

ADDITIONS TO THE ORCHID FLORA OF RANGAMATI HILL DISTRICT, BANGLADESH

Mohammed Mozammel Hoque, Ishrath Jahan, and Md Owahidul Alam

Department of Botany, University of Chittagong, Chittagong- 4331, Bangladesh

Abstract

Three orchid species namely, *Bulbophyllum gibbosum* (Blume) Lindl., *B. odoratissimum* (Sm.) Lindl. ex Wall., and *Dendrobium albopurpureum* (Seidenf.) Schuit. & Peter B.Adams, were collected from Rangamati Hill District and have been reported here as new angiospermic records for Bangladesh flora. The detailed critical examination of the specimens of these species has been made to confirm their taxonomic identification. The present communication reports their detailed taxonomic descriptions along with flowering time, ecology, geographical distribution, illustrations, and photographs.

Introduction

THE FAMILY Orchidaceae is one of the largest families of flowering plants and is one of the most fascinating groups of ornamental plants of the world. These plants occur mostly in the tropical and subtropical parts of the world with 703 genera (POWO, 2024) and about 29,481 species (WFO, 2023). In Bangladesh, most of the orchid species are distributed mainly in the hilly areas of greater Sylhet, Chittagong, Chittagong Hill Tract, and Mymensingh district (Alam *et al.*, 1993; Zaman and Sultana, 1983). This family represents 579 species in Bhutan (Pearce and Cribb, 2002), 1388 species in China (Lang *et al.*, 1999), 1256 species under 155 genera in India (Singh *et al.*, 2019), and 450 species in Nepal (Pant *et al.*, 2016). In Bangladesh, the family is represented by 72 genera and 188 species (Rahman *et al.*, 2017). The largest genus of orchids, *Bulbophyllum* Thou. with about 2182 species is widely distributed throughout the tropics and subtropics of the globe, particularly in Asia and Africa (POWO, 2024). Its twelve species and one variety have also been reported to occur in Bangladesh (Ahmed *et al.*, 1993; Huda, 2008). The genus *Dendrobium* was first established by Swartz (1799), comprises about 1602 species, and distributed in SouthEast Asia, NorthEast and NorthWest Australia (POWO, 2024). It is represented by 27 species in Bangladesh (Rahman *et al.*, 2017). In India, the genus is represented by 114 species (Singh *et al.*, 2019).

As orchid flora of Bangladesh has not yet been studied in detail, the present communication aimed at discovering more species from the unexplored areas of the country. The present communication reports three new species from the remote areas of Dighinala, Marisha and Sajek Valley, Rangamati Hill district of Bangladesh and provides detailed descriptions along

with flowering time, ecology, geographical distribution, illustrations, and photographs.

Material and Methods

The specimens were collected from the remote areas of Dighinala, Marisha and Sajek Valley, Rangamati Hill district of Bangladesh. The collected plants were grown at the Orchidarium, Chittagong University, Bangladesh. After bloom, the flowers of each of the species were dissected and critically examined under microscope and then identified with the consultation of the relevant literature (Datta and Mitra, 1953; Heinig, 1925; Pearce and Cribb, 2002; Prain, 1903; Rahman *et al.*, 2017; Sinclair, 1956). The voucher specimens of each species have been deposited at the Herbarium of Chittagong University (HCU), Bangladesh.

Taxonomic Description

In the present study, three species *i.e.* *Bulbophyllum gibbosum* (Blume) Lindl., *B. odoratissimum* (Sm.) Lindl. ex Wall., and *Dendrobium albopurpureum* (Seidenf.) Schuit. & Peter B.Adams, have been reported here as new angiospermic records for Bangladesh flora. Their detailed descriptions are as follows:

***Bulbophyllum odoratissimum* (Sm.) Lindl. ex Wall.,**
Numer. List: n.° 1987 (1829).

Phyllorkis odoratissima (Sm.) Kuntze in Revis. Gen. Pl. 2: 677 (1891); *Stelis odoratissima* Sm. in A.Rees, Cycl. 34: n.° 12 (1816); *Tribrachia odoratissima* (Sm.) Lindl. in Coll. Bot.: t. 41 (1826).

