

LESSER KNOWN ORCHIDS OF HIMACHAL PRADESH (NORTHWEST HIMALAYAS): III - GENUS *HEMIPILIA* LINDL.

Jagdeep Verma, Kranti Thakur¹, Jaspreet K Sembi², Kusum³, and Promila Pathak²

Department of Botany, Sardar Patel University, Mandi- 175 001, Himachal Pradesh, India

¹Department of Botany, Shoolini Institute of Life Sciences and Business Management, Solan- 173 212, Himachal Pradesh, India

²Department of Botany, Panjab University, Chandigarh- 160 014, Chandigarh, U.T., India

³Department of Botany, St. Bede's College, Navbahar, Shimla- 171 002, Himachal Pradesh, India

Abstract

The orchid genus *Hemipilia* Lindl. *sensu stricto* is represented by a single species, *H. cordifolia* Lindl. in Himachal Pradesh, NorthWest Himalayas. It is sparsely distributed in the mid Himalayan zone in shady to semi-shady and moist floors of coniferous and mixed forests. The present paper describes the species based upon its collections from this state, and provides details on its distribution, habitat, phenology, and threats faced by natural populations.

Introduction

The Himalayas represent one of the most diverse orchid habitats in the country with more than 810 species including 116 endemics (Singh *et al.*, 2019). During field surveys across NorthWest part of the Himalayan range, we came across many orchid species, majority of which were monsoon blooming terrestrials. Earlier, a total of 85 species were recorded from within the geographical limits of the state of Himachal Pradesh (Verma *et al.*, 2013; Vij *et al.*, 2013). Subsequently, with four more new records, the total number of documented orchid species in the state has been now raised to 89 (Jaryal and Pathak, 2021; Kumar *et al.*, 2020; Sharma *et al.*, 2019; and Singh *et al.*, 2013). Many of these species are well known for their ornamental importance and/or therapeutic properties, but a few others are of no much direct use, and are therefore of a little interest to horticulturists and herbalists (Pathak *et al.*, 2010; Prakash and Pathak, 2019, 2020; Verma *et al.*, 2014, 2015). The present communication presents notes on the occurrence, habitat characteristics, and phenology of one such lesser known orchid species, *Hemipilia cordifolia* Lindl., which is the only representative of genus *Hemipilia* Lindl. *sensu stricto* in the state. The epithet '*cordifolia*' refers to heart-shaped leaf of this taxon.

The genus *Hemipilia* Lindl. is now having a wider circumscription with some allied genera, which were earlier treated as independent, have merged to it (POWO, 2023; Wang *et al.*, 2022). *Ponerorchis* Rchb.f. is one such genus occurring in Himachal Pradesh. However, the latter has not been included under the scope of present manuscript, as details of its distribution

in the state have already been presented by Verma *et al.* (2015).

Material and Methods

Field surveys were conducted in Himachal Pradesh (2004-2010), and information on the morphological features, distribution, habitat characteristics, and phenology of many orchids including *Hemipilia cordifolia* Lindl. was collected. Field photographs were taken and hand drawings prepared using fresh material (Figs. 1-2). The plants were described using fresh field material and identified following standard Floras (Deva and Naithani, 1986; Duthie, 1906). The information on this taxon was also supplemented by surveying relevant literature available on its taxonomy and distribution (Chowdhery and Wadhwa, 1984; Deva and Naithani 1986; Duthie, 1906; Vij *et al.*, 2013; Singh *et al.*, 2019).

Species Description

Hemipilia cordifolia Lindl., Gen. Sp. Orchid. Pl. 296. 1835; Hook.f., Fl. Brit. India 6: 167. 1890; Collett, Fl. Siml. 506. t. 167. 1902; Duthie, Ann. Roy. Bot. Gard. (Calcutta) 9: 200. t. 150. 1906; Chowdhery & Wadhwa, Fl. Himachal Pradesh 3: 687. 1984; Deva & Naithani, Orch. Fl. N. W. Himal. 153. t. 78. 1986. Vij *et al.*, Orchids of Himachal Pradesh. 109. *Hemipilia cruciata* Finet, Bull. Soc. Bot. France 44: 421. 1897. *Hemipilia cordifolia* var. *yunnanensis* Finet, Rev. Gén. Bot. 13: 510. 1901. *Hemipilia formosana* Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30 (1): 354. 1911. *Hemipilia yunnanensis* (Finet) Schltr., Notes Roy. Bot. Gard. Edinburgh 5: 98. 1912. *Hemipilia bulleyi* Rolfe, Notes Roy. Bot. Gard. Edinburgh 8: 27. 1913.

