



Research article

Addition of a new report *Acriopsis liliifolia* (J. Koenig) Ormerod (Orchidaceae: Epidendroideae) to the flora of Bangladesh

Mohammed Kamrul Huda, Mohammed Mozammel Hoque and Ishrath Jahan*

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

*Corresponding Author: ishrath.bot@cu.ac.bd, ishrath.btri@gmail.com

[Accepted: 25 March 2022]

Abstract: Occurrence of an epiphytic orchid species viz. *Acriopsis liliifolia* (J. Koenig) Ormerod was recorded from more than ten countries of the world, but there is no previous report from Bangladesh. Recently it was collected from Fasiakhali Wildlife Sanctuary at Cox's Bazar district of Bangladesh, a tropical evergreen and semi-evergreen type of forest close to the coast, and reported here as a new distributional record for Bangladesh. Detailed taxonomic description of the species along with phenology, ecology, geographical distribution, and medicinal value is provided here with illustration and photograph. The species is listed as Critically Endangered in Singapore. In Bangladesh, it may be categorized for time being as Data Deficient according to International Union for Conservation of Nature and Natural Resources Red Listing criteria.

Keywords: Conservation - Data deficient - Fasiakhali - Orchid - New record.

[Cite as: Huda MK, Hoque MM & Jahan I (2022) Addition of a new report *Acriopsis liliifolia* (J. Koenig) Ormerod (Orchidaceae: Epidendroideae) to the flora of Bangladesh. *Tropical Plant Research* 9(1): 31–36]

INTRODUCTION

Bangladesh is dominated by evergreen and semi-evergreen forests in the south and south-eastern part which is home of the majority of total orchids in the country. About 188 orchid species were identified and described from the country so far (Rahman *et al.* 2017). Most of them are epiphytic growing over forest trees. During a field trip to Fasiakhali Wildlife Sanctuary (21° 40' N, 92° 08' E) in mid-September, 2019, the first author could locate two samples of an epiphytic orchid species growing on one of the dominant tree species of the forest, Garjan (*Dipterocarpus turbinatus* Gaertn.). Only two vegetative parts were found in that area. The plants were collected and brought under cultivation in the orchidarium of the University of Chittagong. After flowering, flowers of each species were dissected and critically examined under the microscope and then identified the species with the help of relevant literatures (Roxburgh 1814, 1832, Hooker 1885–1890, 1890–1894, Grant 1895, Prain 1903, Sinclair 1956, Pearce & Cribb 2002) as *Acriopsis liliifolia* (J. Koenig) Ormerod which was recorded from many other countries of the world, but not reported so far from Bangladesh. Hence, this species is reported for the first time here as a new record in the country. The voucher specimens of the species have been deposited in the herbarium of the University of Chittagong.

MATERIALS AND METHODS

Study area

Fasiakhali Wildlife Sanctuary, one of the richest biodiversity of Bangladesh, located at Cox's Bazar district and lies between 21° 40' N and 92° 08' E. According to the local government's administrative jurisdiction, it is situated at about 7 km south from Chakaria Upazila, 38 km north from Cox's Bazar and 112 km from Chattogram city. Sadar beat of Fasiakhali range, an administrative unit of the Bangladesh Forest Department (BFD) under Cox's Bazar North Forest Division (Fig. 1), manages the wildlife sanctuary. Bangladesh Forest Department has divided the forest into three blocks viz Dulahazara, Ringbhong and Fasiakhali that cover 287.45, 612.96 and 402.00 ha, respectively. Fasiakhali Wildlife Sanctuary (FWS) occupies an area of around 1302.43 acres, with tropical semi-evergreen trees predominating (Bangladesh Forest Department 2015). The surface is nearly level, with only modest undulations and dissected short hills that are no higher than 100 meters. Approximately 10% of the landscape is occupied by well-drained flood plains. Due to some narrow valleys

sustaining water all year round, the Protected Area (PA) is intersected by multiple perennial streams.

