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RESEARCH ARTICLE

Taxonomic Studies of the Family Commelinaceae at Rajshahi, Bangladesh

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Abstract

Taxonomic studies of the family Commelinaceae growing throughout the Rajshahi, Bangladesh was carried out during September 2012 to August 2013. A total of 7 species under 4 genera belonging to the family Commelinaceae were collected and identified. For each species botanical name, local name, English name, habit, habitat, taxonomic description, flowering season, flower colour, specimen examined and medicinal uses have been mentioned.

INTRODUCTION

The family Commelinaceae consists of about 50 genera and 700 species, widespread in tropical and subtropical regions. In Bangladesh, it is represented by 10 genera and 27 species. Tender shoots and leaves are used as a green vegetable. eg. *Commelina benghalensis*. *Amischophacelus axillaris* is used to make suppositories that induce abortion. *Floscopa scandens* is used in Malaysia in the treatment of fractured bones. The juice of stem of *Floscopa scandens* is reported to be useful in sore eyes. *Commelina benghalensis* is bitter and beneficial in Leprosy. *Zebrina pendula* is a common ornamental flilage plant in garden. *Tradescantia pallidea* and *Rhoeo discolor* grown as an ornamental plant (Ahmed *et al.*, 2009).

The importance of studying local floristic diversity and medicinal uses has been realized and carried out in Bangladesh by Anisuzzaman *et al* (2007a, 2007b), Ara *et al* (2011, 2013), Rahman *et al* (2006), Rahman *et al* (2007a, 2007b, 2007c) Rahman *et al* (2008a, 2008b, 2008c, 2008d), Rahman *et al* (2011, 2012, 2013a, 2013b, 2013c, 2013d, 2013e, 2013f), Rahman and Akter (2013), Rahman and Khanom (2013), Rahman (2013a, 2013b, 2013c, 2013d, 2013e, 2013f, 2013g, 2013h, 2013i, 2013j, 2013k, 2013l, 2013m, 2013n, 2013o), Rahman (2014a, 2014b, 2014c, 2014d), Rahman and Debnath (2014a, 2014b), Rahman and Keya (2014a, 2014b), Rahman and Gulshana (2014), Rahman and Rahman (2014), Rahman and Rogonigondha (2014), Rahman *et al* (2014a, 2014b, 2014c), Uddin and Rahman (1999) and Uddin *et al* (2014). The main objectives of this work were detailed study on the taxonomic and medicinal aspects of the family Commelinaceae occurring Rajshahi, Bangladesh.

Materials and Methods

Taxonomic investigation of the family Commelinaceae growing throughout the Rajshahi was carried out. A total of 7 species under 4 genera of the family Commelinaceae were collected and identified. The collected specimens were identified studying related taxonomic books and book least from the library of Rajshahi University. The major collection materials were identified and described up to species with the help of Hooker (1877), Pain (1903) and Kirtikar and Basu (1987), Ahmed *et al* (2009) and Uddin and Rahman (1999) were consulted. For the current name and up to date nomenclature Huq (1986), Pasha and Uddin (2013) were consulted.

Results and Discussion

Taxonomy, updated nomenclature and occurrence of the species belonging to the family Commelinaceae at Rajshahi have been presented. A total of 7 species under 4 genera belonging to the family Commelinaceae were collected and identified. A complete taxonomic account of each species have been given along with their botanical name, local name, English name, habit, habitat, taxonomic description, flowering season, flower colour, specimen examined and medicinal uses.

Based on this study, a preliminary list of the family Commelinaceae at Rajshahi, Bangladesh conducted during September 2012 to August 2013. The collected information is comparable with the result of other studies in Bangladesh. A total of 3 species belonging to 2 genera were recorded in Runtia Sal Forest (Tutul et al., 2009). A total of 3 species belonging to 2 genera were recorded in Munshiganj district (Rahman et al., 2013). A total of 4 species belonging to 2 genera were recorded in Tekhnaf Wildlife Sanctuary (Uddin et al., 2013). No published information recorded on the family Commelinaceae at Rajshahi, Bangladesh.

By examining the plant materials collected from the study area using the identification methods and medicinal information was accumulated and described below.

1. *Commelina diffusa* Burm.f.