Morphological Description

Terrestrial *herb*. *Tubers* ovoid to sub-globose, unequal, 10-25 × 8-12 mm. *Stem* stout, glabrous. *Leaf* solitary, fleshy, ovate-cordate, obtuse or acute, amplexicaul, lower surface purplish, upper surface dark green with purple spots, 5-10 × 5-6 cm. *Inflorescence* raceme, 5-6 cm long, having 3-10 laxly arranged flowers. *Floral bracts* small, lanceolate; *Flowers* ca. 1.5 cm across, purple. *Sepals* subequal; the dorsal one erect, ovate-lanceolate, obtuse, 7-12 × 3-4 mm; the laterals falcately oblong and spreading. *Petals* slightly shorter than sepals, obliquely ovate, subacute, erect, forming a hood with the dorsal sepal. *Lip* variable in outline, 7-9 × ca. 5 mm, tri-lobed (lateral lobes sometimes reduced), adaxially finely papillate, apical margin fimbriate; lateral lobes shorter, rectangular, triangular, or suborbicular, margin entire to minutely incised; mid-lobe rectangular to ovate-orbicular, margins diverging, entire to slightly serrate. *Spur* straight and horizontal or slightly upcurved toward apex, 10-15 mm, apex obtuse. *Column* ca. 2.5 mm; *rostellum* ca. 1 mm. *Capsule* ca. 2.5 cm.

Occurrence in Himachal Pradesh

Solan (Chail), Shimla (Elysium Hill, Mashobra), Sirmaur (Shillai, Dallyanoo near Haripurdhar). Rare.

General Distribution

India (Himachal Pradesh, Uttarakhand, Sikkim), Bhutan, Nepal, China, Myanmar.

Phenology

Fresh plants start arising out of soil from the underground tubers during the months of May-June. A short vegetative phase is followed by flowering (July-August)



Fig. 1. *Hemipilia cordifolia* Lindl.: A plant growing in its natural habitat.

and fruiting periods (August-September). Subsequently, fruits dehisce and the whole above-ground plant parts withers before the onset of winters.

Habitat Characteristics

The plants were observed growing in mid Himalayan region (1,500-2,200 m) on shady, semi-shady and moist floors of kail, deodar, oak or mixed forests. They also inhabit rocky slopes in forests where grasses represent the dominant under-vegetation along with ferns. Another orchid species, *Cymbidium macrorhizon*, occasionally shares its habitat.

Threats to Natural Populations

Loss of habitat is the main factor responsible for shrinkage of its natural populations. The forests are being cleared or fragmented for a variety of reasons (house construction, expansion of agricultural and horticultural fields, hydroelectric power project construction etc.). Moreover, many Himalayan species are also facing threat due to colonization of some invasive taxa, especially *Lantana camara* and *Parthenium hysterophorus* (Verma *et al.*, 2021). Therefore, natural habitats should be protected for effective conservation of various species.

Specimen Examined

BSD: B. Balodi 77146, B. D. Naithani 63772, R. S. Karki 82224; PAN: S. P. Vij & J. Verma 294.

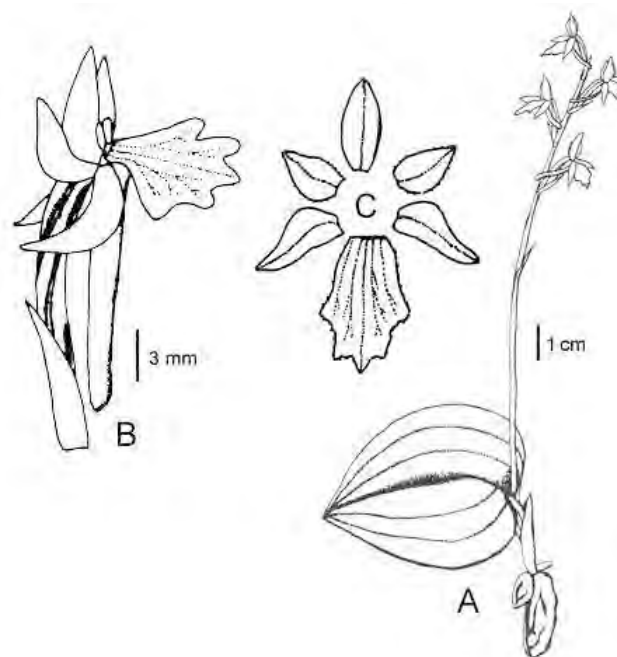


Fig. 2A-C. Hand drawings of *Hemipilia cordifolia* Lindl.: A, General morphology of the plant; B, Flower; C, Floral parts spread (not to scale).