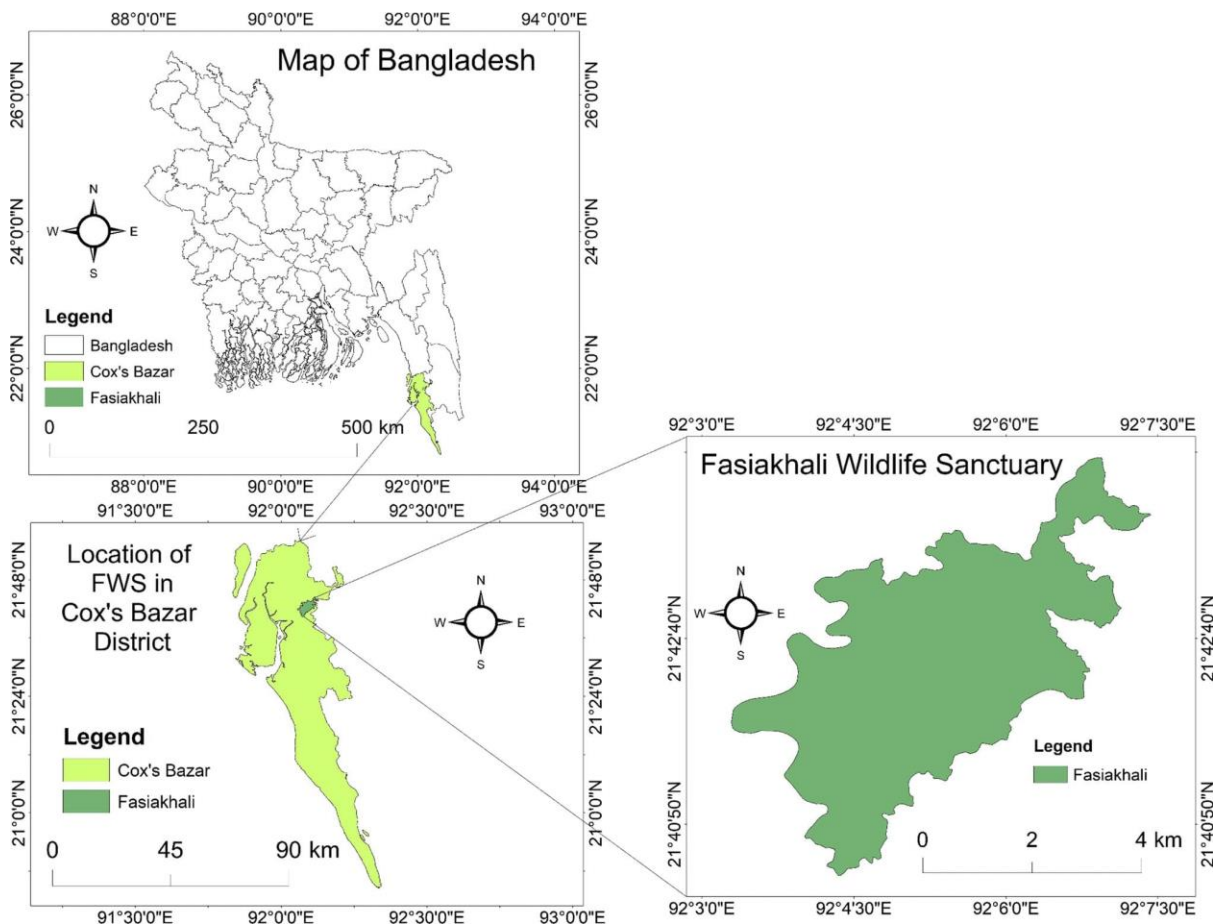


Figure 1. Location of *Acriopsis liliifolia* (J. Koenig) Ormerod at Fasiakhali Wildlife Sanctuary, Cox's Bazar district, Bangladesh.

