Recollection of Indian lipstick plant, *Aeschynanthus monetaria* Dunn (Gesneriaceae) after a century from Arunachal Pradesh, India

The usually epiphytic evergreen tropical Asian genus *Aeschynanthus* Jack (Gesneriaceae) comprises 174 species, and is chiefly distributed from southern China to tropical Asia[1]. In India, the genus is represented by 26 taxa[2,3]. Some of the species are commonly known as lipstick plants due to the appearance of tubular red corolla[4–6]. The generic name *Aeschynanthus* is derived either from the Greek *aischyne* or *aischynō* meaning shame or to be ashamed respectively, and *anthos* meaning flower, alluding to the usually red-coloured corolla, or (less probably) from *aischýnein* meaning deform, distort and *anthos* meaning flower, referring to the strange (?) form of the corolla[4].

Aeschynanthus monetaria Dunn is morphologically unique and distinct among all the *Aeschynanthus* species known from India by its fleshy orbicular leaves with greenish upper surface and purplish-green lower surface[6,7]. The specific epithet *monetaria* means 'mint-like', alluding to the appearance of its leaves. The British botanist, Stephen Troyte Dunn described this species in 1912 based on plant materials collected from Arunachal Pradesh by Isaac Henry Burkill, another English botanist[8]. During floristic studies in Arunachal Pradesh, K.C. collected a few interesting specimens of *Aeschynanthus* from Hyuliang and Chipru of Anjaw district in December 2021. A perusal of the pertinent literature[3,8] and critical examination of fresh specimens as well as digital images of specimens in the Kew Herbarium Catalogue, revealed that the collected specimens were *A. monetaria*, a gesnerid that had never been collected from India after Burkill in 1912. However, the occurrence of this species was reported in China by Hu *et al.*[9] in 2020. This species is poorly represented in Indian herbaria despite the fact that several Indian botanists have well-explored this region since the 1970s. There is only a single representative specimen of this species available at the Central National Herbarium [CAL0000025816!], an evidence of its extremely rare distribution in India. Therefore, descriptions and photographs are provided here for easy recognition in the field, and the threat status is also assessed for the species following IUCN guidelines.

Aeschynanthus monetaria Dunn, *Bull. Misc. Inform. Kew* 1920(4): 135, 1920.

Type: India, Arunachal Pradesh, Rotung, 1300 feet, 17.01.1912, *I. H. Burkill* 36088 (K000096761, image!); Janakamukh, 16.12.1911, *I. H. Burkill* 37186 (CAL00-00025816!) (Figure 1).

Perennial epiphytic herb; stems puberulous when young, glabrous on maturity, 2–3 mm in diameter, swollen and rooting at nodes; internodes 1.5–3 cm. Leaves opposite or in pairs, orbicular, green on the upper surface, purplish-green on the lower surface, 1.0–1.2 × 0.9–1.1 cm, rounded or obscurely cordate at the base, entire at margins, fleshy and flat when fresh, obviously wrinkled when dried, glabrous; mid and lateral veins obscure; petioles 1–2 mm long, glabrous. Flowers axillary, solitary; bracts minute; pedicels slender, 1–2 cm long, jointed, sparsely clothed with white hairs. Calyx purplish-green, five-lobed; lobes free to base, linear-lanceolate, *c*. 4 × 1 mm, subacute at apex, puberulent outside, glabrous inside. Corolla brilliant scarlet outside, light yellowish-brown inside, tubular, 3–4 cm long, sparsely pilose outside, slightly curved, mouth *c*. 1 cm wide, two-lipped; upper lip two-lobed; lobes suborbicular, *c*. 4 × 6 mm, slightly deflexed; lateral lobes *c*. 5 × 3 mm, slightly reflexed; anterior lobes *c*. 4 × 3 mm, spreading. Stamens four, exserted, slightly didynamous; filaments light purple on the upper portion and creamish-white on the lower portion, 2–2.5 cm long, projecting more than 1.5 cm from the mouth; anthers light purple, oblong, *c*. 2 × 0.8 mm. Ovary *c*. 8 mm wide, stipitate; style *c*. 3 mm long; stigma capitate. Capsules are linear, 3–4 cm long, densely pubescent and mixed glandular-pubescent.

Distribution: India (Arunachal Pradesh) and China.

Flowering and fruiting: October–January.

