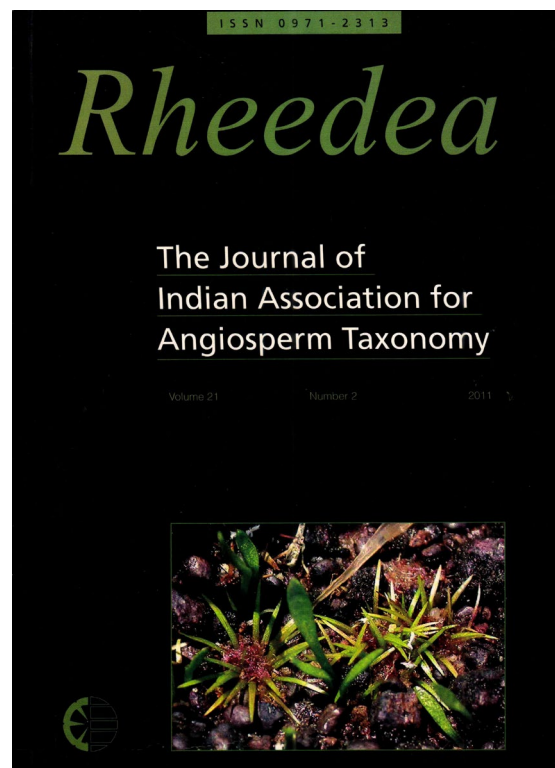




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Exacum tenue (Gentianaceae): A new record for India

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Abstract

Cotylanthera Blume (*Exacum* L.) is a less known genus in India found mostly in Himalayas (1000 – 2000 m). The rarity of the taxon is reflected from its non-representation in Indian Herbaria including CAL. The genus has confused taxonomists since its discovery till it was found to be nested in genus *Exacum* L. (Gentianaceae) in early part of this century. There are only four saprophytic and achlorophyllous species reported for the genus from Old World. *Exacum tenue* (Blume) Klack. is reported here as a new report for Indian Gentianaceae from Similipal, Odisha. Its occurrence in a geographically isolated region from its earlier reported localities is of ecological and phytogeographical significance.

Keywords: Achlorophyllous Saprophyte, *Exacum tenue*, Gentianaceae, India, New Record

Introduction

Cotylanthera Blume was considered a distinct genus consisting of tiny, almost leafless, saprophytic, achlorophyllous herbs with simple or sparsely branched stem. It is distributed from the Himalayas through Southeast Asia to New Guinea. King in July 1875 reported the occurrence of *Cotylanthera paucisquama* C.B. Clarke from Sikkim at 6000 ft. Hara (1975) relocated the species from the same locality after a lapse of about 100 years. There are no collections in most of the Indian herbaria including CAL which indicates the rarity and habitat specificity of the taxon. *Cotylanthera caerulea* Lace is the other Indian taxon of the genus which was collected from Delei Valley, at altitudes ranging from 3000 to 4000 ft. in Assam by Ward (Hara, *l.c.*).

Baillon (1891) reduced *Cotylanthera* to a section of *Exacum*, but did not make any combination for the species; hence not followed by the later authors. Klackenberg (2006) transferred all the species of *Cotylanthera* to *Exacum* based on molecular studies by Yuan *et al.* (2003) and by his own morphological observations. Hence, both the *Cotylanthera* species reported from India are now treated under *Exacum*. These species grow amidst fallen leaves on shady grounds and found from low land evergreen to upper montane rain forests. In addition, *E. nanum* is also reported from bamboo forests.

There are four species of saprophytic *Exacum* (= *Cotylanthera*) reported worldwide. The authors

spotted saprophytic, achlorophyllous population of this genus growing in Upper Barakamada at 1000 m, Similipal (20° 17' – 22° 10' N and 85° 57' – 86° 47' E), Odisha, under the evergreen canopy amidst leaf litter (Fig. 1). Critical analysis and scrutiny of literature revealed that it is not referable to the species recorded from the Indian subcontinent. Branched stem, 6 – 10 mm long flowers, oblong stamens that dehiscence through apical pore, length of pistils equating stamens and capitate stigma are the set of characters that confirm the identity of the specimen as *Exacum tenue* (Blume) Klack.