Several enormous, mature Garjan (*Dipterocarpus* spp.) trees can be found in the tropical residual rainforest that makes up the Fasiakhali Wildlife Sanctuary, which is a protected area. The present study also assessed the composition, structure and diversity of tree species in this protected area. A total of 32 tree species were recorded belonging to 24 genera and 19 families. The forest is low in plant diversity as represented by Shannon-Wiener diversity and Simpson Dominance indices. *Dipterocarpus turbinatus* was the most dominant species with maximum relative density, frequency, dominance, and importance value index. *Syzygium firmum* Thwaites and *Tectona grandis* L.f. are the next two most dominant species. More than 15 Orchid species were found in this area. Most of the host species of the forest were *Dipterocarpus turbinatus* and *Tectona grandis*.

RESULT AND DISCUSSIONS

Taxonomic treatment

As per KEW World Checklist of Orchidaceae (Govaerts *et al.* 2022), the genus *Acriopsis* Reinw. ex Blume, commonly known as chandelier orchids, comprises of 9 valid species and 2 varieties. They are found to grow in primary and secondary forests, coastal swamp forest, on trees in Savannas of India, Burma, Thailand, Laos, Cambodia, Vietnam, Malay Peninsula, all over Indonesia, the Philippines, New Guinea, Palau Islands, Solomon Islands and Australia. The genus was first described in 1825 by Carl Ludwig Blume who published the description in 'Bijdragen tot de flora van Nederlandsch Indië'. The term "acriopsis," which comes from the Greek words "akris" for locust and "opsis" for "resemblance," refers to an odd column that has a locust-like shape (Brown 1956). The genus *Acriopsis*, is new to Bangladesh. It is an isolated genus with slender inflorescences carrying inconspicuous small flowers, in which the lateral sepals are completely fused to form a synsepalum that subtends the labellum. Only one non-endemic species *Acriopsis liliifolia* is reported here as new record for Bangladesh. It is the type species of the genus *Acriopsis*. Because J. Koenig was the first to validly name the taxon, this species was previously known as *Acriopsis javanica* but is now known as *Acriopsis liliifolia* (Comber 2001).

