



Liparis pygmaea (Malaxideae, Orchidaceae), a new distributional record from Western Himalaya, India with notes on Typification

Manoj Singh¹, Jeewan Singh Jalal², Dinesh Kumar Agrawala³ & Harish Negi¹

¹Forest Research Range, Uttarakhand Forest Department, Gopeshwar-246401

²Botanical Survey of India, Western Regional Centre, Pune-411001

³Botanical Survey of India, Sikkim Himalayan Regional Centre, Gangtok-737103

*Corresponding author's e-mail: jeewan.orchid@gmail.com

Abstract

Liparis pygmaea, restricted to Himalayan region, is reported here as a new distributional record from Western Himalaya. Its detailed description, taxonomic note, photographs and conservation status are provided.

Résumé

Liparis pygmaea, restreint à la région himalayenne, est signalé ici comme un nouvel enregistrement dans la partie occidentale de l'Himalaya. Une description détaillée, une note taxinomique, une illustration et l'état de conservation de l'espèce sont fournis.

Keywords: Chamoli, New record, Orchid, Uttarakhand.

Mots clé : Chamoli, Nouvel enregistrement, Orchidée, Uttarakhand.

Introduction

Liparis L.C. Richard (1817: 21) is a large cosmopolitan genus of orchid family (Orchidaceae), which includes about 320 species (Pridgeon *et al.*, 2005) widely distributed in tropical, subtropical and temperate areas of the world with maximal diversity in tropical Asia (Pridgeon *et al.*, 2005). The genus is composed of both terrestrial and epiphytic species and characterized by small to prominent pseudobulbs, one to several conduplicate to plicate leaves, terminal inflorescence, flowers usually resupinate, small or medium-sized, yellow, green, orange, or purple, similar sepals, a lip firmly attached to a footless, often arched column, pollinia 4 in two pairs without attachments (Seidenfaden, 1976; Pearce & Cribb, 2002). In India the genus is represented by 48 species (Singh *et al.*, 2019) of which 10 species have been reported from Western Himalaya (Seidenfaden & Arora, 1982; Deva & Naithani, 1986; Jalal & Jayanthi, 2015). During the floristic explorations in the state of Uttarakhand the first and last authors collected a few interesting plants on the way to Saptkund, Chamoli district (fig. 1). The species was photographed in situ and a sample was preserved in ethanol. The material was sent to the second author for identification at the Botanical survey of India, Pune. After receiving the plant material a flower was dissected for detailed study. On critical examination it was identified as *Liparis pygmaea* King & Pantling (1898: 34). The scrutiny of literature on the orchids of this region (Duthie, 1906; Seidenfaden & Arora, 1982; Deva & Naithani, 1986; Pangtey *et al.*, 1991; Jalal, 2005; Vij *et al.*, 2013; Chowdhery & Agrawala, 2013; Govaerts *et al.*, 2020) reveals that it is the first record of this species from the Western Himalaya. Herbarium specimen was prepared and deposited at BSI. This discovery widens the range of distribution of this species in Himalaya. The present article provides its description, taxonomic note, notes on Typification and field photographs for easy identification. Further, its distribution map and conservation status are also provided.

Taxonomic description

Liparis pygmaea King & Pantling, *Annals of the Royal Botanic Garden* (Calcutta) 8: 34, t.44. 1898; N. Pearce & P.J. Cribb, *Orchids of Bhutan*: 203. 2002; S.Z. Lucksom, *The orchids of Sikkim and north east Himalaya* 279, f.171. 2007.

Type: India, Sikkim-Himalaya, below Jongri (Dzongri), 13000 ft., *Pantling* 449 (Lectotype selected by Seidenfaden in *Dansk Botanisk Arkiv* 31(1): 20. 1975, K-000387807!; isolectotypes-CAL!, E, LE, W).

