

Hemipilia basifoliata (Orchidaceae) – an addition to the orchid flora of India

Krishna Chowlu¹, Jambey Tsering^{2*}, Abbareddy Nageswarao Rao³,
K. Ahmed Kabeer¹ & Ajit Ray¹

¹Botanical Survey of India, Arunachal Pradesh Regional Centre, India; ORCID: KCh <https://orcid.org/0000-0002-6006-1900>, KAK <https://orcid.org/0000-0002-7547-1363>, AR <https://orcid.org/0009-0009-2242-7121>

²Orchid Research Centre, Environment, Forest & Climate Change, India; ORCID: JT <https://orcid.org/0000-0003-3355-4213>

³Rajarajeswari Nagar, Tangellamudi, India; ORCID: ANR <https://orcid.org/0000-0001-8882-8045>

* corresponding author (e-mail: jamserng@gmail.com)

Abstract. The rare temperate orchid *Hemipilia basifoliata* (Finet) Y.Tang & H.Peng is reported here as a new species in the flora of India from Lower Dibang Valley District in the state of Arunachal Pradesh (north-eastern India). This small-sized orchid was found growing at 2400 m asl (28°14'7"N, 95°53'55"E) in June 2024. Its morphological description as well as photographs of plant habit and dissected floral parts are provided.

Key words: *Hemipilia basifoliata*, Arunachal Pradesh, Eastern Himalayas, Lower Dibang Valley, new record, India

1. Introduction

During routine floristic research in the Lower Dibang Valley District of Arunachal Pradesh, the first author collected a few plants of the genus *Hemipilia* Lindl., earlier known as *Ponerorchis* Rchb.f. The collected specimens looked morphologically similar to *Hemipilia puberula* (King & Pantl.) Y.Tang & H.Peng, a species endemic to the East Himalayas, but differed in having a higher number of flowers (4-6) and glabrous sepals than *H. puberula* with fewer flowers (2-3) and pubescent sepals (abaxially). After a critical revision of specimens, perusal of relevant literature (King & Pantling 1898; Pearce & Cribb 2002; Tang *et al.* 2015; Tam *et al.* 2017; Singh *et al.* 2019; eFloras 2024; POWO 2024), and comparison of the protologues and original drawings of type material (Finet 1901), the species was identified as *Hemipilia basifoliata* (Finet) Y.Tang & H.Peng, an extremely rare plant, which was earlier reported only from south-central China. Thus, the species is reported here as a new addition to the orchid flora of India. Its morphological description

and photographs of dissected floral parts are provided below.

2. Taxonomic description

Accepted name: *Hemipilia basifoliata* (Finet) Y.Tang & H.Peng, BioMed Centr. Evol. Biol. 15(96): 26. 2015.

Synonyms: *Peristylus tetralobus* Finet f. *basifoliatus* Finet, Rev. Gen. Bot. 13: 525. 1901. *Orchis basifoliata* (Finet) Schltr., Notes Roy. Bot. Gard. Edinburgh 5: 95. 1912. *Amitostigma basifoliatum* (Finet) Schltr., Repert. Spec. Nov. Regni Veg. Beih. 4: 92. 1919. *Ponerorchis basifoliata* (Finet) X.H.Jin, Schuit. & W.T.Jin, Molec. Phylogen. Evol. 77: 51. 2014.

Description: Plants 10-15 cm tall. Tuber subglobose, 5-8 mm long. Stem with 2 tubular sheaths at base. Leaf 1, located at middle of stem, green, sessile, somewhat porrect, narrowly oblong-lanceolate, conduplicate, 5-7 cm × 0.5-1 cm, apex acute. Inflorescence terminal, laxly 4-6-flowered, somewhat secund; peduncle ebracteate, 5-7 cm long; rachis 3-6 cm long, green, hairless;



Fig. 1. *Hemipilia basifoliata* (Finet) Y. Tang & H. Peng

floral bracts ovate-lanceolate, 3–6 mm long, equal or shorter than ovary, apex acute to acuminate. Flowers secund, white, often tinged pinkish red, with purple spots on lip; ovary and pedicel 5–7 mm long. Sepals 3–3.5 mm × ca. 1.7 mm, 1-veined, apex obtuse; dorsal sepal ovate-oblong, concave; lateral sepals spreading to reflexed, oblong, oblique. Petals connivent with dorsal sepal and forming a hood, rhombic-ovate, 2.5–3 mm × ca. 1.5 mm, 1-veined, apex acute. Lip broadly obovate, 8–11 mm × 7–8 mm, 3-lobed at middle; lateral lobes oblong, slightly falcate, 4–6 mm × ca. 2.5 mm, apex irregularly obtuse-toothed; mid-lobe obovate-flabellate, 4–5 mm × 4–6 mm, base cuneate, apex divided into 2 small lobules; spur pendulous, straight to slightly incurved, cylindrical, 2–3 mm long, apex obtuse. Column very small, ca. 1.8 mm long.