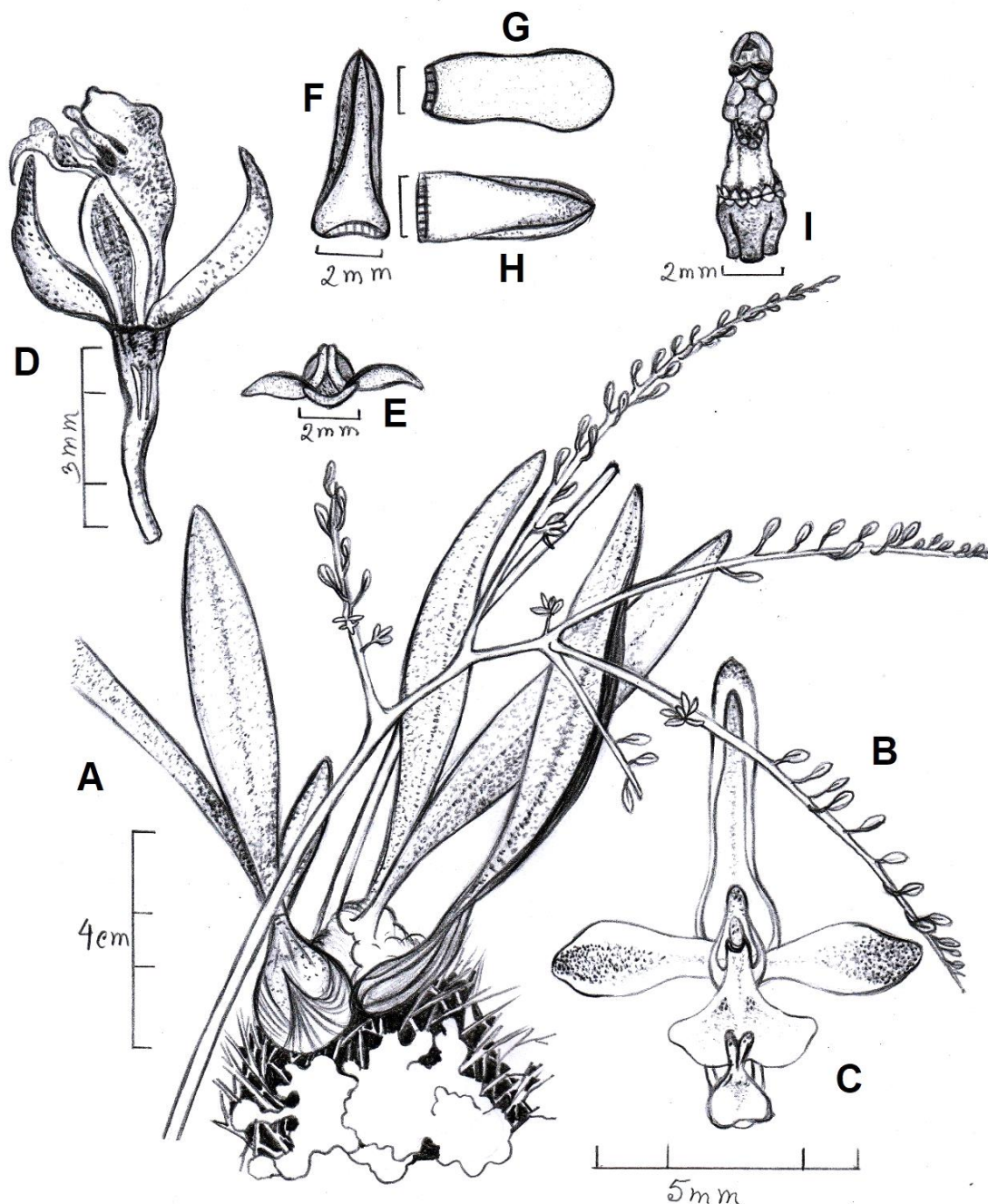


Figure 2. *Acriopsis liliifolia* (J. Koenig) Ormerod: **A**, Habit; **B**, Inflorescence; **C**, Flower: front view; **D**, Flower: lateral view; **E**, Lip; **F**, Dorsal sepal; **G**, Petal; **H**, Synsepalum; **I**, Column.

Acriopsis liliifolia (J. Koenig) Ormerod, *Opera Bot.* 124: 58 (1995).

Epidendrum liliifolium J. Koenig in Retz. *Obs.* vi. 61.

Acriopsis javanica Reinw. ex Blume, *Bijdr.* (1825: 377), *Acriopsis griffithii* Rchb. f. (*Bonplandia* 1854: 92), *Acriopsis nelsoniana* F. M. Bailey (1898: 7/160), *Acriopsis papuana* Kraenzl. (*K.Schum. & Lauterb.* 1901: 250) (nom. nud.), *Acriopsis philippinensis* Ames (1908: 215), *Acriopsis annamica* Finet, (1911: 25), *Acriopsis nelsoniana* F. M. Bailey var. *pallidiflora* Schltr. (1913: 950), *Acriopsis floribunda* Ames (1920: 306), *Acriopsis insulari-silvatica* Fukuy. (1938: 3).

Description: Epiphytic medium-sized herb. Glabrous but lip is somewhat hairy, 16–115 cm in height. *Pseudobulbs* small, clustered, ovoid, 5–7 noded and contains 3–4 scales. *Rhizome* 0.2–0.6 cm in diameter, between the pseudobulbs 0.2–0.7 cm long. *Leaves* 2–3 in number, apical, coriaceous, linear, obtuse, 13–18 cm long, petiolate, petiole 1.5–2.5 cm long. *Inflorescence* panicle, 12–200-flowered, 16–90 cm long, curved at the tip; peduncle 8.5–55 cm long, 0.10–0.35 cm diam., with 2–4 internodes; rachis 8–38 cm long; branches 7 to 25 cm long, sometimes with secondary branches. Floral bracts 0.15–0.30 × 0.05–0.15 cm.