Taxonomic description: An annual herb, diffusely branched, stem creeping or sub – scan dent, up to 40 cm long or more, rooting at the nodes. Leaves 2.5–6.0×1.0-2.5cm, ablong-lanceolate, acuminate, sheaths prominent, surrounding the stem, glabrous, ciliate on the free margins. Flowers in leaf–opposed 2 fid cymes emerging from a spathaceous bract, spathes 2-3 cm long, margin sometimes connate at the base, peduncle 1.0-1.5 cm long. sepals 3-4 mm long, obovate-lanceolate, ple blue. Petals unequal, the larger ones 5-6 mm long, blue clawed. Fertile stamens 3, 2 mm long, anthers versatile, staminodes 3, 2 mm long, filaments all naked. Ovary 3-celled and 3-ovuled. Fruit a capsule, 5-6 mm long, 3 celled, two anterior loculcidal, the posterior keeled. Seeds 2-3mm long, cylindrical, black, more or less rounded at both ends.

English name: Climbing Dayflower.

Local name: Not Known.

Habit: Herb

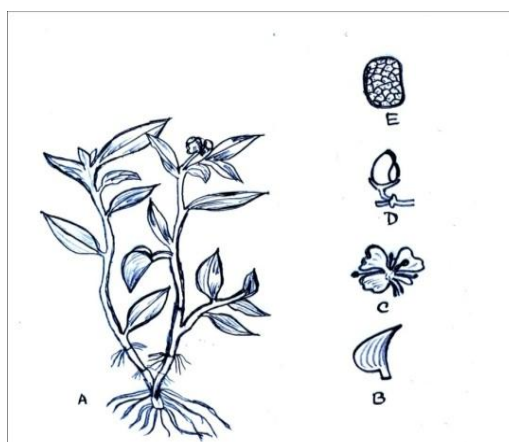
Habitat: Moist clayey to sandy soil along the water’s edge, sandy alluvial riverbanks, swamps and grass lands.

Flower color: Blue.

Flowering season: December to January.

Medicinal uses: The plant is used on the Gold coast to cure a disease called “Okwaha”- a swelling in the groin-producing very itchy spots and sore and swelling. The santals use young leaves as a vegetable.

Specimen examined: MZS 10, Rajshahi University Campus, 17.09.2013



Commelina diffusa Burm.f

Figure: A-E Diagram sketches showing morphological characters of *Commelina diffusa* Burm.f.

Figure: A: Habit sketch, B : Spathe, C : Flower, D: Capsule, E: Seed

2. *Commelina benghalensis* Linn.

Taxonomic description: A creeping, much branched, succulent herb, pubescent, rooting at lower nodes. Leaves elliptic-ovate to broadly ovate, 4-6 × 2-3cm, acute to obtuse glabrous or pubescent, leaf sheath pubescent, closed, but sometimes open towards the apex. Flowers usually in leaf opposed 2-fid cymes emerging from a funnel-shaped spathaceous bract. Spathes 1-3 together, 1-2 × 1.5-1.8cm. pubescent, base auricled on one side, branches of cyme unequal, cleistogamous flowers often occur underground. Sepals 3 mm long, white, ovate-lanceolate. Petals blue, unequal, larger 5-6 mm long, smaller 3-4 mm long. Perfect stamens 3, 6 mm long, One yellowish and the other two bluish, filaments naked, anthers oblong, staminodes 3, 6-7 mm long, filaments naked. Ovary 3 celled, style stout, stigma capitate. Fruit a capsule, 5-6 mm long, membranous, shining, 3-celled. seeds 2 mm long, cylindrical or semicylindrical, mostly truncate at one end, more or less transversely rugose.

English names: Blue commelina, vehus Bath, Bengal Dayflower.

Local names: Dholpata, Kanchira.

Habit: Herb

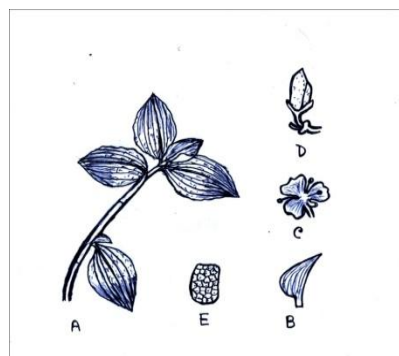
Habitat: Sandy loam on turfs, hill slopes and moist clayed soil.

Flower colour: Blue.