Herb, epiphytic, 15 cm long *rhizome*, creeping or straggling, 2-4 mm in diam., branched, covered with membranous tubular sheaths, rooting from base of

pseudobulbs, roots spreading. *Pseudobulbs* 5.5-6.5 cm apart from each other, subcylindric, 2.5-5.0 cm, 3-6(-9) mm in diameter, with a terminal leaf. *Leaf* subsessile, blade oblong, 8 × 2 cm, leathery, apex obtuse and slightly emarginate. *Scapes* 1 or 2, yellowish green, from base of pseudobulb, erect, 14 cm; *raceme* often nodding, shortened, umbel-like, densely more than 7-10 flowered; *peduncle* 1.5 mm in diam., with 3 or 4 tubular sheaths, 8-10 mm; *floral bracts* whitish, ovate-lanceolate, 7-10 mm, membranous, apex acuminate. *Pedicel* and *ovary* shorter than floral bracts. *Flowers* slightly fragrant; sepals and petals white, later turning into orange in apical half; lip tangerine. *Sepals* free, thickly textured; dorsal sepal ovate or ovate-lanceolate, 3-7 × ca. 1.5 mm; lateral sepals lanceolate, 4-10 × ca. 2 mm, margins incurved from middle to apex and tubular or subulate in shape, apex obtuse or subacute. *Petals* subovate or elliptic, 1-2 × 1-1.5 mm, thinly textured, apex subobtuse; *lip* slightly recurved, ligulate, fleshy, margins with white glandular hairs, adaxially with 2 densely minutely glandular-hairy ridges, base with a short claw attached to end of column foot, apex obtuse. *Column* ca. 1 mm, stout; *steliidia* ca. 0.2 mm; *foot* ca. 1 mm, with free part ca. 0.5 mm; *anther cap* nearly subglobose or cordate, finely papillate (Figs. 1A, 2).

Flowering and Fruiting

July-August

Ecology

Tree trunks in mixed forests, rocks along valleys; 200-2400 m.

Distribution

Bhutan, NorthEast India, Laos, Myanmar, Nepal, Thailand and China.

Specimen Examined

Dighinala, Khagrachari, Rangamati Hill District: 18.09.2020; M. M. Hoque, I. Jahan and M.Q. Alam, 238 (HCU).

Bulbophyllum gibbosum (Blume) Lindl., Gen. Sp. Orchid. Pl.: 54 (1830).

Diphyes gibbosa Blume in Bijdr. Fl. Ned. Ind.: 312 (1825); *Phyllorkis gibbosa* (Blume) Kuntze in Revis. Gen. Pl. 2: 677 (1891); *Bulbophyllum igneocentrum* J.J.Sm. in Bull. Jard. Bot. Buitenzorg, sér. 2, 25: 67 (1917); *Bulbophyllum magnivaginatatum* Ames & C.Schweinf. in O.Ames, Orchidaceae 6: 186 (1920); *Bulbophyllum selangorense* Ridl. in J. Fed. Malay States Mus. 5: 47 (1914); *Dendrobium javanicum* Sw. in Neues J. Bot. 1(1): 96 (1805); *Eria javanica* (Sw.) Blume in Rumphia 2: 23 (1836).

Pseudobulbs cylindric, 6-7 × 1.2-1.5 cm, with 3 sheaths, 2-leaved near apex. *Leaf blade* spatulate to obovate-lanceolate, 36-40 × 5-6 cm, with 7-10 main veins, base attenuate, apex acuminate. *Inflorescences* lateral or subterminal, 40-50 cm, many flowered, sheathing at base; *rachis* rusty pubescent; *floral bracts* deciduous, ovate-lanceolate, 1.2-1.5 cm. *Flowers* fragrant, white, sepals rusty pubescent abaxially; *pedicel* and *ovary* nearly as long as floral bracts, rusty pubescent. *Dorsal sepal* lanceolate, 15-20 × ca. 4 mm, long acuminate; *lateral sepals* falcate-lanceolate, 15-20 × 4-5 mm, long acuminate; *mentum* ca. 5 mm. *Petals* lanceolate, 15-20 × ca. 4 mm, long acuminate; *lip* ovate-lanceolate in outline, ca. 14 × 7-8 mm, 3-lobed; *lateral lobes* suberect, oblong, 6-7 mm, obtuse; *mid-lobe* oblong-lanceolate, 7-8 × ca. 3 mm, acuminate; *disk* with 3 or 5 lamellae extending to near apex of mid-lobe. *Column* ca. 5 mm (with anther cap), thickened, foot 5-6 mm (Figs. 1B, 3).



