

ZEUXINE CLANDESTINA BLUME AND ZEUXINE PARVIFOLIA (RIDL.) K.SCHUM. & FEDDE (ORCHIDACEAE): NEW ADDITIONS TO THE ORCHID FLORA OF SIKKIM, INDIA

Madhusudhan Khanal^{*1}, Shuvadip Sarkar², Puja Acharya³, Rupal Pariyar³, and Avishek Bhattacharjee²

^{*}Taxonomy and Biodiversity Laboratory, Department of Botany, Sikkim University, Samdur- 737 102, Gangtok, Sikkim, India

¹G B Pant National Institute of Himalayan Environment (GBPNIHE), NorthEast Regional Centre, Chandranagar- 791 113, Itanagar, Arunachal Pradesh, India

²Central National Herbarium, Botanical Survey of India, Howrah- 711 103, West Bengal, India

³G B Pant National Institute of Himalayan Environment (GBPNIHE), Sikkim Regional Centre, Pangthang- 737 101, Gangtok, Sikkim, India

Abstract

Two rare terrestrial orchids namely, *Zeuxine clandestina* Blume and *Zeuxine parvifolia* (Ridl.) K.Schum. & Fedde, have been reported for the first time from Sikkim, India. The present communication briefly describes their taxonomic description along with photographs; habitat notes have also been provided for an easy identification of these orchid species.

Introduction

ZEUXINE LINDL. is a genus of terrestrial orchids characterized by subterranean rhizome, leaves, sometimes withered during anthesis, inflorescence 1 to many flowered, terminal raceme with resupinate flowers. Eighty four species of this genus have so far been reported worldwide (POWO, 2024) which are distributed from Central Asia to West Pacific and Tropical Africa (Pridgeon *et al.*, 2003). In India, 18 species have been reported till date (Bhattacharjee and Chowdhery, 2018).

Material and Methods

During the field survey to enumerate the angiospermic diversity of Gangtok, Sikkim, we came across two terrestrial orchids from the roadside area of 6th mile, Tadong, Gangtok. Both the specimens were grown at GBPNIHE SRC Orchidarium and monitored regularly until flowering on January 15, 2023. Critical morphological observations under a stereomicroscope and the consultation of relevant literature (Bhattacharjee and Chowdhery, 2018; Bhattacharjee *et al.*, 2019; Hooker, 1890; King and Pantling, 1898; Krishna *et al.*, 2011; Misra, 2019; Ormerod, 2018; Rao, 1988, 1996; Singh *et al.*, 2019) and consultation of earlier collections of these species deposited in different Indian herbaria *i.e.* APFH, ARUN, ASSAM, BSHC, CAL, COGCEHR, LBG, Orchid Herbarium, Tippi (OHT) revealed that these are new to the orchid flora of Sikkim. *Zeuxine clandestina* and *Z. parvifolia* resemble each other to some extent during the vegetative stage, but clear

differences in floral morphological characters were observed during anthesis. The detailed morphological descriptions, photoplates, information on habitat, phenology, and distribution have been provided for their easy identification.

Taxonomic Description

Zeuxine clandestina Blume, Coll. Orchid.: 70, t.39, fig. 4.1858; Seidenfaden in Dansk Bot. Ark. 32(2): 87, t.54.1978; A.N. Rao in Indian Forester 122(12): 1171.1996; I. Barua, Orchid Fl. Kamrup Distr. Assam: 56. t.17. 2001, p.p.; S. Misra, Orchids India: 320.2007; G. Krishna *et al.* in Richardiana 11:164.2011; Bhattacharjee & Chowdhery, Fasc. Fl. India 28:161, Pl. 38.2018; Sushil K Singh *et al.*, Orchids India, A Pic. Guide: 514.2019.

