

NOTES ON FOUR NEW ANGIOSPERMIC (ORCHIDACEAE) RECORDS FROM BANGLADESH

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Abstract

Extensive field surveys and investigations have been made in Sylhet, Cox's Bazar, Chittagong, and Chittagong Hill Tracts of Bangladesh to explore the orchid diversity which resulted in good collections of orchids including some new reports. The orchid specimens were critically examined and identified. Amongst them, four species, *i.e.* *Chiloschista parishii* Seidenf., *Coelogyne ovalis* Lindl., *Conchidium extincorium* (Lindl.) Y.P.Ng & P.J.Cribb, and *Dendrobium parcum* Rchb.f., are being reported here as new angiospermic records for Bangladesh flora. Two genera *i.e.* *Chiloschista* and *Conchidium* are reported for the first time from Bangladesh. Detailed description, flowering time, ecology, and geographical distribution of the species have been provided with illustration and photographs.

Introduction

ORCHIDACEAE IS highly evolved and widely distributed monocotyledonous family, which is the second largest family of flowering plants after Asteraceae, comprising of about 28,484 species, grouped into 880 genera (Govaerts *et al.*, 2017). On the other hand, according to various estimates, there are between 25,000-35,000 species under 600-800 genera in this family (Dressler, 1993; Huda, 2008; Jayaweera, 1981). Most of the orchids are found in tropical America which estimate 8,266 species under 306 genera, while tropical Asia comes second with 250 genera and 6,800 species (Dressler, 1990). In Indian flora, this is the second largest family represented by about 1,256 species in 155 genera (Singh *et al.*, 2019), distributed mainly in Eastern Himalayas, Western Ghats, and Western Himalayas (Barua *et al.*, 2019; Devi *et al.*, 2018; Kumar *et al.*, 2017; Kumar *et al.*, 2019; Ninawe and Sapna, 2017; Prakash and Pathak, 2019; Singh *et al.*, 2019). Initially, one hundred and sixty species of orchids belonging to 63 genera were reported from Bangladesh (Huda *et al.*, 1999) and later 179 species was reported under 70 genera (Huda, 2008). Now the family is represented in the flora of Bangladesh by 72 genera and 188 species; of these, 117 species under 41 genera are epiphytic in nature and 71 species under 33 genera are terrestrial (Hoque *et al.*, 2019; Huda *et al.*, 2017; Rahman *et al.*, 2017). These 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). Bruhl (1926), Grant (1895), Heinig (1925), Hooker (1880-90, 1890), Huda *et al.* (1999), Mia and Khan (1995), Prain (1903), Raizada (1941), Roxburgh (1814, 1832), Sinclair (1956)

and other related literatures *i.e.* Abraham and Vatsala (1981), Bose *et al.* (1999), Joseph (1987), Pradhan (1976, 1977), and Huda and Rahman (1999) either worked on orchids of Bangladesh or mentioned about Bangladesh orchids in their study. Orchid flora of Bangladesh is not yet prepared completely and it is still being explored. The present work is aimed at discovering unexplored orchids from different remote areas of Bangladesh based on extensive field works with an effort to update the orchid flora.

Material and Methods

Orchid species were collected from Chittagong, Cox's Bazar, Sylhet, and Chittagong Hill Tract districts of Bangladesh in vegetative condition. The collected plants were grown in the orchidarium and after flowering of the species, the flowers of each species were dissected and critically examined under microscope and then identified with the consultation of the relevant literature (Grant, 1895; Hooker, 1890; Pearce and Cribb, 2002; Prain, 1903; Roxburgh, 1814, 1832; Sinclair, 1956) and confirmed in consultation with international orchid experts. The voucher specimens of each species have been deposited at the Herbarium of Chittagong University (HCU).

Results and Discussion

In the present study, *Chiloschista parishii* Seidenf., *Coelogyne ovalis* Lindl., *Conchidium extincorium* (Lindl.) Y.P.Ng & P.J.Cribb, and *Dendrobium parcum* Rchb.f., have been identified as new records from Bangladesh. The detailed description with enumeration, flowering time, habit, habitat, distribution, and illustration of the each species has been provided here.