Habitat: Grows in moist and evergreen forests, at elevations ranging from 543 to 1134 m.

Specimens examined (other than type specimens): India, Arunachal Pradesh, Anjaw district, 5 km above Hyuliang, 27°56′25.0″N, 96°21′54.8″E, 543 m, December 2021, *K. Chowlu* 41872 (CAL, ARUN); Changwinti, 28°07′32.7″N, 97°00′45.2″E, 1134 m, December 2021, *K. Chowlu* 41886 (CAL, ARUN).

Conservation status: This species is so far known from Arunachal Pradesh (India) and China (Xizang, Tibet). During the present study, 40–50 individuals in four different localities were observed in Arunachal Pradesh. The geo-coordinates of these localities were imported into GeoCAT[10] and the extent of occurrence (EOO: 1963.939 km^2),

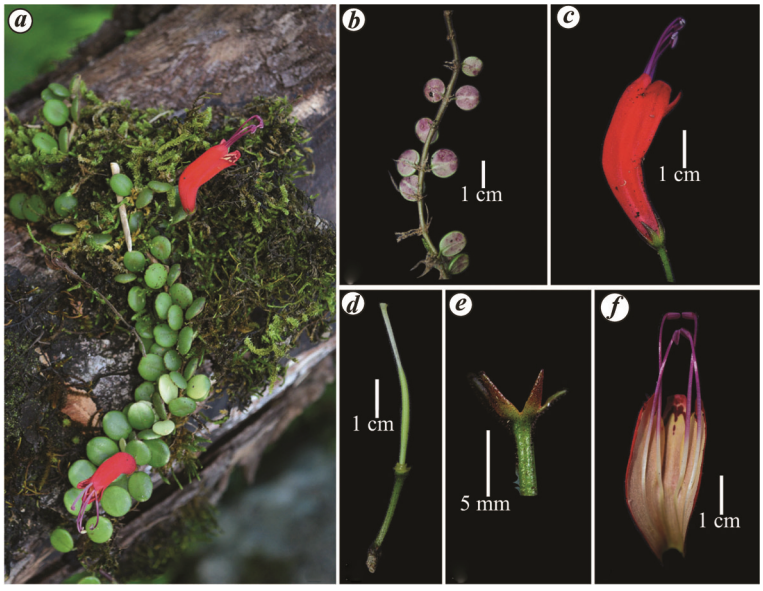

Figure 1. *Aeschynanthus monetaria* Dunn. ***a***, Habit. ***b***, Leaves – dorsal view. ***c***, Close-up of flower. ***d***, Flower showing pistil with calyx and corolla removed. ***e***, Calyx with a portion of the pedicel. ***f***, Corolla split open showing the stamens.

and area of occupancy (AOO: 16 km^2) were calculated based on a cell width of 2 km (ref. 10). The species has been provisionally assessed here as 'Endangered', following the guidelines of IUCN[11]. Landslides are frequent in the Anjaw district of Arunachal Pradesh. Developmental activities such as broadening of roads, construction of schools, new settlements and markets, and jhum cultivation are some of the major threats to this species in Arunachal Pradesh.

1. http://www.plantsoftheworldonline.org (accessed on 30 December 2021).
2. Bhattacharyya, U. C. and Goel, A. K., *Phytotaxonomy*, 2014, **14**, 1–22.
3. Sinha, B. K. and Datta, S., *Nelumbo*, 2016, **58**, 1–43.
4. Jack, W., *Trans. Linn. Soc. London*, 1823, **14**, 42.
5. Clarke, C. B., In *Monographiae Phanerogamarum* (eds de Candolle, A. L. P. P. and de Candolle, A. C. P.), G. Masson, Paris, 1883, vol. 5(1), pp. 1–303.
6. Clarke, C. B., In *The Flora of British India* (ed. Hooker, J. D.), L. Reeve & Co., London, UK, 1884, vol. 4, pp. 336–375.
7. Gledhill, D., *The Names of Plants*, Cambridge University Press, Cambridge, UK, 2002, 3rd edn, pp. 1–326.
8. Dunn, S. T., *Bull. Misc. Inform. Kew*, 1920, **1920**(4), 135.
9. Hu, J., Xiong, Y.-N., Li, L., Liu, Q. and Wen, F., *Phytotaxa*, 2020, **450**, 109–114.
10. Bachman, S., Moat, J., Hill, A., de la Torre, J. and Scott, B., *ZooKeys*, 2011, **150**, 117–126.
11. http://www.iucnredlist.org/documents/RedListGuidelines.pdf.2019 (accessed on 30 December 2021).

