

Occurrence of *Gastrodia exilis* Hook.f. (Orchidaceae) in Darjiling Hills: a new record for Darjeeling and Sikkim Himalaya

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[Received 24.11.2017; Revised 13.12.2017; Accepted 15.12.2017; Published 31.12.2017]

Abstract

Recent collection of *Gastrodia exilis* Hook.f. [Orchidaceae] from the temperate habitat of Senchal Wildlife Sanctuary in Darjiling Hills is a new record of its occurrence for Darjiling and Sikkim Himalaya. The species belongs to the group of Myco-heterotrophs and commonly called as "Ghost Orchid".

Key words: *Gastrodia exilis*, Extended distribution, Darjeeling-Sikkim Himalaya, West Bengal

INTRODUCTION

Senchal Wildlife Sanctuary, located at 26°59' 38" N and 88°15'55" E with an area of 38.6 km² is situated in Darjeeling hills with prevailing temperate climate. This sanctuary was established in 1915 with an altitudinal range of 1500 m (at Rampuria Fv) to 2600 m (at Tiger Hill), presents wide variety of ecological niche to support varied species. The region is floristically surveyed by prominent taxonomists that dates back to 19th century (Hara 1966, 1971; Bhujel 1996; Das 1986, 2004; Lama 2004; Rai 2001; Rai 2006; Yonzon *et al.* 2012). Regular field trips were made during June 2014 to August 2017 for documenting mycotrophic orchid (Ghost Orchid: Naresh Swami 2016) in Senchal Wildlife Sanctuary and the collected specimens were processed into mounted herbarium sheets following Conventional techniques (Jain & Rao 1977). Specimen were identified by matching with the pre-identified specimen at the herbarium of Llyod's Botanical Garden, Darjeeling as well as consulting published literature including Hooker (1890), King & Pantling (1898), Joseph *et al.* (1980), Banerji (1982), Yonzon *et al.* (2012) and Naresh Swami (2016). The plant was identified as *Gastrodia exilis* Hook.f. of Orchidaceae. Voucher specimen has been deposited in the herbarium of Llyod's Botanical Garden and at the Herbarium of Botany Department, St. Joseph College, Darjeeling. Data mining reveals the occurrence of this species as a new record for the Darjeeling and Sikkim parts of the Himalayas. A brief description of the species along with sketches is provided here for its easy identification.

Taxonomic treatment

Gastrodia exilis Hook.f., Fl. Brit. Ind. 6: 123. 1890; Joseph, Abbareddy & Haridasan, Bull. Bot. Surv. Ind. 22 (1-4): 203 – 205. 1980; Naresh Swami, Terrestrial Orchid. 206. 2016. [PLATES - I & II]

Gastrodia siamensis Rolfe ex Downie in Bull. Misc. Inform. Kew 1925: 416. 1925.

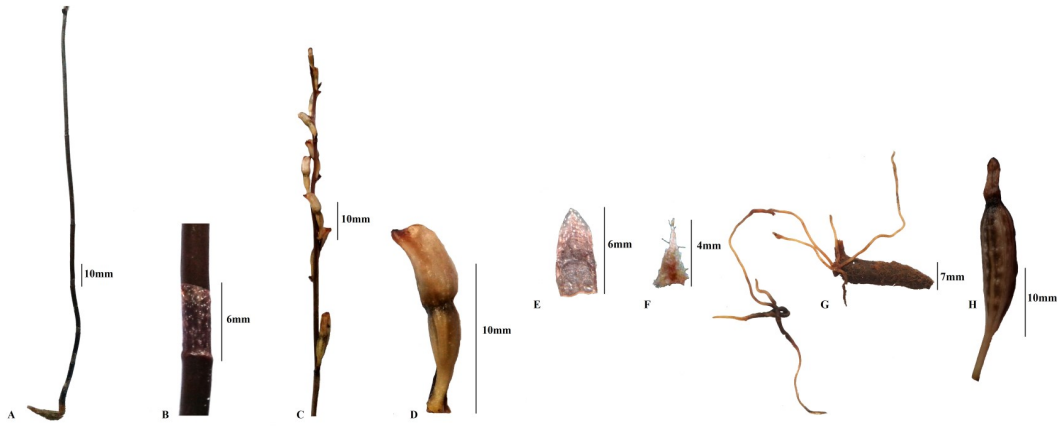


PLATE – I. *Gastrodia exilis* Hook.f.: A. Scape; B. Sheathing Bract; C. Inflorescence; D. Single Flower; E. Floral Bract; F. Scale (from tuber); G. Tuber; H. Capsule.