Chiloschista parishii Seidenf., Opera Bot. 95: 176, t. 109. 1988.

Thrixspermum luniferum auct. non Rchb.f. 1868; *Sarcochilus luniferus* auct. non. (Rchb.f.) Benth. ex Hook.f. 1889; *Chiloschista lunifera* auct. non (Rchb.f.) J.J.Sm., 1905.

Plant epiphytic; *roots* numerous, elongate, 28 to 53 cm long and 2-2.3 mm wide. No apparent stem, pseudostem or leaf. *Inflorescence* pendent, pubescent, laxly many-flowered; *peduncle* sheathed, hirsute, 19-30 cm long; sheaths distant, lanceolate, acute, membranous, 9 mm long; *rachis* softly hirsute, 1.2 cm long; *floral bracts* ovate-lanceolate, membranous, 4 mm; *Flowers* subsessile, 9 × 12 mm across; Sepals and petals yellow with large brown to red spots, lip yellow with broad bands of brown, outer surface hirsute; *pedicel* and *ovary* subsessile, pubescent, 2-3 mm long. *Dorsal sepal* ovate, obtuse, concave, arching over the column, 5-6 × 3-4 mm; *lateral sepals* ovate-orbicular, obtuse, spreading, 5-6 × 1.5-3.5 mm. *Petals* subquadrate, truncate, 4-5 × 3-4 mm. *Lip* adnate to the column foot, deeply saccate, parallel to the column, 3-lobed; *lateral lobes* large, erect, obliquely oblong, glabrous, 2.5-3 × 0.8-1.2 mm; *mid-lobe* knob-like, reduced; *sac* 1.5-2 mm long; *disc* with a pubescent ridge. *Column* thick, 1-1.2 mm long; *foot* ca. 1.5-2 mm long. *Fruit* fusiform-cylindric, 1.6-2.8 × 0.2-0.3 cm (Figs. 1 and 5).

Flowering

April-June

Habit

This epiphytic species was found to occur on a host tree, *Tectona grandis* L. and was found growing along with an epiphytic orchid species of *Oberonia*.

Distribution

Bangladesh, Nepal, India, and Myanmar.

Specimen Examined

Bandarban; Thanchi, Remakri, 10.04.2018, M. K. Huda, M. M. Hoque, and M. O. Alam, 203 (HCU).

Coelogyne ovalis Lindl., Edwards's Bot. Reg. 24: misc. 91, no. 171 (1838)

Coelogyne fimbriata Lindl., Gen. Sp. Orchid. Pl: 41 (1830); *Broughtonia linearis* Wall. ex Lindl., op. cit. 42 (1830); *Coelogyne pilosissima* Planch, Hort. Donat.: 144 (1854); *C. decora* Wall. ex Voigt, Hort. Suburb. Calcutt.: 621 (1845); *C. xerophyta* Handel-Mazzetti, Symb. Sin. 7: 1346 (1936).

Plant epiphytic or lithophytic; *rhizome* creeping, branching, sheathed. *Pseudobulbs* ovoid-fusiform to fusiform, smooth, 5-7 cm apart on rhizome, becoming ridged with age, sheathed at the base, ca. 5-8 × 1.5 cm. *Leaves* 2, narrowly elliptic, acute to acuminate, petiolate, 9-17 × 2.5 cm; *petiole* grooved, ca. 2 cm long. *Inflorescence* hysteranthous, few-flowered; *peduncle* slender, enclosed at base by 3 scale-like sheaths, ca. 5 cm long; *rachis* slender, ca. 7 cm long; *floral bracts* caducous. *Flowers* 3-4 cm across, pale yellowish-green, lip margin ciliated, marked brown, keels darker brown, column yellowish-green; *pedicel* and *ovary* slender, 1-1.3 cm long. *Dorsal sepal* ovate-lanceolate, acute, ca. 2.7 × 1.3 cm; *lateral sepals* lanceolate, acuminate, reflexed, ca. 3 × 0.7 cm. *Petals* linear, acute, deflexed, ca. 2.7 × 0.1 cm. *Lip* saccate at base, 3-lobed; *lateral lobes* oblong to triangular, erect, partly enclosing the column, lower parts of margins ciliate, *mid-lob* ovate, apex round, mucronate, margins ciliate; *disc* 3-keeled at base of lip with 2 keels extending to mid-lobe apex,