According to Indian material (fig. 2): terrestrial herbs, 3–4 cm tall. Pseudobulbs 5–7 × 0.4–0.5 cm, narrowly ovoid, enclosed by 2–3 membranous sheaths. Leaves 2, arising from the apex of pseudobulb, sub-opposite, 1.3–1.6 × 0.6–0.8 cm, ovate to elliptic, sessile, margin entire, sheathing at base, apex acute. Inflorescence terminal, erect, 2–3 cm long, glabrous, 2-flowered. Floral bracts pale-greenish, ca. 2 mm long, lanceolate, membranous, apex acute, shorter than pedicel and ovary. Flowers resupinate, widely spreading, violet, 6–8 mm long, sepals, petals and column purple, labellum darker towards base; pedicel and ovary erect, linear, 4–6 mm long. Dorsal sepal oblong ca. 8 × 2 mm, apex obtuse, arching over the column; lateral sepals parallel below lip, linear ca. 6 × 1.5 mm. Petals linear, ca. 6 × 0.5 mm, acute, spreading, margins reflexed. Lip oblong ovate, ca. 6 × 3 mm, slightly deflexed from middle, 5-veined; basal half concave, entire edges, with a large 2 lobed callus just under the column; the apical half obscurely erose, the apex broad, apiculate. Column ca. 2.5 mm long, slender, base dilated, apex with small wings; anther with an acute beak; pollinia elliptic oblong.

Flowering: June–July.

Habitat: Found growing in alpine zone in the association with *Rhododendron campanulatum* D. Don (1821: 410), *Cassiope fastigiata* (Wallich, 1820: 394) D. Don (1834: 158), *Gaultheria trichophylla* Royle (1835: 260), *Oxygraphis polypetala* (Royle, 1834: 54) Hooker & Thomson (1855: 27), *Galearis spathulata* Lindley (1835: 280) P. F. Hunt (1971: 172), *Picrorhiza kurrooa* Royle ex Bentham (1835: 47) and *Potentilla cuneifolia* Bertoloni (1863: 15) at elevation of 3800–3900 m.

Distribution: INDIA (Sikkim, Uttarakhand [Present report], West Bengal); CHINA; NEPAL.

Specimen examined: **Uttarakhand**, Chamoli district, on the way to Saptkund, Ghannsal Udiyar, Alt. 3800 m, 23.06.2020, *MS & HN 197758* (BSI!); **Sikkim**: Without locality, without date, 1892, *Gammie s.n.* (CAL!); 1877, Without locality, without date, *G. King 4161* (CAL!); **West Bengal**: Singalelah, 12000 ft., July 1896, *Pantling 449* (CAL!).

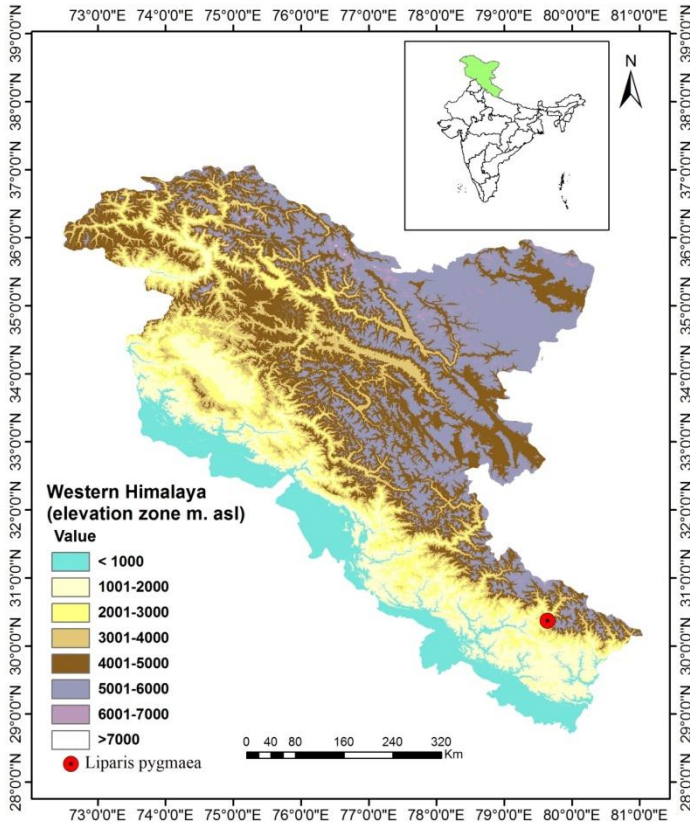


Fig. 1. Location map of *Liparis pygmaea* in Western Himalaya.

Taxonomic note: Seidenfaden (1976) while revising the genus *Liparis* for Thailand suspected that *Liparis nana* Rolfe (1913: 28) could be conspecific with *L. pygmaea* based on the size of plant. He could not study the flower details of the specimen available at Kew because the specimen was so mutilated and soaked in glue that study of the details of the flowers had been impossible. Later, Pearce & Cribb (2002), agreed with Seidenfaden (1976) observation and reduced *L. nana* under *L. pygmaea*. We carefully examined the lip of *L. pygmaea*, which is oblong ovate, margin entire, with a fleshy bilobed callus, while in *L. nana* the lip is sub-quadrangle, margin erose

and with U-shaped callus. We agree with the view (Chen *et al.*, 2009) that *L. nana* and *L. pygmaea* are two different entities.