Pedicle 0.3–0.64 cm long, *ca.* 0.04 cm in diam., ovary 0.20–0.35 cm long. *Flowers* yellowish white. 0.8–1.4 cm in diam. Median sepal 0.47–0.72 × 0.10–0.28 cm; apex acute, 3-nerved. Synsepalum 0.45–0.65 × 0.14–0.32 cm; apex obtuse; 4–6-nerved. Petals oblong to obovate, 0.43–0.68 × 0.15–0.30 cm; apex rounded; nerves 3–5. Lip 3-lobed. Hypochile: adnate part 0.21–0.3 cm long, sometimes slightly inflated, centrally constricted; free part narrowed, more or less canaliculate, apically without marginal auricles. Epichile: 0.38–0.50 × 0.25–0.50 cm, from base to keel centrally slightly swollen; lateral lobes obovate, triangular or obliquely rectangular, slightly convex, glabrous or sometimes with very short hairs; keels on the base of the end-lobe, erect to ascending. Column almost straight, 0.38–0.6 cm long; stelia 0.09–0.15 cm long, 0.03–0.05 cm diam., tips swollen, decurved; hood straight, its top margin not recurved, entire, emarginate or slightly crenulate. Stigma elliptic in outline, sometimes slightly elevated; rostellum beak-like or narrowly triangular, 0.09–0.13 cm long. Anther more or less pear-shaped, pollinia more or less falcate and flattened or obovoid, the inner two narrower, 0.07 × 0.02–0.03 cm; tips rounded to acute; stipes 0.06–0.07 cm long; viscidium more or less ovate. *Fruit* ellipsoid to globose, 0.9–1.5 × 0.8–1.0 cm. (Description based on collected specimen) (Fig. 2).