Figs. 1-4. Four orchid species as new record from Bangladesh: 1, *Chiloschista parishii* Seidenf.; 2, *Coelogyne ovalis* Lindl.; 3, *Conchidium extinctorium* (Lindl.) Y.P.Ng & P.J.Cribb.; 4, *Dendrobium parcum* Rchb.f.

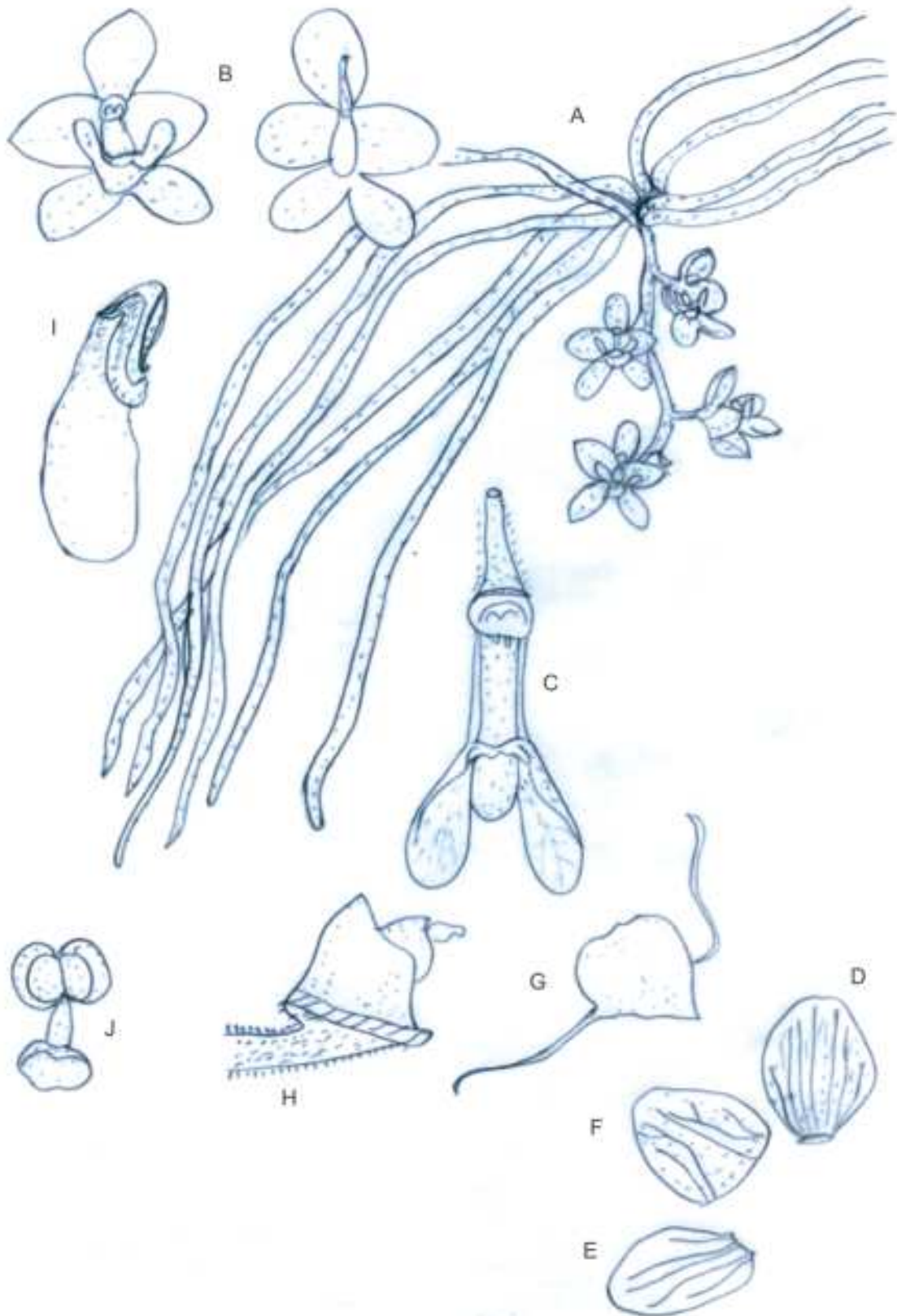


Fig. 5. *Chiloschista parishii*: A, Habit; B, Flowers; C, Lip with spur; D, Dorsal sepal; E, Lateral sepal; F, Petal; G, Anther; H, Column, lateral view; I, Lip; J, Pollinarium.