Fig. 1. Three new additions to the orchid flora of Rangamati Hill District, Bangladesh: A, *Bulbophyllum odoratissimum*; B, *Bulbophyllum gibbosum*; C, *Dendrobium albopurpureum*.

Flowering and Fruiting

June-July

Ecology

Lithophytic in rocky places, sometimes in forests; 300-1000 m.

Distribution

NorthEast India, Indonesia, Laos, Malaysia, Myanmar, New Guinea, Philippines, Thailand.

Specimen Examined

Marisha, Rangamati Hill District; 18.09.2020; M. M. Hoque, I. Jahan and M.Q. Alam, 239 (HCU).

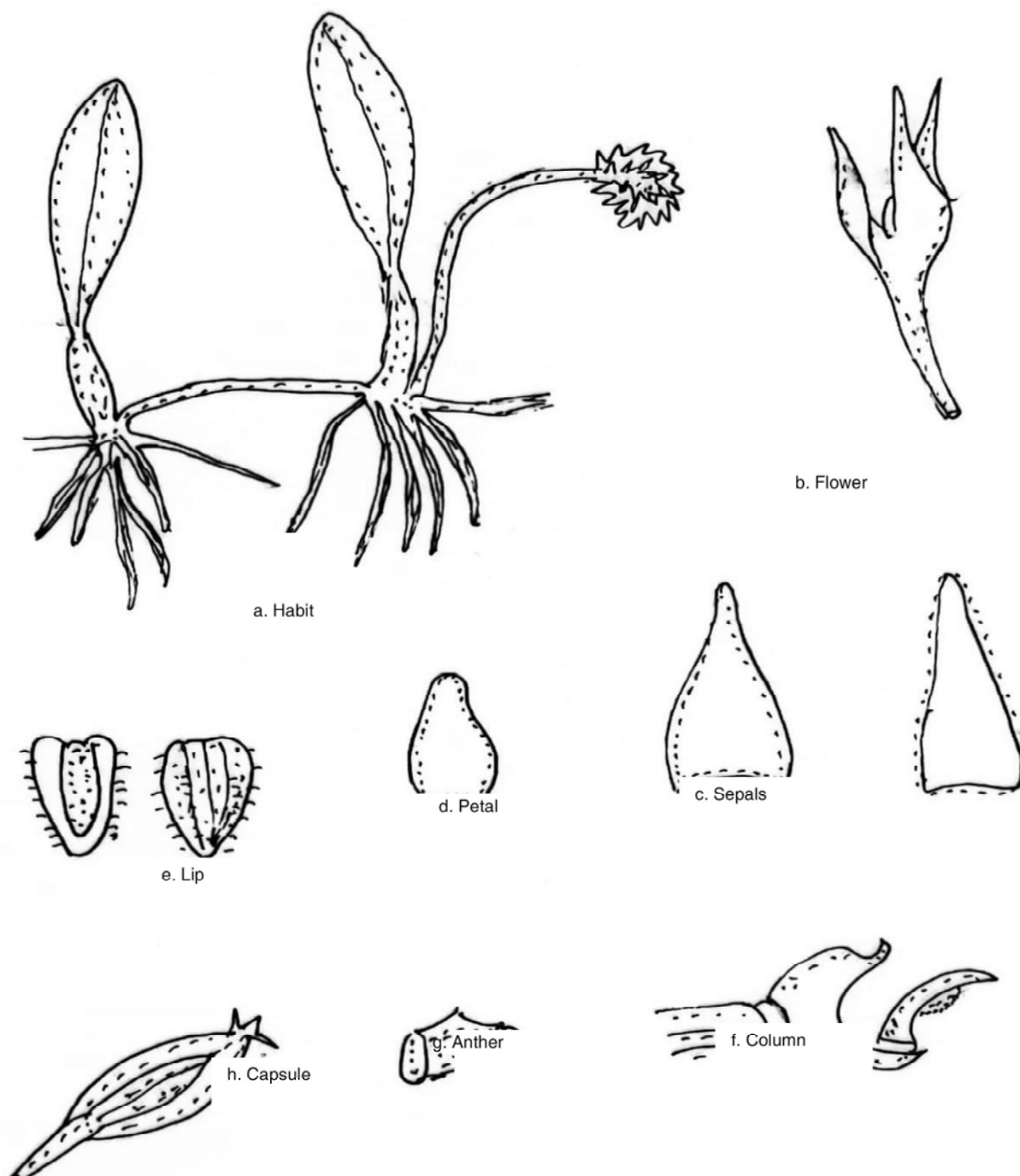