ACKNOWLEDGEMENTS. We thank Dr A. A. Mao, Director, Botanical Survey of India, Kolkata, for providing the necessary facilities and encouragement, and Dr V. K. Rawat, Head of Office (ARUN) and Dr M. U. Sharief, Head of Office (MH), for help and support; Dr J. S. Jalal, Scientist, BSI, Kolkata for help in estimation of EOO and AOO. We also thank the Principal Chief Conservator of Forests, Arunachal Pradesh, for collection permits; Mr Khulai Chaitom and Mr Jabralum Chaitom for accommodation, and Mr Isang Chowsong and Mr Sunil Soniyal for help with plant collection.

Received 10 March 2022; accepted 16 March 2022

KRISHNA CHOWLU[1]
GOPAL KRISHNA[2,*]
W. ARISDASON[3]

[1]*Botanical Survey of India, Arunachal Pradesh Regional Centre, Itanagar 791 111, India*
[2]*Botanical Survey of India, CGO Complex, 3rd MSO Building, DF Block, Sector 1, Salt Lake City, Kolkata 700 064, India*
[3]*Botanical Survey of India, Southern Regional Centre, TNAU Campus, Lawley Road, Coimbatore 641 003, India*
**For correspondence.*
e-mail: gopal_bsi@yahoo.co.in

Possible Ediacaran discs from the Paniam Quartzite, Kurnool Group, South India

The Ediacaran Period (635–541 Ma) reveals the appearance of varied life forms, both in animal and plant communities, some of which continued in the Phanerozoic, while a few others disappeared as failed experiments of nature[1–3]. During this period, the Earth experienced significant changes in the lithosphere, biosphere, atmosphere and hydrosphere. Life forms suddenly became big and complex after the Marinoan (~635 Ma) and Gaskiers (~579 Ma) glaciations in the Ediacaran Period[4]. The megascopic Ediacaran fauna that appeared around 570 Ma, with a remarkable diversity around 560–550 Ma, is the first record of morphologically complex life[5–7]. As of now, Ediacaran fossil assemblages have been reported from more than 30 localities worldwide[8]. The distinctive soft-bodied organisms are an important indicator of the evolutionary history of the Proterozoic. Disc-shaped fossils are the most common elements of the Ediacaran biosphere. They were first described by Billings[9] from Canada and are considered as an important component of Ediacaran metazoans, which evolved during the terminal Ediacaran Period. The impressions of Ediacaran discs are found best preserved on the bedding surfaces of siliciclastic sandstone and shale[2,10]. These discs are generally considered to be of Cnidarians affinity and many to be the holdfast of the soft-bodied metazoans.

Similar discs were reported from the different Ediacaran successions of the Indian subcontinent: Krol Formation, Nainital Syncline, Lesser Himalaya[11,12], the Jodhpur Group, Marwar Supergroup[13–17], Maihar Sandstone and Bundi Hill Sandstone of the Vindhyan Supergroup[18–20]. This note discusses the possible Ediacaran discs from the Kurnool Group of peninsular India. Discoid fossils from the Kurnool Group are morphologically well compared with the established forms of the Ediacaran biota.

The Kurnool Group is the youngest group of the Cuddapah Supergroup in South India. It is invariably deposited over different parts of the Cuddapah Supergroup and is exposed in the Kundair Valley in the west and the Palnad area in the northeast (Figure 1)[21]. It has been subdivided into six formations in stratigraphic order. These are: Banganpalle Quartzite, Narji Limestone, Owk Shale, Paniam Quartzite, Koilkuntla

Table 1. Generalized lithostratigraphy of the Kurnool Group, Cuddapah Basin, South India (after Nagaraja Rao *et al.*[21])

Geological unit	Formation	Thickness of the unit (m)
Kurnool Group	Nandyal Shale	50–100
	Koilkuntla Limestone	15–50
	Paniam Quartzite	10–35
	Owk Shale	10–15
	Narji Limestone	100–200
	Banganpalle Formation	10–50
----------	Unconformity ----------	
Cuddapah: Srisailam Quartzite		