Flowering season: February to December.

Medicinal Uses: The plant is bitter and said to be beneficial in Leposy (Ghani, 1998). In La Reunion, The plant is considered emollient and mucilginous. The sutos prepare a medicine from the plant for treating barrenness in women. The santals of Bangladesh use its tender shoots as a vegetable.

Specimen examined: MZS 12, Rajshahi University Campus, 16.06.2013



Commelina benghalensis Linn.

Figure: A-E Diagram sketches showing morphological characters of *Commelina benghalensis* Linn.

Figure: A: Habit sketch, B : Spathe, C : Flower, D: Capsule, E: Seed

3. *Commelina longifolia* Lamk.

Taxonomic description: A diffused herb, stem slender with long internodes. Leaves lanceolate, 2-10 × 1.0-1.5cm, acuminate, glabrescent, sheaths prominent, surrounding the stem, open, ciliolate. Flowers usually in leaf opposed 2 fid cymes emerging from a funnel shaped spathaceous bract. Spathes axillary, solitary lanceolate, acute or acuminate, glabrous, base cordate, peduncles 2.0-2.5cm long. Sepals 3-4 cm long, Ovate-lanceolate petals unequal, larger one 5-7 mm long, blue, clawed. fertile stamens 3 with oblong versatile anthers, filaments of the fertile stamens and staminodes c 3mm long, naked. Ovary 3 celled, anterior pair of ovary cells 2-ovuled. Fruit a capsule, 6-8mm long, 3-celled, two anterior cells loculicidal, each usually 2-seeded, the posterior cell keeled, more or less truncate at one end and appendiculate at the other.

English name: Not Known

Local Name: Pani Kanchira.

Habit: Herb.

Habitat: Moist grassland on alluvial soil, and edges of water bodies or ditches.

Flower colour: Blue.

Flowering season: December to January

Medicinal Uses: The plant is used in dysentery and insanity. The Santals of Bangladesh use its tender shoots as a vegetable.

Specimen examined: MZS 23, Rajshahi University Campus, 16.06.2013



Commelina longifolia Lamk.



Figure: A-E Diagram sketches showing morphological characters of *Commelina longifolia* Lamk.

Figure: A: Habit sketch, B: Spathe, C: Flower, D: Capsule, E: Seed

4. *Commelina hasskarlii* C.B. Clarke

Taxonomic description: A diffusely branched herb, stem 30–100 cm long, rooting at lower nodes. Leaves 2.5–7.0×0.5–1.5cm, glabrous, sheaths surrounding the stem prominent, 1.0–1.5cm long, open, ciliate from the middle upwards. Flowers in leaf opposed 2-fid cymes emerging from a spathaceous bract, spathes lanceolate, deeply cordate at the base, acuminate, glabrous, peduncles 5–10 mm long. Petals blue. Fertile stamens and staminodes 2 mm long, filaments naked. Ovary 3-celled, anterior pair of cells 2-ovuled, posterior cell 1-ovuled. Fruit a capsule c 6 mm long, elongated, acute, 2-celled, (rarely 3 celled), always 2-valved, each cell with 1 seed, dorsal cell indehiscent with seed adnate to the wall. Seeds 2 mm long. Oblong, dark brown, truncate at one end, rounded at the other, smooth or faintly pitted, seeds of the dorsal cell brownish – black and often about 1.5 times longer than those of the ventral cell.

English Name: Not Known

Local Name: Not Known

Habit: herb.

Habitat: Moist rice fields, swampy riverbanks, roadsides and near lakes, ponds and drains.

Flower colour: Blue.

Flowering season: October to January.

Medicinal uses: The plant is used for poulticing sores. Leaves and stems can be eaten as a vegetable.