Fig. 2. *Bulbophyllum odoratissimum* (Sm.) Lindl. ex Wall.: a, Habit (3cm); b, Flower (5mm); c, Sepals (5mm) (dorsal and lateral); d, Petal (2mm); e, Lip (2 mm); f, Column with lip (1mm); g, Anther (1mm); h, Capsule (1cm).

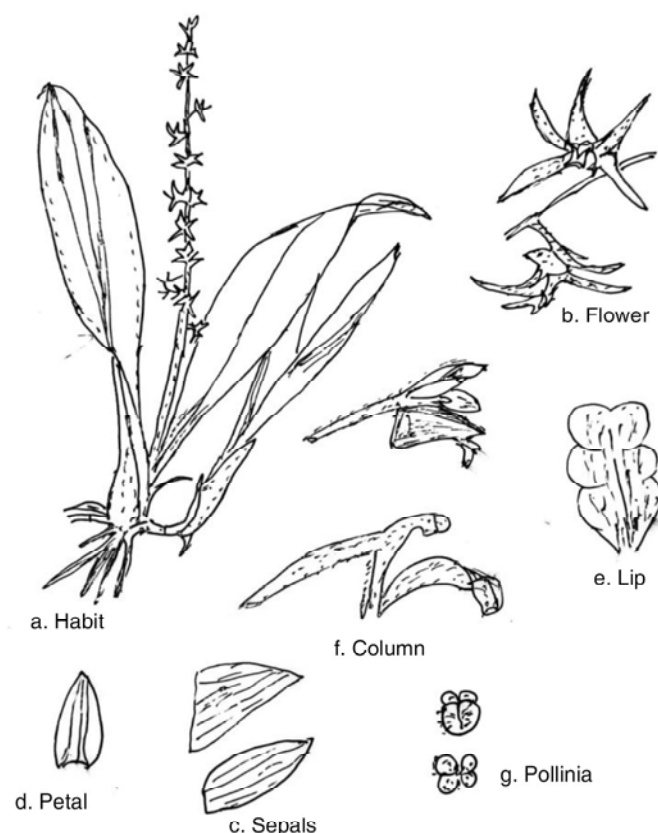


Fig. 3. *Bulbophyllum gibbosum* (Blume) Lindl.: a, Habit (6cm); b, Flower (1.5cm); c, Sepals (15mm) (dorsal and lateral); d, Petal (15mm); e, Lip (14 mm); f, Column (5mm); g, Pollinia (1mm).

Dendrobium albopurpureum (Seidenf.) Schuit. & Peter B.Adams, *Muelleria* 29: 66 (2011).

Flickingeria albopurpurea Seidenf. in *Dansk Bot. Ark.* 34: 48 (1980); *Dendrobium albopurpureum* f. *album* N.H.Tuan & O.Gruss in *Orchidee, Taxon. Mitt.* 5(11): 81 (2019).

