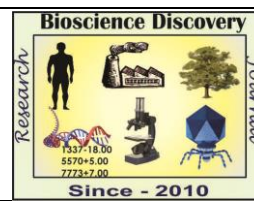


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**Research Article**



## Rediscovery and Range Extension of *Eulophia graminea* Lindl. (Orchidaceae)

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### Abstract

*Eulophia graminea* Lindl., a terrestrial orchid has been rediscovered from Ramgarh forest under Tilkonia Range (Kushmhi forest) of Gorakhpur Forest Division of Uttar Pradesh, after it was collected by C.L. Malhotra in 1964 from Chandanchoki area in Lakhimpur Kheri district of Uttar Pradesh. It has been rediscovered after about 47 years of its first and only report. This species stands as a new record for the north-eastern Uttar Pradesh (range extension) and rediscovery for the state. In this paper the species has been described with the help of suitable illustration and photographs along with field note, ecology and phenology to facilitate its identification and conservation measures by foresters and field botanists.

### INTRODUCTION

*Eulophia* R.Br. ex Lindl. is a large genus comprising about 250 (Mabberley, 2008) species, belonging to the subfamily Epidendroideae of family Orchidaceae. In India the genus is represented by 32 species (Deb and Imchen, 2008). It was first described by John Lindley in 1823. The name "Eulophia" was derived from the Greek word, referring to the presence of crested ridges of the labellum (lip) in most species. They occur in varying habitat conditions such as shady rainforests, open scrub and woodlands of tropical and subtropical countries of the world.

During the analysis of forest vegetation of north-eastern Uttar Pradesh, we came across a species of *Eulophia*, which was unknown to us, after survey of literature and herbarium records online available from Atlas of Florida Plants (<http://florida.plantatlas.usf.edu/SpecimenDetails.aspx?PlantID=4276>), it was subsequently identified as *Eulophia graminea* Lindl., hitherto unreported in any of the previous publications of the north-eastern Uttar Pradesh (Duthie, 1911; Kanjilal, 1933; Mishra, 1978; Saini, 2005a; Saini, 2005b; Saini *et al.*, 2010; Srivastava, 1976; Srivastava, 1981). However, on further investigation it is found that the species was collected for first time in April 1964 from

Chandanchoki area on the Mohana river bed in Lakhimpur-Kheri district of Uttar Pradesh and was reported as a new record for the flora of Upper-Gangetic plain (Malhotra, 1966). Since then, the species has not been recorded in any one publication from the Uttar Pradesh. However, Khanna (2017), has listed *E. graminea* in their checklist of angiospermic plants of Uttar Pradesh, but he has not mentioned its locality, occurrence or any other details about the species. Thus, the species stands as a new record for the flora of north-eastern Uttar Pradesh (range extension) and second authentic report for the state. It has been rediscovered after about 47 years of its first and only report. This species is native to the warmer parts of Asia from Pakistan east through India, Nepal, Burma and southern China to the Ryuku Islands of Japan. Within its native range, the species occurs in diverse habitats. In India, the species is known from about 21 states out of 29 states, such as Andhra Pradesh, Andaman and Nicobar Islands, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Jammu-Kashmir, Jharkhand, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Mizoram, Nagaland, Odisha, Sikkim, Tamilnadu, Tripura, Uttarakhand, Uttar Pradesh and West Bengal. The present report of this species from Ramgarh area under Tilkonia Range

(Kushmhi forest) of Gorakhpur Forest Division is of phytogeographical significance. Hence, a brief description, notes on ecology, distribution and phenological observations of the specimen are given here for easy identification of the taxon in the field. The voucher specimen has been deposited in the Angiospermic herbaria of the Department of Botany, of D.D.U. Gorakhpur University (DDUGKP-AH), Gorakhpur with deposit no. *DDUGKP-AH 036*.