This report suggests that the maximum diversity of the saprophytic species, i.e. three out of reported four species occur in India and indicates the Indian centre of origin. Except the lectotype of *Cotylanthera yunnanensis* W.W. Sm. (= *E. paucisquama* (C.B. Clarke) Klack.), no other specimen of this saprophytic group is found at CAL. This tiny, inconspicuous saprophyte has probably been overlooked by collectors. More material accompanied with careful field observations are much needed for critical research of these rare herbs.

Taxonomic treatment

Since, three out of four species are reported from India, a diagnostic key is provided to facilitate easy identification. A description along with photographs are provided for *E. tenue*.



Fig. 1. *Exacum tenue* (Blume) Klack.: a. Habitat and Habit; b. Flower close-up view showing poricidal anthers

Key to species

1. Stem branched **E. tenue**
1. Stem never branched 2
2. Flowers 6 – 8 mm long; anthers sagittate, 3.5 – 5.5 mm long **E. paucisquamum**
2. Flowers 3 – 6 mm long; anthers oblong, 1.2 – 3 mm long **E. nanum**

Exacum tenue (Blume) Klack., Bot. Jahrb. Syst. 126: 477 – 481. 2006. *Cotylanthera tenuis* Blume, Bijdr.: 708. 1826; Figdor, Ann. Jard. Bot. Buitenz. 14: 213, tt. 16, 17. 1896; Schumann & Lauterbach., Fl. Dents. Schutz. Sudsee.: 500. 1900; Merrill, Philip. J. Sci. 1 Suppl.: 223. 1906; Merrill, Enum. Philip. Pl. 3: 317. 1923; Steenis, Trop. Natuur. 23(3): 52, f. 12, 1934; Backer & Bakh.f., Fl. Jav. 2: 438. 1965. *Eophylon tenellum* A. Gray, J. Linn. Soc., Bot. 2: 23. 1869. *E. lobbii* A. Gray, J. Linn. Soc., Bot. 2: 23. 1869. *Cotylanthera tenella* (A. Gray) Gilg. in Engler & Prantl, Nat. Pflanzenfam. 4(2): 64. 1895. **Fig. 1**

Tiny, saprophytic, achlorophyllous herb; stem branched, up to 10 cm long, glabrous, white; roots fleshy. Leaves opposite, minute, c. 5 mm long, sessile, scaly, membranous, appressed to the stem, linear, acute at apex. Flowers occasionally in two or solitary, terminal, 7 – 10 mm long, bluish purple, bracteate; bracts ovate, membranous. Calyx campanulate, c. 3 mm long, 4-lobed; lobes ovate, remotely serrate at margins, broadly acute at apex. Corolla 4-lobed; lobes oblong, 4 – 9 x 1.5 – 3 mm,

connate at base, obtuse (occasionally emarginate) at apex, glabrous. Stamens 4, 1.8 – 3 mm long; filaments as long as anthers, slender; anthers oblong, poricidal. Gynoecium with the style as long as or slightly exceeding the stamens; stigma capitate, white; ovary subglobose; ovules many.

Flowering & Fruiting: October – November.

Habitat: Occasional on decomposed litter, under moist shady condition in semi-evergreen forests (soil pH 6/acidic).

Distribution: India (Upper Barakamda, 1000 m, Similipal, Odisha); Java, N. Borneo, New Guinea, Philippines and Sumatra.

Specimen examined: INDIA, **Odisha**, Mayurbhanj district, Upper Barakamda, Similipal, 2.10.2007, A.K. Biswal 702 (IMMT Herbarium, Bhubaneswar).

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Literature Cited

Baillon, H.E. 1891. *Historire des Plantae*. Vol. 10. Librairie Hachette, Paris.

Hara, H. 1975. A new species of *Cotylanthera* (Gentianaceae) from Philippines, with a conspectus of the genus. *J. Jap. Bot.* **50**: 321 – 328.

Klackenberg, J. 2006. *Cotylanthera* transferred to *Exacum* (Gentianaceae). *Bot. Jahrb. Syst.* **126**: 477 – 481.

Yuan, Y.-M., Wohlhauser, S., Möller, M., Chasot, P., Mansion, G., Grant, J., Küpfer, P. &

J. Klackenberg 2003. Monophyly and relationships of the tribe Exaceae (Gentianaceae) inferred from nuclear ribosomal and chloroplast DNA sequences. *Mol. Phyl. Evol.* **28**: 500 – 517.

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