dioecious or monoecious, stoloniferous herbs, 20-50 cm tall. Stems simple, soft, succulent, internodes long. Leaves opposite, simple, very anisomorphic; leaf blade pale green beneath, green above, the larger blade oblong-ovate, 5-13 × 3-6 cm, asymmetric, strongly unequal in shape and size, sometimes reduced into alternate leaves, base distinctly peltate or deeply cordate in basifixed leaves, margin entire or with a few small teeth near apex, apex caudate-acuminate,



Fig. 19. *Pilea insolens* Weddell.

membranous, 3-veined, basal lateral veins U-shaped near origin, lateral veins many, regularly transverse, reticulate, cystoliths minute, shortly fusiform, conspicuous on both surfaces; the minor blade ovate, 1.5-4.0 × 0.8-2.0 cm, base deeply cordate, almost around stem, or subtruncate, apex acute, margin entire but with a few small teeth near apex; stipules triangular-ovate, 1.5-2.0 mm long, membranous, persistent; petiole strongly unequal in length, up to 5 cm long. Male inflorescence spike like, somewhat coiled distally, few branched, 5-14 cm long, flowers loosely arranged along one side of axis; female inflorescence a paniculate cyme, much branched, up to 5 cm long; bracts triangular-ovate, ca. 3 mm long. Male flowers ca. 2.5 mm diameter; pedicel thin, ca. 2 mm long; perianth lobes 4, ovate, connate for ca. half length, apex caudate; stamens 4; rudimentary ovary minute, conic. Female perianth lobes unequal, lower lobe hooded, ca. half as long as achene, lateral 2 lobes triangular-ovate, ca. half as long as lower lobe, membranous. Achene brownish, ovoid, ca. 1.2 mm diameter, slightly compressed, slightly oblique, verrucose, enclosed by persistent perianth. Flowering and fruiting: June-October.

*Ecology:* Shaded moist places in evergreen and broad-leaved mixed forests, near streams; 1600-2700 m.

*Distribution:* Bhutan, India, Nepal and China.

*Specimen examined:* **East Bengal:** Locality & collection date unknown, Griffith 4525 (Iso Type K000708663-4 & CAL0000014550).

### 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. We would like to thank the authorities of the Royal Botanic Gardens, Kew (K), Central National Herbarium, Howrah (CAL), India and Eastern Regional Centre Herbarium at Shillong, India (Assam) for using their herbarium facilities.

### References

- Bassett, I.J., Crompton, C.W. and Woodland, D.W. 1974. The family Urticaceae in Canada. *Canad. J. Bot.*
- Boufford, D. E. 1997. *Urticaceae*. In: Flora of North America Editorial Committee, eds. 1993+. *Flora of North America North of Mexico*, 18+ Vols. New York and Oxford. Vol. 3, pp. 400-413.
- Chen, J., Lin, Q., Friis, I., Wilmot-Dear, C.M. and Monro, A.K. 2003. Urticaceae. In: Wu, Z. Y., P. H. Raven & D. Y. Hong (eds.). *Flora of China*, Vol. 5 (Ulmaceae through Basellaceae). Science Press, Beijing, and Missouri Botanical Garden Press, St. Louis. pp. 76-189.
- Datta, R.B. and Mitra, J.N. 1953. Common plants in and around Dacca city. *Bull. Bot. Soc. Beng.* 7(1&2): 1-110.
- Heinig, R.L. 1925. List of the plants of the Chittagong Collectorate and Hill Tracts. Darjeeling.
- Hooker, J.D. 1888 (Repr. 1954). Urticaceae. In: Hooker, J.D., *The Flora of British India*, Vol. 5. L. Reeve & Co. Ltd., The Oast House, Booke, Ashford, Kent, England. pp. 477-594.
- Kanjilal, U.N., Kanjilal, P.C., De, R.N. and Das, A. 1940 (Repr. 1982). *Flora of Assam*, Vol. 4. A Von Book Company, Ajmeri Gate, Delhi, India. pp. 279-296.
- Khan, M.S. and Afza, S.K. 1968. A taxonomic report on the angiospermic flora of Teknaf and St. Martin's Island. *Dhaka Univ. Studies, Part B.* **16**: 35-37.
- Khan, M.S. and Banu, F. 1972. A taxonomic report on angiospermic flora of Chittagong Hill Tracts 2. *J. Asiat. Soc. Bangladesh* **17**(2): 63-68.

- Khan, M.S. and Hassan, M.A. 1984. A taxonomic report on the angiospermic flora of St. Martin's Island. *Dhaka Univ. Studies*, Part B, **32** (1): 76-78.
- Khan, M.S. and Huq, A.M. 2001. The vascular flora of Chunut Wildlife Sanctuary in south Chittagong, Bangladesh. *Bangladesh J. Plant Taxon.* **8** (1): 47-64.
- Khan, M.S., Rahman, M.M., Huq, A.M., Mia, M.M.K. and Hassan, M.A. 1994. Assessment of biodiversity of Teknaf Game Reserve in Bangladesh focusing on economically and ecologically important plant species. *Bangladesh J. Plant Taxon.* **1**(1): 21-33.
- Mia, M.K. and Khan, B. 1995. First list of angiospermic taxa of Bangladesh not included in Hooker's Flora of British India and Prain's Bengal Plants. *Bangladesh J. Plant Taxon.* **2** (1&2): 25-45.
- Prain, D. 1903 (Indian Repr. 1981). *Bengal Plants*, Vol. 2. Bishen Singh Mahendra Pal Singh, Dehra Dun, India. pp. 955-971.
- Rahman, M.O. 2004a. Second list of Angiospermic taxa of Bangladesh not included in Hooker's "Flora of British India" and Prain's "Bengal Plants" : Series I. *Bangladesh J. Plant Taxon.* **11**(1): 77-82.
- Rahman, M.O. 2004b. Second list of Angiospermic taxa of Bangladesh not included in Hooker's "Flora of British India" and Prain's "Bengal Plants" : Series II. *Bangladesh J. Plant Taxon.* **11**(2): 49-56.
- Raizada, M.B. 1941. On the Flora of Chittagong. *Indian Forester* **67**(5): 245-254.
- Rashid, S.H. and Mia, M.M.K. 2001. Angiosperm flora of Madhupur National Park, Tangail, Bangladesh. *Bangladesh J. Plant Taxon.* **8** (2): 63-82.
- Sinclair, J. 1956. The Flora of Cox's Bazar, East Pakistan. *Bull. Bot. Soc. Beng.* **9** (2): 92-94.
- Ullah, M.A., Afroz, S., Tutul, E., Liza, S.A. and Huq, A.M. 2009. *Urticaceae*. In: Ahmed, Z.U., Hassan, M.A., Begum, Z.N.T., Khondker, M., Kabir, S.M.H., Ahmad, M. and Ahmed, A.T.A. (eds.). *Encyclopedia of Flora and Fauna of Bangladesh*, Vol. 10. Angiosperm: Dicotyledons (Ranunculaceae-Zygophyllaceae). Asiatic Society of Bangladesh, Dhaka. pp. 411-428.