Specimen examined: MZS 31, Rajshahi University Campus, 06.07.2013



Commelina hasskanlii Clarke

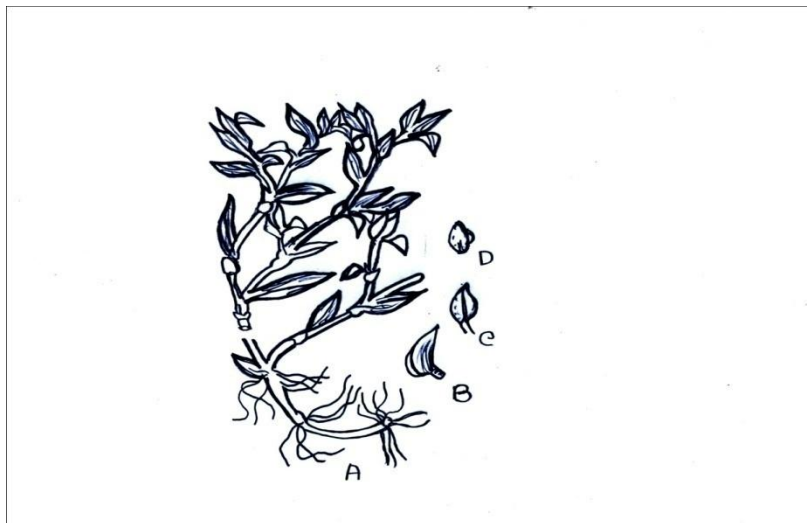


Figure: A-D Diagram sketches showing morphological characters of *Commelina hasskanlii* Clarke.
Figure: A: Habit sketch, B: Spathe, C: Capsule, D: Seed

5. *Cyanotis cristata* (L.) D. Don

Taxonomic description: A many branched, creeping herb, herb, branches angular, villous on the angles. Leaves $5-10 \times 1.0-2.5$ cm, ovate-oblong, subacute, rather fleshy, hirsute, at the margins, with a sheathing base, sheath very short. Flowers in the terminal cymes formed of imbricate, foliaceous bracteoles. Bracts 1.5-7.0cm long, bracteoles 1.0-1.5cm long, ovate-falcate, acute. Sepals 5-7 mm long, lanceolate, hirsute. Petals 5-8mm long, purple. Stamens 6, all fertile, c 6 mm long, filaments bearded in the middle with moniliform hairs. Ovary hairy at the apex, 3-celled, ovules collateral, 2 in each cell, stigma capitate. Fruit a capsule, 3-5mm long with accrescent sepals. Seeds usually 2 in each cell, c 1 mm long, pyramidal, foveolate.

English Name: Not Known.

Local Name: Not Known

Habit: Herb

Habitat: Paddy fields and edges of ditches.

Flower colour: Purple

Flowering season: September to February.

Medicinal Uses: Root paste with common salt is given to the cattle in fever. The leaves are used as a pot herb in Southeast Asia and also as a good source of forage.

Specimen examined: MZS 35 Rajshahi University Campus, 14.09.2013



Cyanotis cristata (L.)D. Don

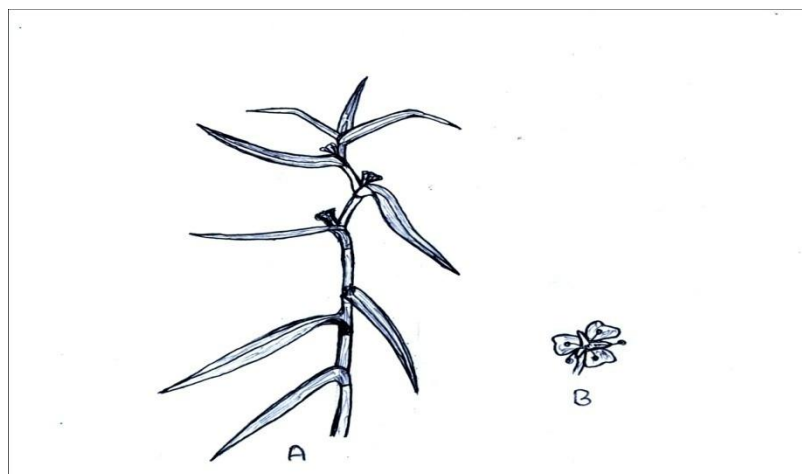


Figure: A-B Diagram sketches showing morphological characters of *Cyanotis cristata* (L.) D. Don

Figure: A: Habit sketch, B: Flower

6. *Tradescantia pallida* (Rose) D.R. Hunt

Taxonomic description: An erect herb to 60cm or more tall, branched. Leaves 6-15×2.6-3.4cm, lanceolate, acute, deep purple, ciliate on the margins. Flowers in cymes subtended by two leaflike spatheaceous bracts, the larger 4-5cm long, overlapping the smaller at the base, 2-3cm long. Bracts 8-10mm long, bracts and bracteole white. Sepals 8-11mm long, free, lanceolate, surrounded at the base by a whorl of ciliate hairs. Petals 12-15mm long, purple. Stamens 6, all perfect, c 8 mm long, filaments with moniliform multicellular hairs from the middle, connective stout, divaricated. Carpels 3-loculed. Fruit a 3-locular capsule.