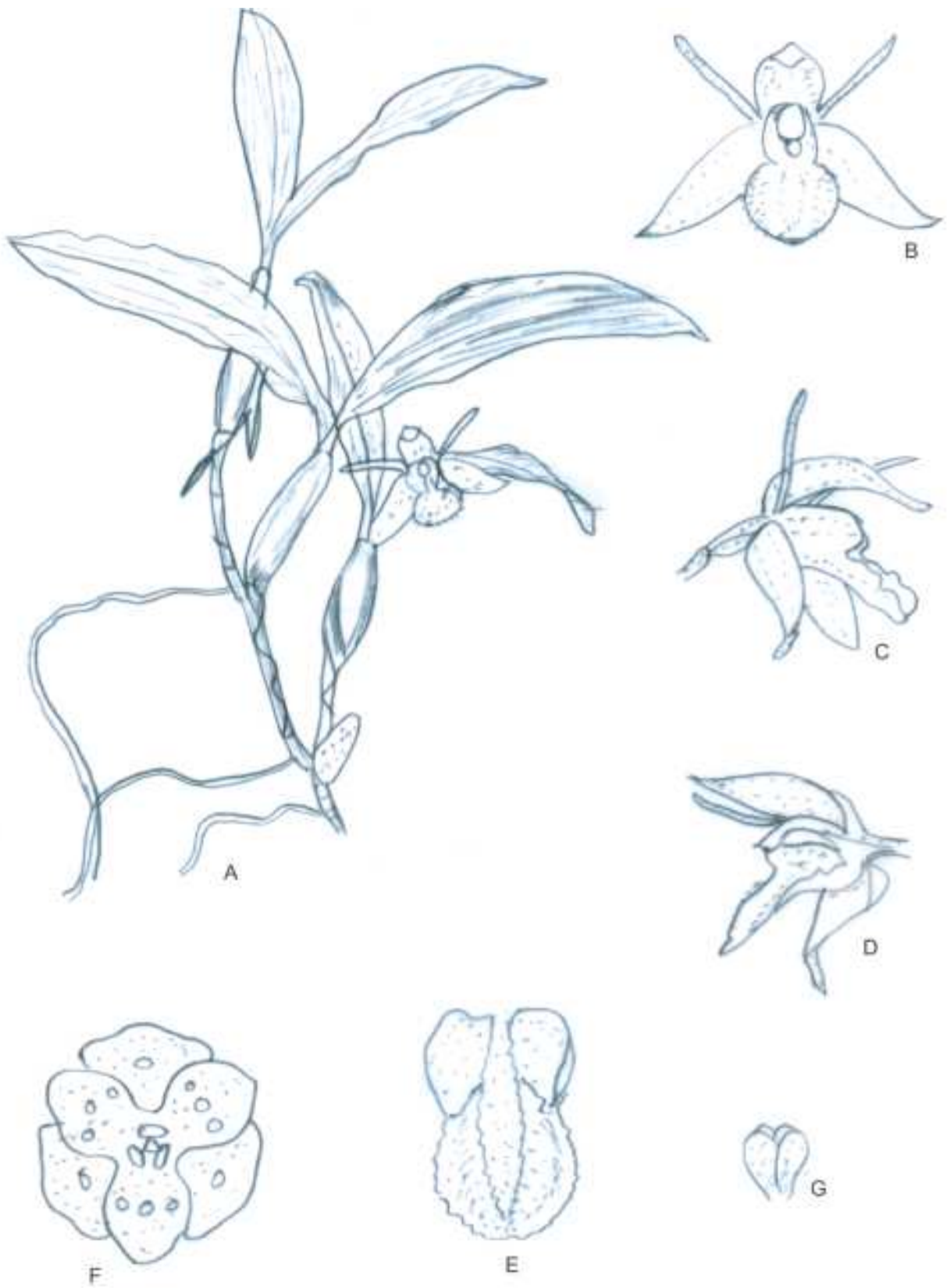


Fig. 6. *Coelogyne ovalis*: A, Habit; B, Flower, front view; C, Flower, lateral view; D, L. S. of the flower through column and lip; E, Lip; F, C. S. of the ovary; G, Pollinia.



Fig. 7. *Conchidium extincorium*: A, Habit; B, Flower, front view; C, Flower, lateral view; D, Lip, lateral view; E, Column; F, Pollinarum; G, Dorsal sepal; H, Petal; I, Lateral sepal; J, Lip.