Flowering: August–September.

Habitat: Terrestrial on moss-covered rocks on slopes; elevation 2400 m.

Specimen examined: India, Arunachal Pradesh, Lower Dibang Valley, Mayodia (28°14'7"N, 95°53'55"E June 2024, K. Chowlu & Ajit Ray (ARUN).

Distribution: China (south-central), India (Arunachal Pradesh: reported here).

Conservation status: *Hemipilia basifoliata* is found in Sichuan and Yunnan Provinces in China and Arunachal Pradesh in India. The species has been classified as vulnerable [VU: B1ab(i,iii,v) + B2ab(i,iii,v)] in China by Qin *et al.* (2017). In India only one location is now known, with a very small subpopulation size of fewer than 20 mature individuals. Further studies are needed to assess the actual population size and its threat status in this country.

Etymology: The specific epithet *chandrasedkharanii* was given in honour of Dr. N. Chandrasekharan Nair, D.Sc., Former Joint Director, Botanical Survey of India, Southern Circle, Coimbatore (MH), for his valuable contributions to Indian botany.

Acknowledgements. We would like to thank the Principal Chief Conservator of Forests, Govt. of Arunachal Pradesh, for facilities needed for this study. The first author is also grateful to the Director of the Botanical Survey of India, for providing research facilities. Special thanks are due to Sunil Soniyal for his company in the field.



Fig. 2. *Hemipilia basifoliata* (Finet) Y.Tang & H.Peng

Explanations: A-C – plant *in situ*, D – plant habit, E – basal part showing a tuber, F – rachis, G-H – flower, I – sepals and petals, J – lip with attached ovary, K – lip

Author Contributions:

Research concept and design: J. Tsering, K. Chowlu
 Collection and/or assembly of data: J. Tsering, K. Chowlu
 Data analysis and interpretation: J. Tsering, K. Chowlu, A. N. Rao, K. A. Kabeer, A. Ray

Writing the article: J. Tsering, K. Chowlu
 Critical revision of the article: J. Tsering, K. Chowlu, A. N. Rao, K. A. Kabeer, A. Ray
 Final approval of article: J. Tsering, K. Chowlu, A. N. Rao, K. A. Kabeer

References

- EFLORAS 2024. Orchidaceae. Flora of China. Published on the Internet <http://www.efloras.org> [accessed 26 September 2024] Missouri Botanical Garden, St. Louis, MO & Harvard University Herbaria, Cambridge, MA.
- FINET M. E. A. 1901. Les Orchidees de L'asie Orientale (avec planches). In: M. G. BONNIER (ed). *Revue Generale de Botanique*, pp. 497-534. Librairie generale de l'enseignement, Paris.
- KING J. & PANTLING R. 1898. The Orchids of Sikkim Himalaya. In: *Annals of the Royal Botanic Garden, Calcutta*, vol 8, 304-305 pp. Bengal Secretariate Press.
- PEARCE N. R. & CRIBB P. J. 2002. The Orchids of Bhutan. The Charlesworth Group, Huddersfield.
- POWO 2024. Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet; <http://www.plantsoftheworldonline.org/> Retrieved 28 September 2024.
- QIN H., YANG Y., DONG S., HE Q., JIA Y., ZHAO L., YU S., LIU H., LIU B., YAN Y., XIANG J., XIA N., PENG H., LI Z., ZHANG Z., HE X., YIN L., LIN Y., LIU Q., HOU Y., LIU Y., LIU Q., CAO W., LI J., CHEN S., JIN X., GAO T., CHEN W., MA H., GENG Y., JIN X., CHANG C., JIANG H., CAI L., ZANG C., WU J., YE J., LAI Y., LIU B., LIN Q. & XUE N. 2017. Threatened Species List of China's Higher Plants. *Biodiversity Science* 25(7): 696-744. <https://doi.org/10.17520/biods.2017144>
- SINGH S. K., AGRAWALA D. K., JALAL J. S., DASH S. S., MAO A. A. & SINGH P. 2019. Orchids of India, A Pictorial Guide. Botanical Survey of India, Kolkata.
- TAM N., TSERING J. & APANG O. 2017. Orchids of Arunachal Pradesh, 2nd revised edition. State Forest Research Institute, Itanagar.
- TANG Y., YUKAWA T., BATEMAN R. M., JIANG H. & PENG H. 2015. Phylogeny and classification of the East Asian Amitostigma alliance (Orchidaceae: Orchideae) based on six DNA markers. *Evolutionary Biology* 15: 96. <https://doi.org/10.1186/s12862-015-0376-3>