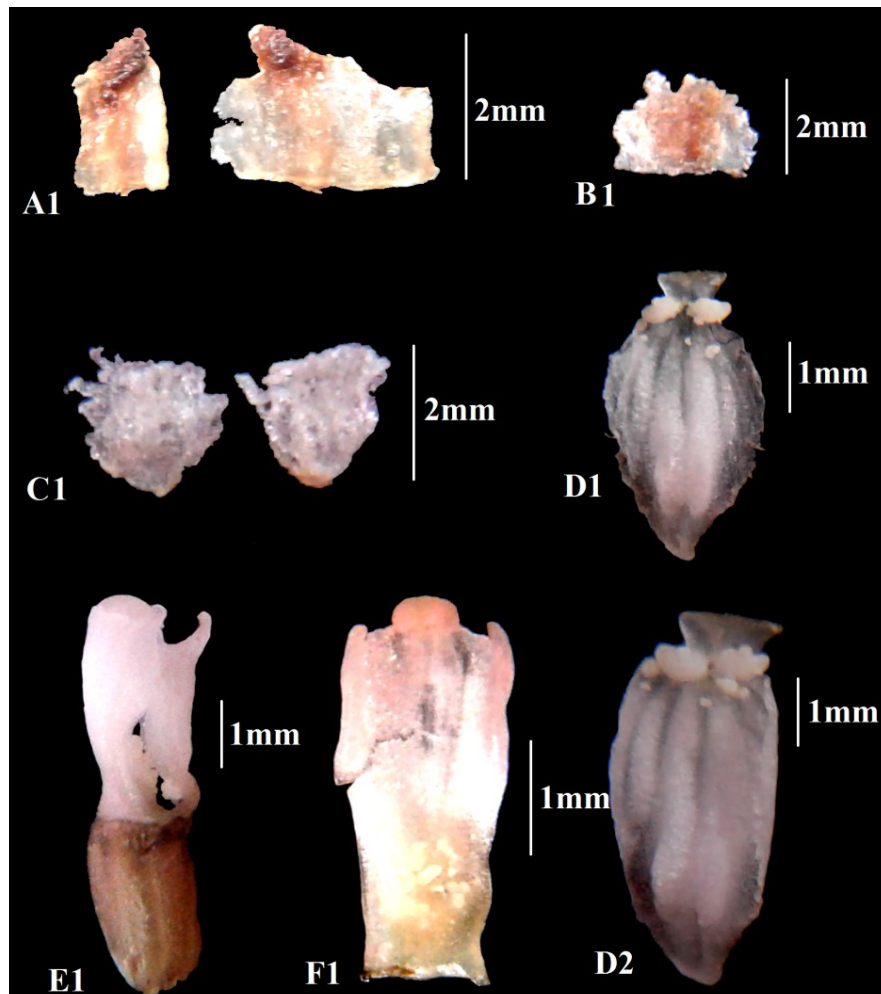


PLATE II. *Gastrodia exilis* Hook.f.: A1. Lateral sepal lobes; B1. Dorsal sepal lobe; C1. Lateral petals; D1 & D2. Lip; E1. Column with ovary; F1. Column (ventral side)