**Field note & ecology:** *Eulophia graminea* Lindl. shows close resemblance with *Eulophia epidendreaea* (koen.) Scheltr. However, the former is quite smaller in all its parts than the later one. The species survives the dry season through their large pseudobulbs. This orchid was spotted growing among decaying leaves of the moist forest floor under the shade of understorey vegetation in sal-dominated forest (Figure 1) of Ramgarh area under Tilkonia Range (Kushmhi forest) of Gorakhpur Forest Division during the dry period of early summer (March–April) in the year 2011. These forests have been thoroughly explored during the course of forest trips from 2006–2012, but the species noticed only once. The species, evidently, is uncommon across the region. Due to high human pressure and disturbances of several types, the species habitat is largely fragmented which may culminate into local extinction of the species. Thus, its habitat needs special attention for its conservation in this region.

## MATERIALS AND METHODS

*Eulophia graminea* Lindl. plant was observed in flowering stage in the month of March, 2011. Collection as well as photographs was taken in the month of April, 2011 in Ramgarh forest under Tilkonia Range of Gorakhpur Forest Division, Uttar Pradesh. The plant was found growing on the sal-dominated forest floor densely covered with litter. The site is situated between latitude 26.720387°N and longitude 83.462505°E having elevation 84 meter from mean Sea level.

### Taxonomic Description

*Eulophia graminea* Lindl., Gen. & Sp. Orchid. Pl. 182. 1833; Hook. f. Fl. Brit. India 6: 2. 1890; King & Pantl. Ann. Roy. Bot. Gard. Calcutta 8: 176. Pl. 238. 1898; Gamble, Fl. Pres. Madras 1435 (1003). 1928; Abraham & Vatsala, Introd. Orchids 296. 1981; Vajravelu, Fl. Palghat Dist. 478. 1990; Sivarajan & Mathew, Fl. Nilambur 686. 1997; Kumar & Manilal, Orchid Memories 189. 2004 (Figure 2).

Terrestrial, autotrophic, pseudobulbous herb up to 90 cm tall. Pseudobulbs borne above ground or partially underground, erect, ovoid, conical, oblong, 3–14 × 2–8 cm, several noded, producing erect, aerial stems. Stems becoming leafless at the time of

flowering. The leafy stems bear about 5–7 leaves. Leaves linear, acute, 10–35 × 0.6–1.5 cm, the upper and lower leaves being smaller. Inflorescence 40–75 cm long, scapose, slender, erect, branched or unbranched, racemose or occasionally paniculate, bearing many flowers that are about 1.5–3.0 cm apart from each other on a glaucous, grey rachis; floral bracts linear-lanceolate, apex acuminate, 4–8 × 2 mm, shorter than ovary. Flowers pedicellate, 1.5–3 cm long, 2–3 cm in diam.; sepals and petals olive-green with dark green venation; lip white with purplish red lamellae. Dorsal sepal narrowly oblong to oblanceolate, 11–15 × 1.5–3 mm, apex acuminate; lateral sepals similar to dorsal sepal, usually slightly longer and slightly oblique. Petals curved outward above middle, narrowly ovate, 9–10 × 2.5–3 mm, apex shortly acuminate; lip obovate-oblong, 7–10 × 3–5 mm, spurred at base, 3-lobed at or below middle; lateral lobes small; mid-lobe orbicular, 3–5.5 × 4–5 mm, apex with an acute mucro; disk with 3–5 longitudinal lamellae, extending from base of lip almost to apex of midlobe, divided into fimbriate fringes on mid-lobe, white tinged purplish red; spur usually curving forward, cylindrical or slightly clavate, 3–3.5 mm, apex acute to obtuse. Column straight, slender, 4–5 mm long with a very short foot. Ovary 8–15 mm long. Fruit 25–35 × 12 mm, pendulous, ellipsoid, capsule.