Terrestrial *herb*, ca. 15 cm tall. *Rhizome* terete, creeping at nodes with tiny hair like fibrous roots, brownish-green. *Stem* erect, 6.0-12.0 × 0.3-0.5 cm, terete, glabrous, unbranched. *Leaves* 5-9, lamina 0.14-0.25 × 0.7-0.21 cm, ovate to lanceolate, slightly oblique, base obtuse, apex acute, 3-veined, glabrous, scattered uniformly throughout the stem; *petiole* 0.2-0.4 cm long sheathed clasping the stem at nodes, glabrous. *Inflorescence* a terminal raceme, laxly 6-many flowered, pubescent, greenish-brown; *peduncle* 6-11 cm long with 2-5 sheathing bracts; sheathing *bracts* 0.1-0.15 cm long, lanceolate, apex acuminate, 1-veined, pubescent; *floral bracts* ovate-lanceolate, 0.5-0.9 × 0.2-0.25 cm, pinkish-brown, slightly shorter than the pedicellate *ovary*, pubescent, 3-veined, midvein prominent, lateral veins

obscure; sheathing bracts on spike lanceolate, ca. 0.15 cm long, pubescent, apex acuminate. *Flowers* few to numerous, resupinate, each flower 0.7-0.11 cm long, sparsely pubescent. *Pedicel* and *Ovary* 0.4-0.7 × 0.1-0.2 cm, terete, green, slightly twisted, sparsely pubescent. *Sepal* free, brownish-green, apex acute to obtuse, 3-veined (mid vein prominent, lateral veins obscure), pubescent; lateral sepals ovate, 0.3-0.4 × 0.13-0.25 cm, slightly oblique; dorsal sepals 0.3-0.4 × 0.17-0.24 cm, ovate, adnate to petals forming a hood above the column. *Petal* linear-oblong, 0.3-0.4 × 0.1-0.12 cm, whitish, semi-transparent, thin textured, 2-veined, apex acute to obtuse. *Labellum* 3-lobed, 0.25-0.35 cm long, yellowish-white to pale white, base occasionally with a greenish tinge; *hypochile* saccate, 0.1-0.13 × 0.1-0.14 cm with a pair of narrowly curved filiform appendage on each side; *mesochile* oblong 0.07-0.09 × 0.07-0.1 cm, margins incurved; *epichile* bilobed sub-squarish, 0.1-0.11 × 0.06-0.08 cm, apex slightly truncate. *Column* 0.1-0.17 cm long, pinkish-white to pale-white, pair of tiny wing-like projections prominent below the rostellum; *rostellum* bifid, slightly projecting, apex acute. *Stigma* bilobed, placed sub-laterally and well separated, stigma lobes orbicular to elliptic-orbicular; *anther cap* oblong-ovate, whitish-pink; *pollinarium* pale yellow, 0.1-0.2 cm long; *pollinia* 2, narrowly oblong-ovate (Fig. 1A-M).

Habitat

Terrestrial; found growing on the roadside area with leaf litter at the elevation of 1200 m.

Flowering and Fruiting

January-April

Distribution

India [Arunachal Pradesh, Assam, Sikkim (Present report), West Bengal], Indonesia, Thailand, Malaysia.

Specimens Examined

India, Sikkim, Gangtok, 6th mile, ± 1197m, 12.10.2022, M.Khana/00901 (Sikkim University Herbarium).

Zeuxine parvifolia (Ridl.) K.Schum. & Fedde, Just's Bot. Jahresb. 31(1):786. 1903 (publ. 1904); Seidenf. in Dansk Bot. Ark. 32(2):82.1978, p.p. (quoad plantum typicam), nom. illeg.; Ormerod in Harvard Pap. Bot. 23(2):274.2018; Av. Bhattacharjee *et al.* in Nelumbo 61(1):18 20.2019. *Hetaeria parvifolia* Ridl. in J. Straits Branch Roy. Asiat. Soc. 39:87.1903.