Notes on Typification: Pearce & Cribb (2002) have mentioned the Type as “India, Sikkim, Jongri (Dzongri), *Pantling 449A* (holotype CAL, isolectotypes E!, K!, LE!, W!)”. They have inadvertently contradicted Article 7.11 of ICN (Turland *et al.*, 2018), as *Pantling 449A* collected from 13000 ft. at Dzongri comprises multiple specimens distributed in different herbaria. Prior to this, Seidenfaden (1976) have indicated *Pantling 449K* as the ‘type’ of *L. pygmaea*, which has been corrected as ‘Lectotype’ as per Article 9 of ICN (Turland *et al.*, 2018).

Conservation status: this species is known as distributed in India [Uttarakhand (one locality); Sikkim (three localities) and West Bengal (one locality)], Nepal and China (one locality each) and restricted to alpine zone of Himalaya between 3100 m to 3900 m elevation. From Sikkim and West Bengal, it has been observed only once in last 100 years which indicates its rarity. Present report from Western Himalaya involves less than 10 mature individuals at a single location < 1 km². Although the species is not known under any commercial exploitation, its habitats are vulnerable to several natural and anthropogenic threats. Unsustainable tourism and developmental activities are in full pace at all the Indian localities. The species has pollination and germination constraints and also subjected to livestock grazing and trampling. For the purpose of its threat status assessment as per IUCN Criteria (IUCN, 2019), the Extent of Occurrence (EOO) can be estimated as 133945.67 km² and the Area of Occupancy (AOO) is estimated 28 km² (criteria B2) by considering the minimum grid size of 2 × 2 km. Number of locations are seven and the extent and the quality of habitat is continuously declining. This species is growing in association with highly medicinal species e.g., *Picrorhiza kurroa*, which is over-exploited for its medicinal uses. Due to that this particular habitat is also threatened. Therefore, the threat perspective of this species at global context has been evaluated as Vulnerable [VU B2ab(iii); C2(a)(i)].



Fig. 2. *Liparis pygmaea*

A & B: Habit; C & D: Close up view of flowers (Photographs by Harish Negi).

Acknowledgements

We are thankful to the Uttarakhand Forest Department for facilities, permission and encouragements and we are grateful towards the Director, Botanical Survey of India, Kolkata for providing research facilities.

References

- Bentham, G., 1835. Scrophularinaea Indicae : A synopsis of the East Indian Scrophularineae contained in the collections presented by the East India Company to the Linnean Society of London. *James Ridgways and Sons, Piccadilly*, London, 58 pp.
- Bertoloni, A., 1863. *Potentilla cuneifolia* t.2. *Miscellanea botanica*. No. 24. Ex Typographeo Emygdii ab Ulmo, Bononiae. 15 pp.
- Chen, S.C., Z.J. Liu, G.H. Zhu, K.Y. Lang, Z.H. Ji, Y.B. Luo, X.H. Jin, J.C. Philip, J.J. Wood, J.J., S.W. Gale, P. Ormerod, J.J. Vermeulen, H.P. Wood, D. Clayton & A. Bell, 2009. Orchidaceae. In: C.Y. Wu, P.H. Raven & D.Y. Hong (Eds.) *Flora of China* volume 25. *Science Press, Beijing, & Missouri Botanical Garden Press, St. Louis*, 506 pp.
- Chowdhery, H.J. & D.K. Agrawala, 2013. A Century of West Himalayan Orchids. *Bishen Singh Mahendra Pal Singh, Dehradun*, 318 pp.
- Deva, S. & H.B. Naithani, 1986. The Orchid Flora of North-West Himalaya, *Print and Media Associates*, New Delhi, 459 pp.
- Don, D., 1821. Descriptions of Several new Plants from the Kingdom of Nepal, taken from Specimens preserved in the herbarium of Aylmer Bourke Lambert, Esq. *Memoirs of the Wernerian Natural History Society* 3: 410.
- Don, D., 1834. An attempt at a New Arrangement of the Ericaceae, *Edinburgh New Philosophical Journal*, 17: 158.
- Duthie, J.F., 1906. The Orchids of the North-Western Himalaya. *Annals of the Royal Botanical Garden, Calcutta*, 9(2): 81–211.
- Govaerts, R., P. Bernet, K. Kratochvil, G. Gerlach, G. Carr, P. Alrich, A.M. Pridgeon, J. Pfahl, M.A. Campacci, D.H. Baptista, H. Tigges, J. Shaw, P.J. Cribb, A. George, K. Kreuz, & J.J. Wood, 2016. World checklist of Orchidaceae. Facilitated by the Royal Botanic Gardens, Kew. [<http://apps.kew.org/wcsp/>, retrieved on 20.7.2020].
- Hooker, J. D. & T. Thomson, 1855. *Flora Indica: Being a Systematic Account of the Plants of British India* Vol. 1. W. Pamplin, 45, Frith Street, Soho, London, 285 pp.
- Hunt, P.F., 1971. Notes on Asiatic Orchids: VI. *Kew Bulletin* 171-185.
- IUCN Standards and Petitions Committee, 2019. Guidelines for Using the IUCN Red List Categories and Criteria. Version 14. Prepared by the Standards and Petitions Committee. Downloadable from <http://www.iucnredlist.org/documents/RedListGuidelines.pdf>.
- Jalal, J.S., 2005. Systematics, Phytogeography and Habitat Ecology of Orchids of Uttarakhand. *Ph.D. thesis submitted to Kumaun University*, 210 pp.