Plant epiphytic, *Rhizome* creeping, 4-8 mm in diam., *internodes* 3-7 mm. *Stem* usually pendulous, yellow or yellowish brown, many branched. *Pseudobulbs* golden yellow, slightly compressed, fusiform, 3-8 cm \times 7-20 mm. *Leaf blade* oblong or oblong-lanceolate, 9-19.5 \times 1.5-3.6 cm, leathery, base contracted into a very short petiole, apex obtuse and minutely retuse, arista in sinus absent or indistinct. *Inflorescence* simultaneously adaxial and abaxial, 1- or 2-flowered; *peduncle* very short, with several scale-like sheaths. *Flowers* lasting half a day, thinly textured; *sepals* and *petals* white, *mentum* yellowish, *lip* and *column* densely spotted purple-red, mid-lobe white, turning pale cream-colored when old, proximal part of keels deep purple, distal wavy part with deep purple edges and spots; *pedicel* and *ovary* ca. 5 mm, pale yellow. *Dorsal sepal* oblong, ca. 10 \times 3.5 mm, acute; *lateral sepals* obliquely

ovate-lanceolate, ca. 10 \times 3.5 mm, base oblique and relatively wide, apex acute; *mentum* perpendicular to ovary, ca. 5 mm, obtuse. *Petals* narrowly oblong, ca. 9 \times 2.2 mm, acute; *lip* ca. 12 mm, 3-lobed; *lateral lobes* erect, subovate, rounded, ca. 7 mm apart between apices; mid-lobe obovate-flabellate in outline, ca. 5 \times 7 mm, 2-lobed, basal margin lacerate-cripsed; disk with 2 lamellae extending from base to narrowed base of mid-lobe, crisped-undulate in apical half. *Column* ca. 3 mm, stout, *foot* ca. 5 mm (Figs. 1C, 4).

Flowering and Fruiting

June-July

Ecology

Epiphytic on tree trunks in open forests, lithophytic on rocks in forests; 800-1200 m.

Distribution

China South-Central, Laos, Thailand, Vietnam.

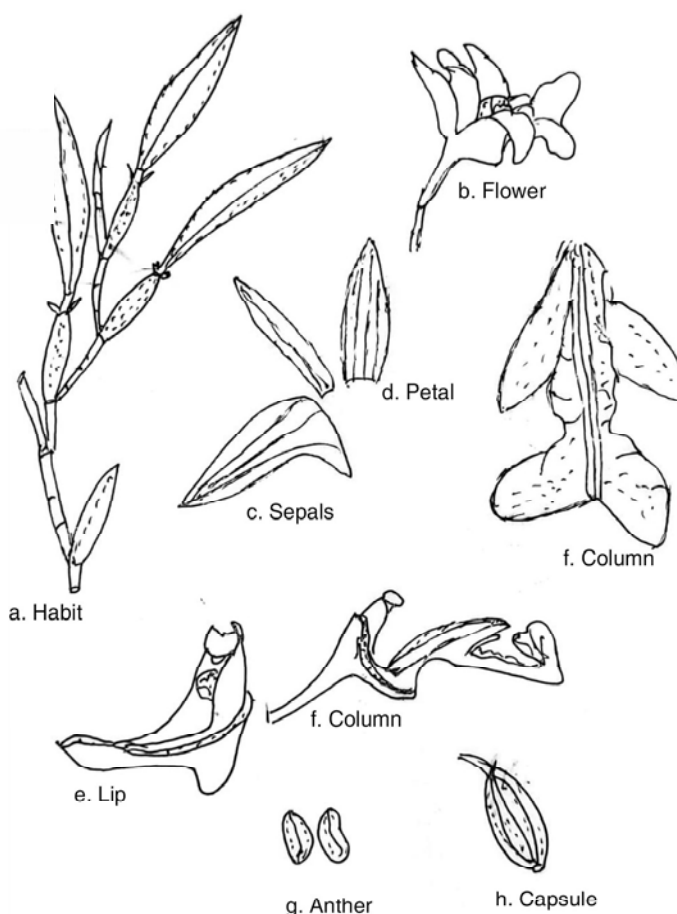


Fig. 4. *Dendrobium albopurpureum* (Seidenf.) Schuit. & Peter B.Adams: a, Habit (8cm); b, Flower (1.5 cm); c, Sepals (10mm); d, Petal (9mm); e, Lip (12 mm); f, Column with lip (3mm); g, Anther (1.3mm); h, Capsule (2cm).