Terrestrial *herb*, upto 23 cm tall. *Rhizome* 4-5 cm long, creeping, brownish-green with reddish tinge. *Root* 1-5 cm long, brownish to greenish-white at the underside

of the succulent rhizome. *Stem* 5.0-9.0 × 0.2-0.4 cm, erect, brownish-green with a reddish tinge, internodes 4-5 sheathed by membranous leaf bases, glabrous. *Leaves* 2.0-3.2 × 1.2-2.1 cm, green, 4-8 often crowded at the stem apex, glabrous, oblong to ovate-lanceolate, margins entire, base cuneate, often withered during anthesis, 3-5 veined, midlobe prominent, lateral veins obscure; *petiole* 0.9-1.5 cm long, sheathing at base. *Inflorescence* a terminal raceme, lax, 7-many flowered, greenish to brownish-pink, densely pubescent. *Peduncle* 7-11cm long, pubescent with 2-3 sheathing *bracts*; sheathing bracts 0.6-1.0 cm long, 1-veined, villous, lanceolate. *Flower* 0.5-0.9 cm long, resupinate, upto 30 in a single spike; *pedicel* and *ovary* 0.5-0.7 cm long, brownish, villous entirely; *floral bracts* 0.5-0.8 × 0.2-0.4 cm, pinkish-brown, broadly lanceolate, acuminate at apex, margins ciliate, equal to or longer than the pedicel and ovary, villous, 2-3 veined. *Pedicel* and *ovary* terete to oblong, slightly twisted or curved, pubescent entirely. *Sepal* free, greenish-brown to pinkish-brown, lighter coloured near apex, villous with ciliate hairs at the margins; *dorsal sepal* 0.3-0.35 × 0.15-0.16 cm, ovate, apex subacute, concave, 1-veined. *Lateral sepal* 0.2-0.3 × 0.13-0.15 cm, ovate-lanceolate, apex obtuse to acute. *Petal* 0.25-0.3 × 0.1-0.14 cm, obliquely oblong, white, glabrous, apex obtuse, 1-veined. *Labellum* 0.2-0.3 × 0.1-0.13 cm, white to brownish-white, glabrous; *epichile* bilobed, lobes slightly divergent often with a narrow sinus between the lobules; lobules 0.6-0.7 × 0.2-0.3 cm, whitish, rectangular to sub-rectangular; *mesochile* 0.7-0.8 cm long, subtubular, whitish to brownish-white; *hypochile* 0.13-0.15 × 0.15-0.4 cm, brownish white, saccate with 2 subulate appendages on either sides, margins incurved. *Column* 0.14-0.18 × 0.12-0.15 cm, narrowly clavate, brownish-white to dull white; *rostellum* 0.1-0.12 cm long, bifid, subacute to obtuse at apex. *Anther* whitish-pink, 0.13-0.15 cm long, *Stigma* lobes 2, well separated, laterally placed on the column near the base of each rostellum. *Pollinarium* yellowish-white, 0.1-0.2 cm long with 2 sectile pollinia (Fig. 2A-N).

Habitat

Terrestrial; found growing with bamboo leaf litter on the roadside at the elevation of 1200 m.

Flowering and Fruiting

January-March

Distribution

India [Assam, Sikkim (Current report)], Malaysia, Singapore.

Specimens Examined

India, Sikkim, Gangtok, 6th mile, ± 1197m, 18.10.2022,
M.Khana/00902 (Sikkim University Herbarium).

Note

Only 2-3 individuals of both the species in vegetative stage were found and rescued and were maintained at