- Jalal, J.S. & J. Jayanthi, 2015. An annotated checklist of the orchids of Western Himalaya, India. *Lankesteriana* 15: 7–50.
- King, G. & R. Pantling, 1898. The Orchids of Sikkim Himalaya. *Annals of Royal Botanic Garden, Calcutta*, 8: 34.
- Lindley, J., 1835. The Genera and Species of Orchidaceous Plants. *Ridgways Piccadilly*, London. 553 pp.
- Pangtey, Y.P.S., S.S. Samant & G.S. Rawat, 1991. Orchids of Kumaon Himalaya. *Bishan Singh Mahendra Pal Singh, Dehradun*, 193 pp.
- Pearce, N. R. & P.J. Cribb, 2002. The Orchids of Bhutan. *Royal Botanic Garden Edinburgh*, 643 pp.
- Pridgeon, A. M., P.J. Cribb, M.W. Chase & F.N. Rasmussen, 2005. Genera Orchidacearum, *Oxford University Press*, vol. 4: Epidendroideae (Part 1).
- Richard, L.C., 1817. De Orchideis Europaeis Annotationes. *Ex Typographia A. Belin., Parisiis*, 152 pp.
- Rolfe, R.A., 1913. New Orchids: Decade 39. *Bulletin of Miscellaneous Information*, Kew 1913(1): 28.
- Royle, J.F., 1834. Illustrations of the botany and other branches of the natural history of the Himalayan Mountains and of the flora of Cashmere. *W. H. Allen & Co., Leadenhall Street*, London, 472 pp.
- Royle, J.F., 1835. Illustrations of the botany and other branches of the natural history of the Himalayan Mountains and of the flora of Cashmere. *W. H. Allen & Co., Leadenhall Street*, London, 472 pp.
- Seidenfaden, G., 1976. Orchid genera in Thailand IV. *Dansk Botanisk Arkiv*. 31: 5–105.
- Seidenfaden, G. & C.M. Arora, 1982. An Enumeration of the Orchids of the North-Western Himalaya. *Nordic Journal of Botany*, 2: 7–27.
- Singh, S.K, D.K. Agrawala, J.S. Jalal, S.S. Dash, A.A. Mao & P. Singh, 2019. Orchids of India-a pictorial guide. *Botanical Survey of India, Kolkata*, pp. 548.
- Turland, N., J. Wiersema, F. Barrie, W. Greuter, D. Hawksworth, P. Herendeen, S. Knapp, W.H. Kusber, D.-Z. Li, K. Marhold, T. May, J. McNeill, A. Monro, J. Prado, M. Price & G. Smith, 2018. International Code of Nomenclature for algae, fungi, and plants (Shenzhen Code) adopted by the Nineteenth International Botanical Congress Shenzhen, China, July 2017. *Regnum Vegetabile* 159. *Glashütten: Koeltz Botanical Books*. DOI <https://doi.org/10.12705/Code.2018>
- Vij, S.P., J. Verma & C. Sathish Kumar, 2013. Orchids of Himachal Pradesh. *Bishan Singh Mahendra Pal Singh, Dehradun*, 275 pp.
- Wallich, N., 1820. Descriptions of some rare Indian plants. *Asiatic Researches* 13: 369–415.