**Common name:** Grass-Leaf Eulophia.

**Habitat:** Terrestrial, growing on the sal-dominated forest floor densely covered with litter.

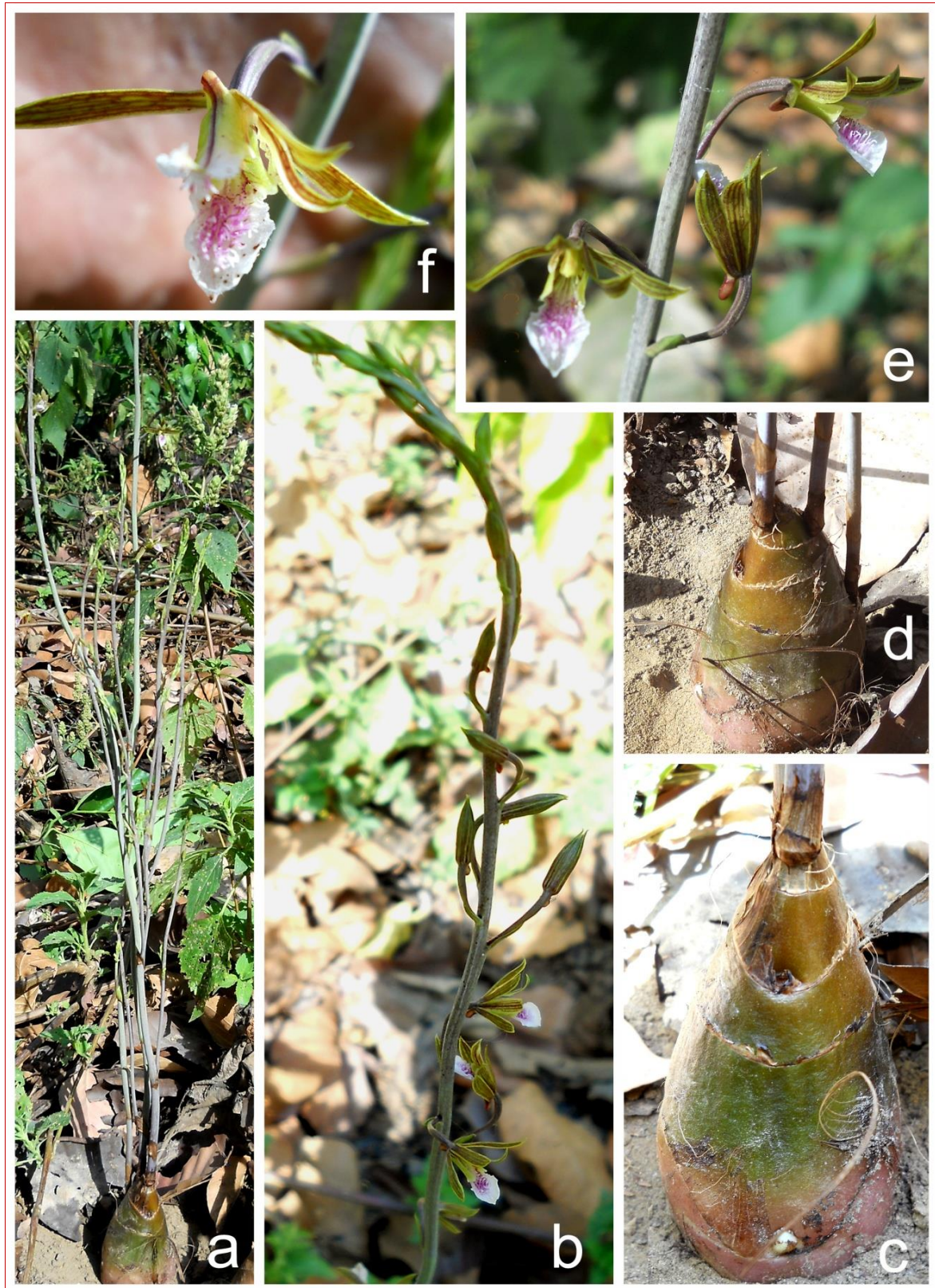
**Flowering & fruiting:** March–June.