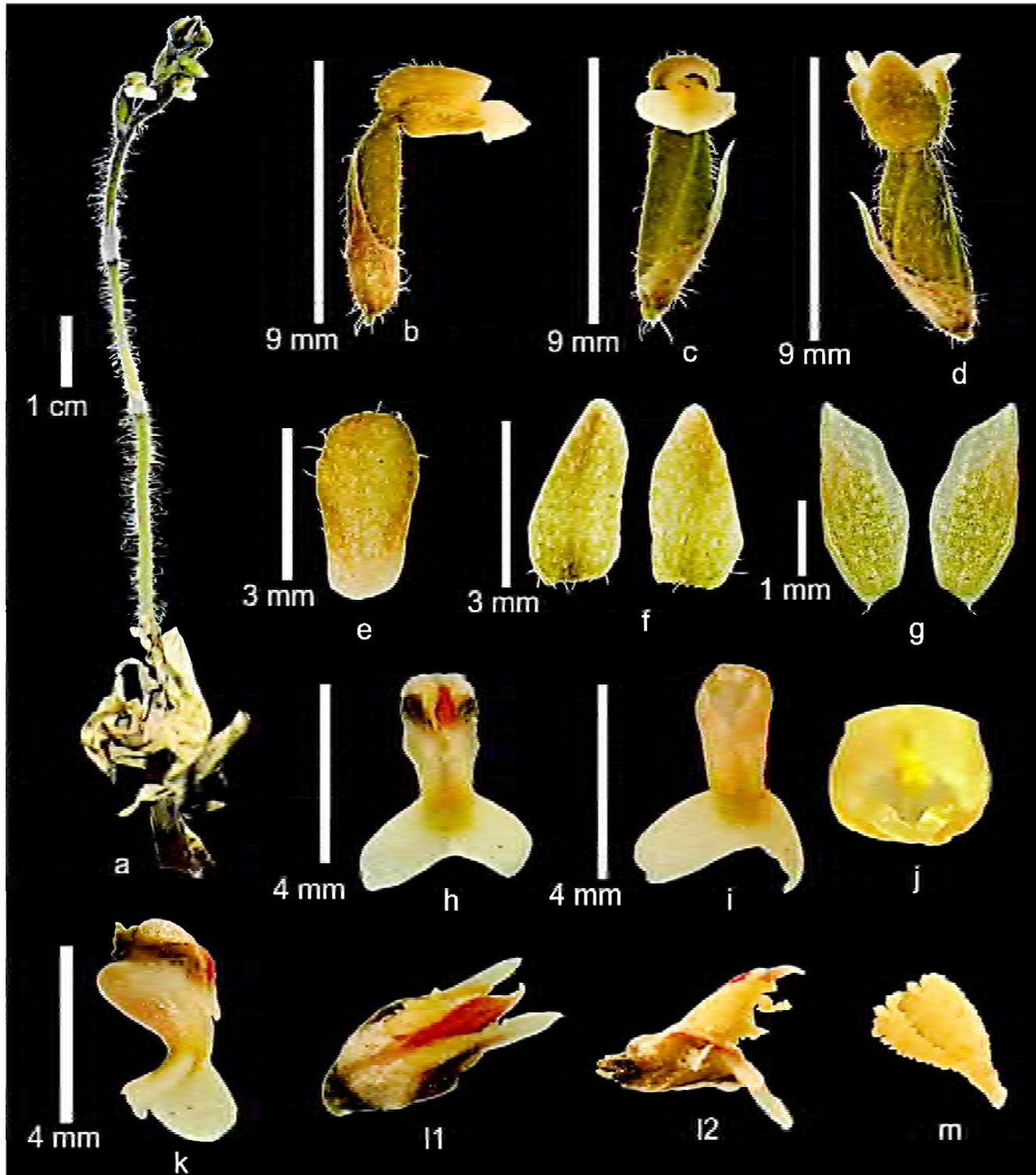


Fig. 1A-M. *Zeuxine clandestina*: A, Plant; B-D, Different views of the flower; E, Dorsal sepal; F, Lateral sepals; G, Petals; H, Front view of lip with column; I, Front view of the lip; J, Hypochile base showing pair of horn-like calli; K, Lateral view of the labellum and column; L1-L2, Front and side view of the column; M, Pollinia.