Specimen Examined

Konglak pahar, Sajek Valley, Rangamati Hill District; 19.09.2020; M. M. Hoque, I. Jahan and M.Q. Alam, 240 (HCU).

Acknowledgement

The authors are grateful to the University of Chittagong for providing financial support during the present investigation.

References

- Ahmed, M., M. K. Pasha, and M. A. Aziz Khan. 1993. A taxonomic account of *Bulbophyllum* Thou. (Orchidaceae) from Bangladesh. *J. Bom. Nat. Hist. Soc.*, **91**(1): 78-85.
- Alam, Sk. S., K. Kondo, and R. Tanaka. 1993. A chromosome study of eight orchid species in Bangladesh. *La Kromosome II*, **71**(72): 2456-64.
- Datta, R. M. and J. N. Mitra. 1953. Common plants in and around Dacca. *Bull. Bot. Soc. Bengal*, **7**(1-2): 1-10.
- Heinig, R. L. 1925. *List of Plants of the Chittagong Collectorate and Hill Tracts*. The Bengal Government Branch Press, Darjeeling, India.
- Huda, M. K. 2008. Orchidaceae. In: *Encyclopedia of Flora and Fauna of Bangladesh* (eds. Z. U. Ahmed, M. A. Hassan, Z. N. T. Begum, M. Khondker, S. M. H. Kabir, M. Ahmad, A. T. A. Ahmed, A. K. A. Rahman, and E. U. Hoque) pp. 1-149. Asiatic Society of Bangladesh, Dhaka, Bangladesh.
- Lang, K., S. Chen, Y. Luo, and G. Zhu. 1999. Orchidaceae. In: *Flora Reipublicae Popularis Sinicae* (ed. K. Lang) pp. 1-499. Science Press, Beijing, China.
- Pant, B., M. R. Paudel, M. B. Chand, and S. H. Wagner. 2016. *A Treasure Trove of Orchids in Central Nepal*. Department of Botany, Tribhuvan University, Kathmandu, Nepal.
- Pearce, N. R. and P. J. Cribb. 2002. The flora of Bhutan. *The Orchids of Bhutan*. Vol. 3, Part 3. The Royal Botanic Garden, Edinburgh, U.K.
- POWO. 2024. *Plants of the World Online*. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet. <http://www.plantsoftheworldonline.org>.
- Prain, D. 1903. *Bengal Plants*. Vol. 2. (Reprint 1966). Botanical Survey of India, Calcutta, India.
- Rahman, M. A., M. K. Huda, and M. E. Rashid. 2017. Orchid species diversity in Bangladesh and their revised nomenclatural updates. *Biodivers. Bull. Bangladesh*, **10**: 1-70.
- Sinclair, J. 1956. *The Flora of Cox's Bazar*. East Pakistan. *Bull. Bot. Soc. Beng.*, **9**(2): 107-08.
- Singh, S. K., D. K. Agrawala, J. S. Jalal, S. S. Dash, A. A. Mao, and P. Singh. 2019. *Orchids of India: A Pictorial Guide*. Botanical Survey of India, Kolkata, India.
- Swartz, O. 1799. *Dianome epidendri* generis Linn. *Nova Acta egiae Societatis Scientiarum psaliensis*, **6**: 61-88.
- WFO. 2023. *World Flora Online*. Published on the Internet; <http://www.worldfloraonline.org>.
- Zaman, M. A. and P. Sultana. 1983. Cytogenetics of orchids from Bangladesh: *Spathoglottis plicata* Blume. and *Cymbidium bicolor* Lindl. *Bangladesh. J. Bot.*, **12**(1): 37-49.