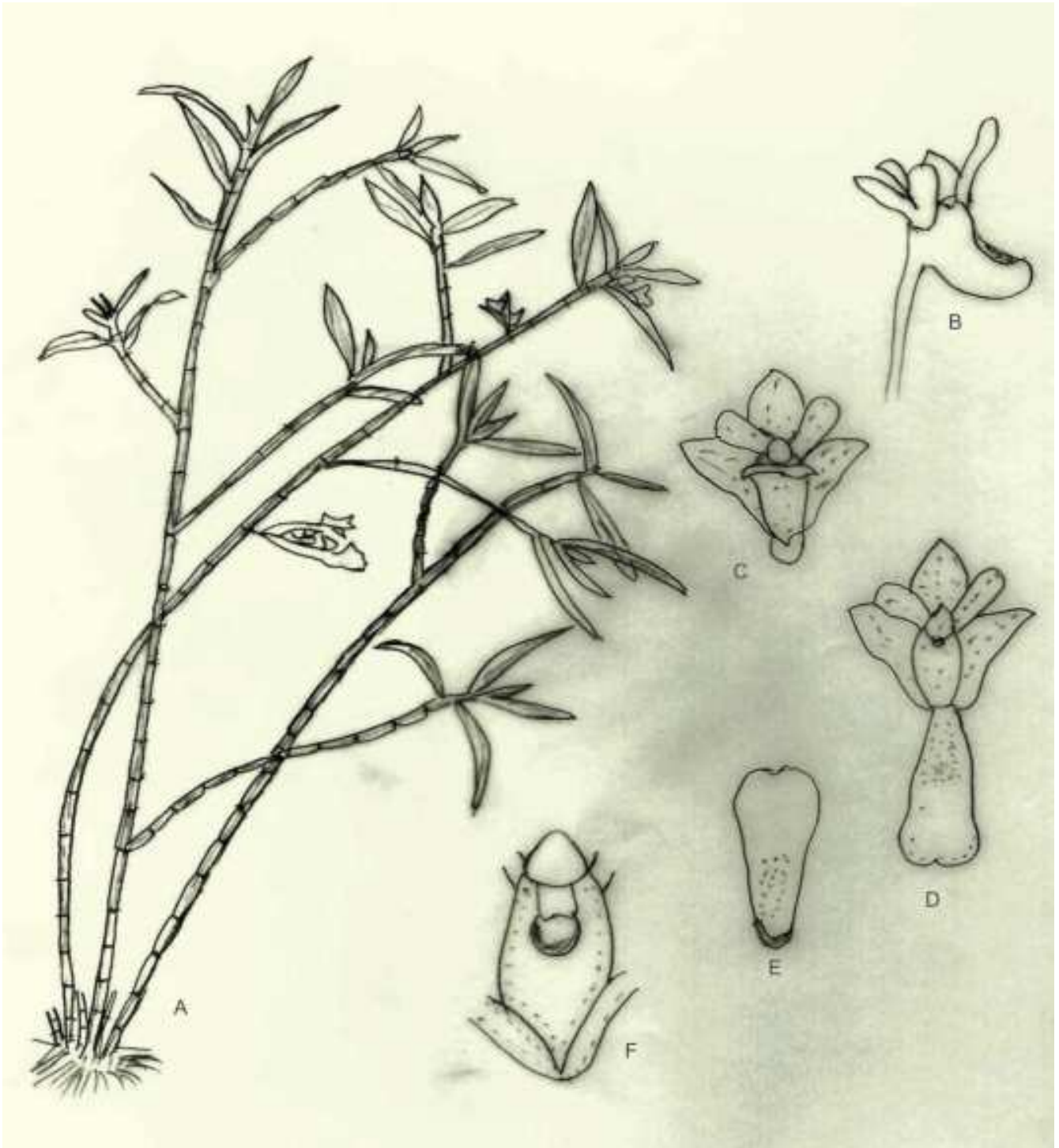


Fig. 8. *Dendrobium parcum*: A, Habit; B, Flower, lateral view; C, Flower, front view; D, Flower, forced down; E, Lip; F, Column.

undulate. Column curved, hooded at rounded apex, ca. 1.5 x 0.7 cm (Figs. 2 and 6).

Flowering

February

Habit

The species was found to occur as epiphyte on a large tree *Syzygium grande* (Wt.) Wall. and *Dillenia scabrella* Roxb.

Distribution

Bangladesh, India, Myanmar, Bhutan, Thailand, and China.

Specimen Examined

Bandarban; Chimbuk hill. 03.05.2018, M. K. Huda, M. M. Hoque, and M. O. Alam, 204 (HCU).

Conchidium extincorium (Lindl.) Y.P.Ng & P.J.Cribb
Orchid Rev. 113: 272 (2005)

Porpax extincoria (Lindl.) Schuit., Y.P.Ng & H.A.Pedersen, Bot. J. Linn. Soc. 186: 199 (2018);
Dendrobium extincorium Lindl., Edwards's Bot. Reg. 21: t. 1756 (1835); *Eria extincoria* (Lindl.) Oliv., Bot. Reg. Mag. 97: t. 5910; *Pinalai extincoria* (Lindl.) Kuntz., Revis. Gen. Pl. 2: 679 (1891).

Plant epiphytic herbs, 1-2 cm high, glabrous, *Pseudobulbs* congested, globose, depressed, covered by reticulate, membranous sheaths. *Leaves* 2 or 3, obovate-lanceolate. *Inflorescence* 3.5 cm long, 2 flowered. *Flowers* white 1 cm long. *Pedice*l 4 cm long. *Sepals* white, 5-veined, *Dorsal sepal* much smaller than the laterals, ovate obtuse, *lateral sepal* triangular acute, *mentum* longer than the lateral sepals, conical, incurved, 2-lobed. *Petals* white, oblong obtuse, 3-veined, *lip* larger than the sepals, obcordate with a 2-lobed undulate midlobe in the sinus, purple band like blotch in the middle and orange coloured spots on the lower part. *Capsule* 6 mm long (Figs. 3 and 7).

Flowering

October-November

Habit

Epiphyte on the trunks of *Dipterocarpus turbinatus* Gaertn. in a Garjan forest.