English Names: Purple heart, Purple Queen.

Local Name: Not Known.

Habit: Perennial Herb.

Habitat: Generally gardens.

Flower colour: Purple.

Flowering season: Throughout the year.

Medicinal uses: Not Known.

Specimen examined: MZS 41, Garden of 3rd Science building, Rajshahi University, 05.09.13



Tradescantia pallida (Rose) D.R. Hunt

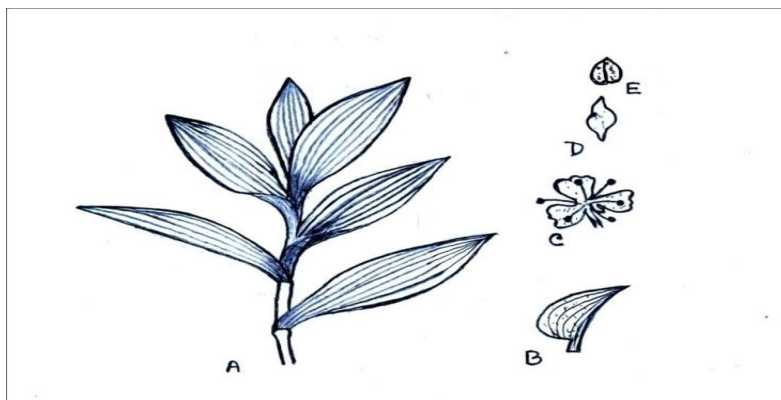


Figure: A-E Diagram sketches showing morphological characters of *Tradescantia pallida* (Rose) D.R. Hunt.
Figure: A: Habit sketch, B: Spathe, C: Flower, D: Capsule, E: Seed

7. *Rhoeo discolor* (L'Her) Hance in Walp.

Taxonomic description: A stout herb with short stem. Leaves 30-45x 4-6cm, spirally arranged, lanceolate, acute, glabrous, dorsal surface green and the ventral surface purple. Flowers in axillary eymes enclosed by 3-5cm long, purplish spathaceous bracts exerted from tops of subtending leaf sheaths. Individual bract of each flower 0.7-1.2cm long, memberanous, white, pedicel up to 2 cm long. Sepals 5-7mm long, light pink to whitish. Petals 4-6mm long, free, white stamens 6, all fertile, c 6 mm long, filaments hairy, anthers slightly notched on the upper side. Seeds corrugated.

English Name: Tradescantia

Local Name: Not Known

Habit: Perennial herb.

Habitat: Dry soils and gardens.

Flower color: Flight pink to whitish/white.

Flowering season: January to February

Medicinal Uses: The plant is used as cough, cold, coughing phlegm with blood, whooping cough, nose bleeding, bacillary dysentery and blood in the stool. No significant ethno botanical information is known. But it is grown as an ornamental plant.

Specimen examined: MZS 36, Garden of 3rd Science building, 05.09.13



Rhoeo discolor Walp.

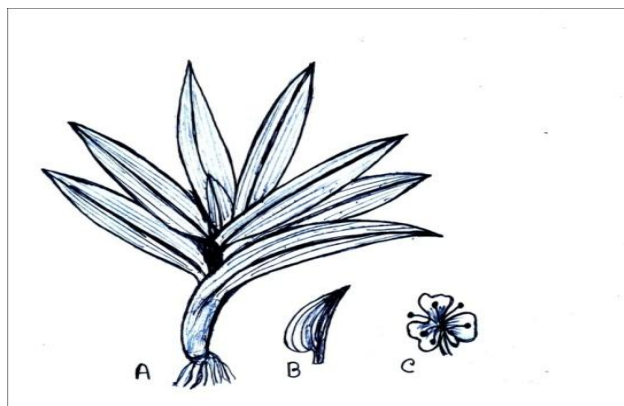


Figure: A-C Diagram sketches showing morphological characters of *Rhoeo discolor* Walp.

Figure: A: Habit sketch, B: Spathe, C: Flower

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