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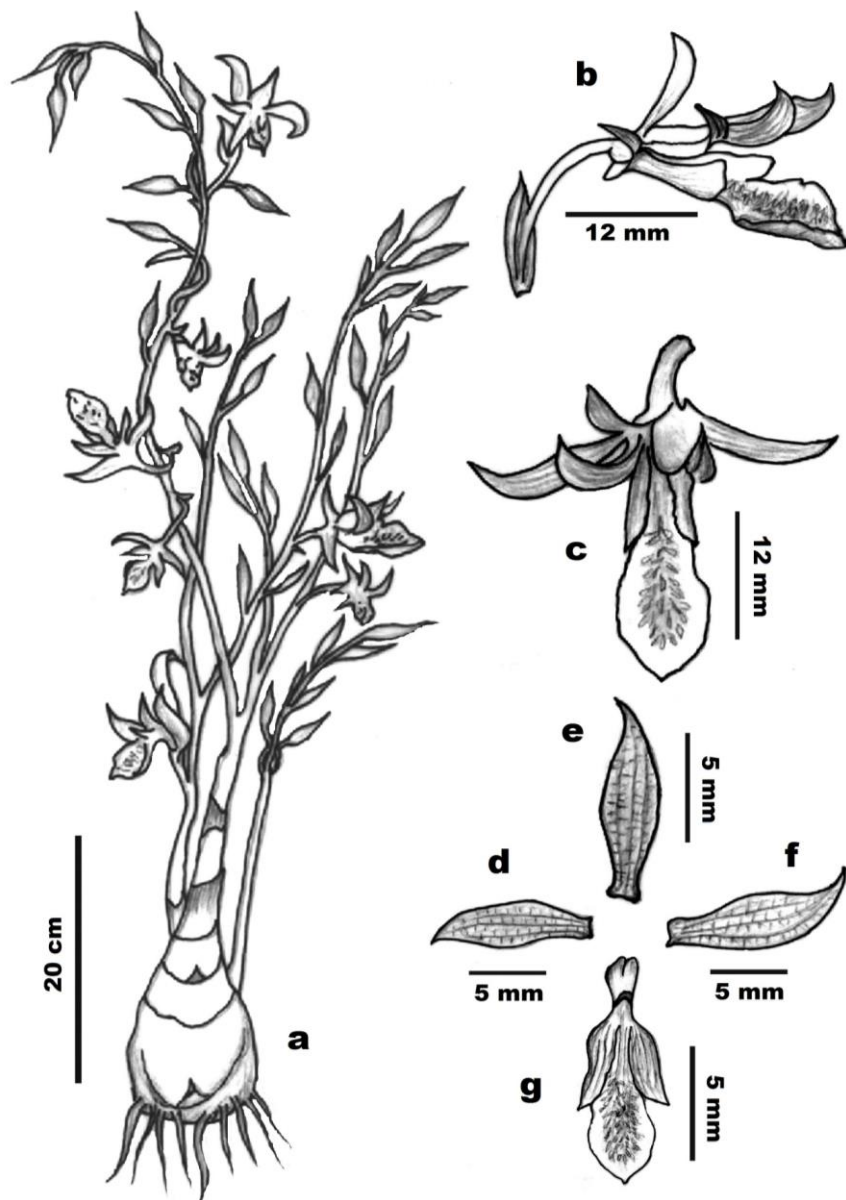
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**Fig. 1.** *Eulophia graminea* Lindl.

a. Plant in natural habitat. b. Inflorescence. c – d. Conical pseudo bulb. e. Group of flowers and their arrangement on floral axis. f. A single flower.



**Fig. 2.** *Eulophia graminea* Lindl. a. Plant with buds and flowers; b, c. Different views of flowers; d. Dorsal sepal e. Petal f. Lateral sepal. g. Lip.

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