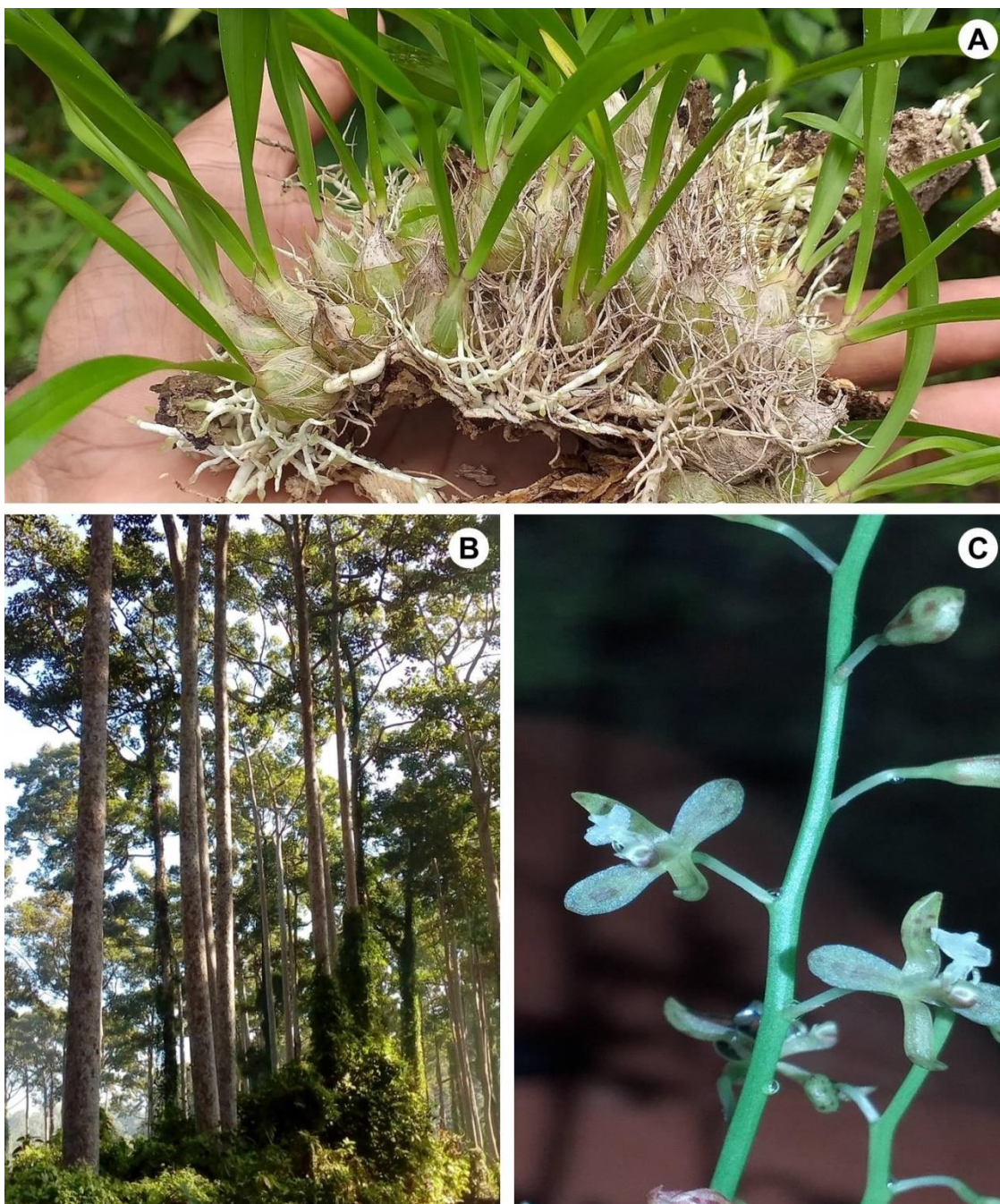


Figure 3. **A,** *Acriopsis liliifolia* (J. Koenig) Ormerod plant collected from Fasiakhali Wildlife Sanctuary; **B,** *Acriopsis liliifolia* (J. Koenig) Ormerod habitat in 2019; **C,** A close-up of the flower. [Photographed by: M.K. Huda]

Distribution: Bangladesh, Myanmar, Andaman Islands, Peninsular Malaysia, Philippines, Thailand, Eastern Himalayas (Arunachal Pradesh, Bhutan, Darjeeling and Sikkim), Java, Laos, Moluccas, New Guinea, Salomon Islands, Singapore, Sulawesi, Sumatra, Australia, Borneo, Cambodia, Caroline Islands. In Bangladesh, the species was found Chakaria, Fasiakhali, Cox's Bazar.

Habitat: The species was found to occur in the natural forest as an epiphyte on trunks of the Garjan tree (*Dipterocarpus turbinatus* Gaertn.). The clump of orchid was small and found to grow on the trunk of the plant at the height of approximately 10 m. It was mostly exposed to sun light with little partial shade (Fig. 3).

Phenology: Flowering: March; Fruiting: April (Based on the observation from the collected specimen).

Uses: In Java, treatments for fevers associated with Malaria have been treated by boiling the plant and making a broth which is taken by mouth (De Padua *et al.* 1999).

Population and conservation: *Acriopsis liliifolia* was reported as Critically Endangered in Singapore (Tan *et al.* 2008). Only two plants could be located in the natural habitat during the survey. As this area is already declared as the Wildlife Sanctuary by the Government and under protection, no threats are recorded. Under present distribution record of Bangladesh, it should be enlisted as Data Deficient (DD) species according to the criteria of International Union for Conservation of Nature and Natural Resources (IUCN). The genus *Acriopsis* consists very few species worldwide, so proper conservation measures should be taken by the authority for ensuring both in-situ and ex-situ conservation.