Distribution

Bangladesh, Bhutan, China, India, Japan, Laos, Myanmar, Nepal, and Thailand.

Specimen Examined

Jhahazphora, Teknaf, Cox's Bazar, 07.10.2014, M. K. Huda, M. M. Hoque, and M. O. Alam, 209 (HCU).

Dendrobium parcum Rchb.f., Gard. Chron. 1866: 1042 (1866)

Callista parcam (Rchb.f.) Kuntze, Revis. Gen. Pl. 2: 655 (1891); *Dendrobium hexadesmia* Rchb.f., Gard. Chron. 1869: 710 (1869); *Dendrobium listeroglossum* Kraenzl. in H. G. Reichenbach, Xenia Orchid. 3: 108 (1892); *Dendrobium tapingense* W.W.Sm., Notes Roy. Bot. Gard. Edinburgh 13: 202 (1921); *Dendrobium parcoides* Guillaumin, Bull. Mus. Natl. Hist. Nat., sér. 2, 27: 142 (1955).

Epiphytic herbs. *Stems* 50 cm or more, usually thin, purple and furrowed when old, sheaths grey, often branching. *Inflorescence* very short subterminal and at nodes, with 2-5 creamy yellow flowers; *Dorsal sepal* 4-5 mm, 3-veined; *Petals* linear-spathulate; *Lip* nearly twice as long, spatulate, slightly retuse at apex, without side lobes, the base fleshy with two ridges; *Hypochile* green with dark purple spots; *Epichile* pure yellow; *Mentum* sac-shaped; *Column* very broad with a much concave front side; *Rostellum* rather large with squarish front edge; *Operculum* triangular, conical (Figs. 4 and 8).

Flowering

March

Distribution

Bangladesh, Japan, and Korea through the Indo-Malayan region to Indonesia, Australia, New Zealand, and to certain parts of Polynesia.

Specimen Examined

Bandarban; Thanchi, Remakri 10.06.2018; M. K. Huda, M. M. Hoque, and M. O. Alam, 210 (HCU).

Discussion

The newly reported orchid species *Chiloschista parishii* Seidenf. is characterized by absence of stem or leaf. *Inflorescence* many-flowered, arranged laxly. *Flowers* are small but showy; *Sepals* and *Petals* are yellow with large brown to red spots; *Lip* yellow with broad bands and deeply saccate. The genus *Chiloschista* was established in 1832 by John Lindley in the Botanical Register. Diels and Mansfeld (1932) and Seidenfaden (1982) have reviewed the genus. The genus comprises about 10 species distributed from the Indian subcontinent through SouthEast Asia and Australia. The World Monocot Checklist currently recognizes 19 species which are distributed in Myanmar, Thailand, Laos, and SouthEast Asia. But no species of the genus *Chiloschista* has so far been reported from Bangladesh.

The genus *Coelogyne* comprises over 100 species distributed in India, China, SouthEast Asia, the Malay Archipelago, and the Pacific Islands. In Bangladesh, five species of *Coelogyne* were previously recorded (Huda, 2008). Ten species of the genus *Conchidium* are found in Bhutan, China, India, Japan, Laos, Myanmar, Nepal, Thailand, and Vietnam (Chen and Wood, 2009). However, it was not recorded earlier from Bangladesh. *Dendrobium* Sw. is the second largest genus of the family Orchidaceae with nearly 1600 valid species, distributed widely in the Eastern hemisphere

from Japan and Korea through the Indo-Malayan region to Indonesia, Australia, New Zealand, and to certain parts of Polynesia. In Bangladesh, Huda *et al.* (2001) reported two species; Hooker (1890) reported four species; Prain (1903) reported nine species; and Roxburgh (1814, 1832) and Sinclair (1956) reported three species each. A total of 27 species of *Dendrobium* were recorded from Bangladesh (Huda, 2008; Rahman *et al.*, 2017). Through this exploration and addition, four more orchid species have enriched the orchid flora of Bangladesh.

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