Gastrodia hayatae Tuyama in J. Jap. Bot. 17: 580. 1941

Terrestrial, leafless, mycoheterotroph, 8 – 50 cm tall, fragile. Tubers oblong-obovate, single, horizontal, 0.8 – 1.5 cm broad and 1.5 – 3.5 cm long, densely hairy, with 2 – 3 buds and scales in 2 – 5 concentric rows, scales brown, triangular (ovate)-lanceolate, 1 mm broad and 4 mm long, sparsely hairy, apex acuminate; roots few; Scape 6 – 36 cm high, erect, internodes 3 – 12, with a faint groove becoming prominent towards the apical end, glabrous, dark brown, lower internodes shorter (8 – 20 mm long) with imbricating bracts and growing longer above (4–8 cm long) with tubular sheathing bracts; sheathing bracts 2–7 mm long, apex obtuse-subacute, reddish brown, transparent, sessile glands present (glands drying white), persistent; Inflorescence terminal, erect, 3 – 15 cm long, 3–16 flowered lax raceme; Floral bracts ovate-oblong, 2.5 mm broad and 6mm long, shorter than or exceeding pedicel, margin entire, apex acute, brown, white dotted, glabrous, persistent; Flowers 1.4 – 2 cm long (including ovary and pedicel), sub-erect, tubular, slightly curved, white, glabrous; pedicel ca 5mm long, glabrous, ovary ca 6mm long, obovate (in flower), triangular in cross section, sparsely gland dotted; Sepals connate into a tube, 3 lobed at the mouth, tube ca 5mm long, lateral sepals lobe ca 1 – 2 mm long, triangular, apex oblique, crisped, 3–4 nerved, dorsal sepal lobe ovate, ca 2mm long, slightly hooded, margin crisped at the apex; Lateral petals inserted in the tube alternating with the sepal lobes, 1.5 mm broad and 2 mm long, obovate, apex obtuse, margin fimbriate, 1 nerved; Lip 2.5 mm broad and 4 mm long, free, equal or slightly exceeding column, ovate, acute, margin irregularly, finely denticulate, 5 nerved, with two conspicuous, parallel lamellae towards the apex and 2 reniform calli towards the base; Column ca 2 mm broad and 3mm long, winged, apically lobed with two erect, acute teeth; anther terminal, 2 celled; pollinia granular; stigma at the base of the column; Capsule obovoid, fusiform, 3–4cm long (including pedicel), sub-erect, faintly warted, dehiscing by 6 longitudinal sutures; Seeds linear, tapered towards both end, fusiform, 1 mm long.

Exsiccates: West Bengal, Darjeeling Hills, Labdah Basti, 12.08.2017, Norbu Sherpa & Nayan Thapa, 121 A (SJC BH), 121B (LBH), 26° 57' 45.59" N and 88° 20' 42.94" E; Alt. 1587±10 m.

Local Distribution: Labdah Basti, Darjeeling, West Bengal.

Global Distribution: India (Meghalaya, Kerala, West Bengal), Thailand and Sumatra.

LITERATURE CITED

- Banerji, M.L., 1982. *Orchids of Nepal*. Bishen Singh Mahendra Pal Singh, Dehra Dun.
- Bhujel, R.B. 1996. *Studies on the Dicotyledonous Flora of Darjeeling district*, Ph.D. Thesis, University of North Bengal, Siliguri.
- Das, A.P. 1986. *On the floristic and palynological survey of Darjeeling and adjoining places*. Ph.D. Thesis, Calcutta University, Kolkata.
- Das, A.P. 2004. Floristic studies in Darjiling hills. *Bull. Bot. Surv. India* 46(1-4): 1 – 18.
- Hara, H. 1966, 1971. *The Flora of Eastern Himalayas*, 1st & 2nd, University of Tokyo, Japan.
- Hooker, J.D. 1890. *The Flora of British India*. Vol. 6. L. Reeve & Co. Ltd., London.
- Jain, S.K. & Rao, R.R. 1977. *Field and Herbarium methods*. Today and Tomorrow's Printers and Publisher, New Delhi.
- Joseph, J.; Abbareddy, N.R. & Haridasan, K., 1980. *Gastrodia exilis* Hook.f. – A Rare and Interesting Orchid from Khasi and Jaintia Hills, Meghalaya, India. *Bull. Bot. Surv. India*. 22 (1-4): 203 – 205.

- King, G. & Pantling, R., 1898. The Orchids of Sikkim Himalaya. *Ann. Royal Bot. Gard. (Calcutta)* 8: 1 – 342 & Pl. 1 – 144.
- Lama, D. 2004. *Taxonomical Distributional and Ecological Studies of Acer L. (Aceraceae) in the Darjiling and Sikkim Himalayas*. Ph.D. Thesis, North Bengal University, Siliguri.
- Naresh Swami, N. 2016. *Terrestrial Orchids*. ATREE Publisher, Bangalore. ISBN 978-93-5258-377-5.
- Rai, P.C. 2001. *Survey of the Flora of Neora Valley National Park in Darjeeling, West Bengal*. Ph.D. Thesis, North Bengal University, Siliguri.
- Rai, U. 2006. *Characterization of Plants Biodiversity in Darjiling Hills Using Remote Sensing Techniques*. Ph.D. Thesis, North Bengal University, Siliguri.
- Yonzone, R.; Lama, D.; Bhujel R.B.; Gogoi, K. & Rai, S., 2012. Taxonomic assessment on the reported orchid species of Darjeeling district from flora of Bhutan, the Orchids of Bhutan – A review. *Int. J. Pharm. Life Sci.* 3(4): 1590 – 1606.