GBPNHIE SRC Orchidarium. As the species were found to grow in areas near human settlements, rapid

urbanization and increasing pollution have been causing immense threat to these rare orchids in their

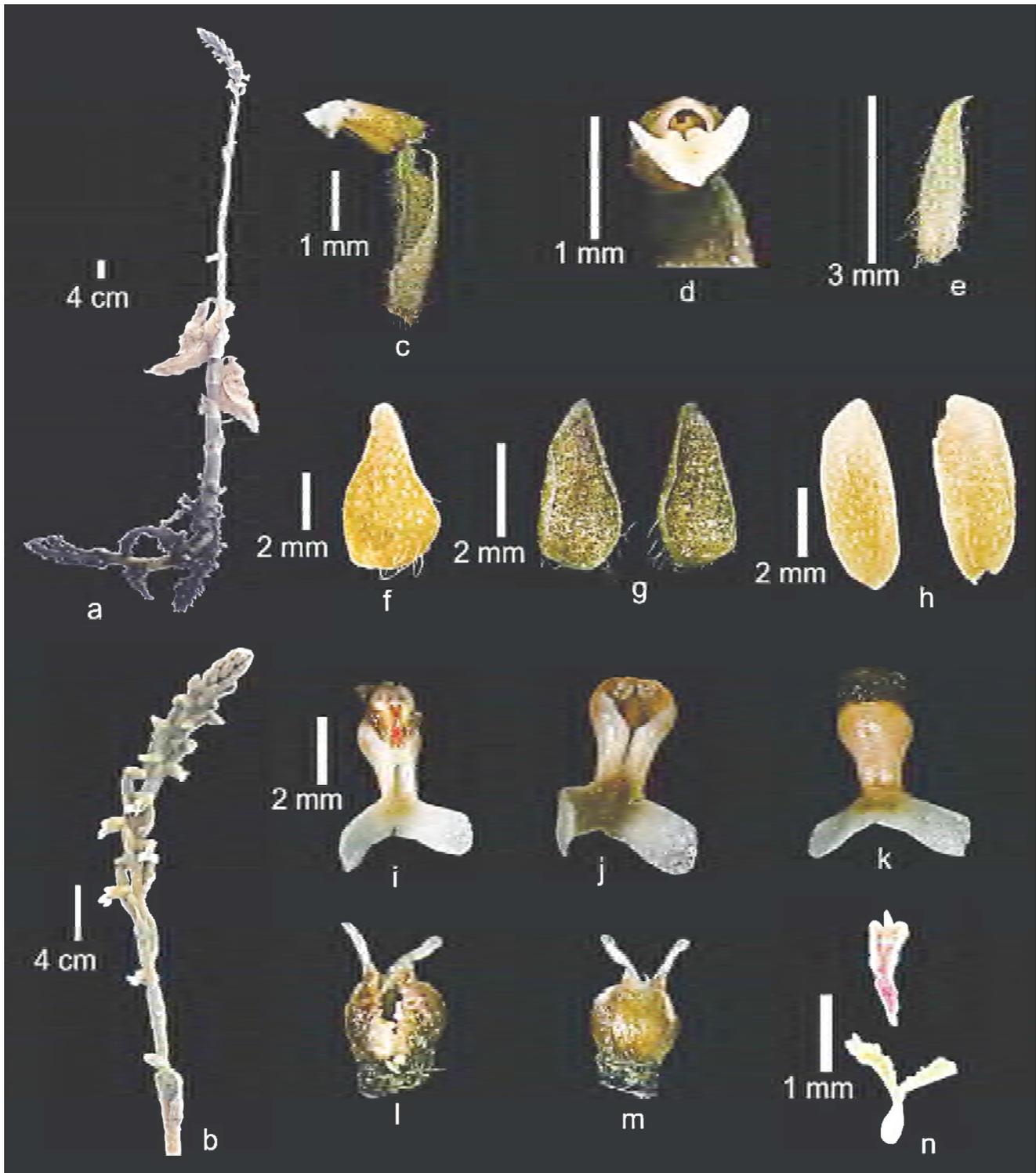


Fig. 2. A-N. *Zeuxine parvifolia*: A, Plant; B, Inflorescence; C-D, Side and front view of the flower; E, Bract; F, Dorsal sepal; G, Lateral sepals; H, Petals; I, Front view of labellum with column; J-K, Front and back view of the labellum; L-M, Front and back view of the column; N, Anther cap and pollinia.

natural habitats.

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