References

- Chowdhery, H. J. and B. M. Wadhwa. 1984. *Flora of Himachal Pradesh*. Vol. 3. Botanical Survey of India, Calcutta, India.
- Deva, S. and H. B. Naithani. 1986. *The Orchid Flora of North West Himalaya*. Print and Media Associates, New Delhi, India.
- Duthie, J. F. 1906. The orchids of North Western Himalaya. *Ann. Royal Bot. Gard. Calcutta*, **9**(2): 81-211.
- Jaryal, Pratibha and Promila Pathak. 2021. *Peristylus fallax* Lindl. (Orchidaceae)- A new record for the flora of Himachal Pradesh, India. *Nelumbo*, **63**(2): 76-79.
- Kumar, P., H. Singh, and J. S. Jalal. 2020. A note on *Corollorhiza trifida* Chatel.: A lesser known partial myco-heterotrophic orchid from Himachal Pradesh, Western Himalaya, India. *Indian For.*, **146**(6): 565-66.
- Pathak, Promila, A. Bhattacharya, S. P. Vij, K. C. Mahant, Mandeep K. Dhillon, and H. Piri. 2010. An update on the medicinal orchids of Himachal Pradesh with brief notes on their habit, distribution, and flowering period. *J. Non Timber Forest Prod.*, **17**(3): 365-72.
- POWO. 2023. *Plants of the World Online*. Facilitated by the Royal Botanic Gardens, Kew. (<http://www.plantsoftheworldonline.org>) Retrieved 10 November 2023.
- Prakash, Ankush and Promila Pathak. 2019. Orchids of Water Catchment Wildlife Sanctuary, Shimla (Himachal Pradesh), NorthWestern Himalayas: Their diversity, status, indigenous uses, and conservation status. *J. Orchid Soc. India*, **33**: 65-77.
- Prakash, Ankush and Promila Pathak. 2020. Effects of different concentrations of NPK on vegetative growth parameters of a floriculturally important epiphytic orchid, *Dendrobium chrysanthum* Wall. ex Lindl. *J. Orchid Soc. India*, **34**: 117-21.
- Sharma, A., N. Singh, and P. Kumar. 2019. Rediscovery of *Calanthe davidii* (Orchidaceae) after 11 decades in the Western Himalaya, India. *J. Threat. Taxa*, **11**(10): 14368-72.
- Singh, G., I. D. Rai, G. S. Rawat, and G. S. Goraya. 2013. *Neottia pinetorum* (Orchidaceae): A new record to the flora of Himachal Pradesh, India. *Indian For.*, **139**(6): 566-67.
- Singh, S. K., D. K. Agrawala, J. S. Jalal, S. S. Dash, A. A. Mao, and P. Singh. 2019. *Orchids of India: A Pictorial Guide*. Botanical Survey of India, Kolkata, India.
- Verma, J., K. Thakur, and S. P. Vij. 2013. On the occurrence of an interesting leafless orchid *Neottia listeroides* Lindl. in Himachal Pradesh, NorthWestern Himalaya, India. *J. Threat. Taxa*, **5**(11): 4601-03.
- Verma, J., Jaspreet K. Sembi, and Promila Pathak. 2015. Lesser known orchids of Himachal Pradesh (NorthWest Himalaya): II- Genus *Galearis* Raf. and *Ponerorchis* Rchb. f. *J. Orchid Soc. India*, **29**: 103-07.
- Verma, J., Kusum, K. Thakur, and S. P. Vij. 2014. Lesser known orchids of Himachal Pradesh: I- Genus *Zeuxine* Lindley. *Pleione*, **8**(1): 1-8.
- Verma, J., K. Thakur, Jaspreet K. Sembi, Kusum, and Promila Pathak. 2021. On the occurrence of a leafless *Cymbidium* in Western Himalaya. *J. Orchid Soc. India*, **35**: 147-51.
- Vij, S. P., J. Verma, and C. Sathish Kumar. 2013. *Orchids of Himachal Pradesh*. Bishen Singh Mahendra Pal Singh, Dehradun, India.
- Wang, X. M., Y. Tang, P. H. Peng, and H. Peng. 2022. *Hemipilia avisoides* (Orchidaceae), a new species from Sichuan Province, China. *PhytoKeys*, **213**: 1-18.