Specimen examined: BANGLADESH, Cox's Bazar district, Chakaria, Fasiakhali, 13.09.2019, M. K. Huda, M. M. Hoque, and Ishrath Jahan - K218 (Herbarium of Chittagong University).

ACKNOWLEDGEMENTS

The authors are grateful to the Research and Publication Cell, University of Chittagong for providing financial support to conduct this research. We would like to declare that there is no conflict of interest related to the work.

REFERENCES

- Bangladesh Forest Department (2015) *Fasiakhali Wildlife Sanctuary Management Plan 2015–2025*. Ministry of Environment and Forests, Bangladesh, 95 p.
- Brown RW (1956) *The Composition of Scientific Words*. Smithsonian Institution Press, Washington, D.C.
- Comber JB (2001) *Orchids of Sumatra*. Natural History Publication, Borneo, 1026 p.
- De Padua LS, Bunyapraphatsara N & Lemmens RHMJ (1999) Plant resources of South-East Asia In *Medicinal and poisonous plants*. Backhuys Publishers, pp. 210–218.
- Grant B (1895) *The orchids of Burma*. Hanthawaddy press, Rangoon, Myanmar, 424 p.
- Govaerts R, Bernet P, Kratochvil K, Gerlach G, Carr G, Alrich P, Pridgeon AM, Pfahl J, Campacci MA, Holland Baptista D, Tigges H, Shaw J, Cribb P, George A, Kreuz K & Wood J (2022) *World Checklist of Orchidaceae*. Facilitated by the Royal Botanic Gardens, Kew. Available from: <http://wcp.science.kew.org/> (accessed: 27 Feb. 2022).
- Hooker JD (1885–1890) *The Flora of British India Vol. 5*. L. Reeve & Co. Ltd., Kent, England, pp. 667–910.
- Hooker JD (1890–1894) *The Flora of British India. Vol. 6*. L. Reeve & Co. Ltd., Kent, England, pp. 1–198.
- IUCN (2001) *IUCN Red List Categories and Criteria Version 3.1*. IUCN Species Survival Commission, IUCN, Gland and Cambridge.
- Pearce NR & Cribb PJ (2002) *The Orchids of Bhutan: Including a record of Plants from Sikkim and Darjeeling*. Royal Botanic Garden, Edinburgh and Royal Government of Bhutan, 643 p.
- Prain D (1903) Orchidaceae In *Bengal Plants. Vol. 2*. Botanical Survey of India, Bishen Singh Mahendra Pal Singh, Dehra Dun, India, pp. 750–777.
- Rahman MA, Huda MK & Rashid ME (2017) Orchid Species Diversity in Bangladesh and their Revised Nomenclatural Updates. *Biodiversity Bulletin Bangladesh* 10: 1–70.
- Roxburgh W (1814) *Hortus Bengalensis* (nom. nud.). Boerhaave Press, Leiden, Holland, 63 p.
- Roxburgh W (1832) *Flora Indica. Vol. 3*, in W. Carey (eds.) *Description of Indian Plants*. Mission Press, Serampore, Calcutta, India, pp. 609–622.
- Sinclair J (1956) The flora of Cox's Bazar, East Pakistan. *Bulletin of the Botanical Society of Bengal* 9: 107–108.
- Tan HTW, Tan Kx, Ibrahim A, Chew PT, Chua KS, Duistermaat H, Ganesan SK, Goh MWK, Gwee AT, Kiew

R, Lee SML, Leong P, Lim J, Lok AFSL, Loo AHB, Lum SKY, Morgany T, Suran S, Sim S, Haji Ahmad HS, Wee YC, Yap KF, Yeo CK & Yong JWH (2008) Checklists of Threatened Species - Seed Plants. In: Davison GWH, Ng PKL & Ho HC (eds) *The Singapore Red Data Book. 2nd Edition*. The Nature Society (Singapore), Singapore, pp. 213–244.