



Galearis tschiliensis (Orchidaceae): A new distribution record for the flora of India from Arunachal Pradesh

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Abstract

Galearis tschiliensis (Orchidaceae), previously considered endemic to China, is newly reported from the Indian state of Arunachal Pradesh close to its borders with China and Myanmar. The species is very distinct from other species of the genus by its subactinomorphic perianth.

Keywords: *Aceratorchis albiflora*, Arunachal Pradesh, *Galearis tschiliensis*, India, New Record, Orchidaceae

Introduction

While studying various orchid specimens from northern Myanmar and adjacent regions, the author came across a specimen of *Galearis tschiliensis* (Schltr.) P.J. Cribb, S.W. Gale & R.M. Bateman collected from easternmost Arunachal Pradesh (India) close to its borders with China and Myanmar. A review of the available literature and online resources (Pradhan, 1976, 1979; Seidenfaden & Arora, 1982; Chowdhery, 1998, 2009; Sathish Kumar & Suresh Kumar, 2005; Lucksom, 2007; Misra, 2007; Jalal & Jayanthi, 2015; Govaerts *et al.*, 2016) revealed that the species is not yet known to occur in India. This new distribution record is presented below.

Galearis tschiliensis shares many diagnostic characters with the other species of its genus: underground rhizome, which is unusual in subfamily Orchidoideae; erect stems with one or two basal leaves; few-flowered inflorescences; leafy floral bracts; purple, pink or white flowers; petals connivent with the median sepal and forming a hood together with it; similar gynostemium architecture (Wood & Cribb, 2001). However, the species is unusual in its floral morphology as the unlobed lip is unspurred and therefore resembles the petals.

Galearis tschiliensis (Schltr.) P.J. Cribb, S.W. Gale & R.M. Bateman, *Ann. Bot. (Oxford)* 104: 439. 2009; Chen *et al.*, *Fl. China* 25: 91. 2009. *Aceratorchis tschiliensis* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 12: 329. 1922; Chen *et al.*, *Native Orchids China*: 4. 1999; Chen *et al.*, *Field Guide Orchids China*: 51. 2009. *Orchis tschiliensis* (Schltr.) Soó, *Ann. Hist.-*

Nat. Mus. Natl. Hung. 26: 351. 1929. Type: CHINA, Hebei, Hsiao Wu tai shan, Hsi tai, c. 2600 m, *s.d.* (possibly July 1915, see Limpricht, 1922), *Limpricht* 3039 (Holotype, WRSL [not found]; Isotype, B [destroyed, see Butzin, 1981]). **Figs. 1,2**

Aceratorchis albiflora Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 12: 328. 1922.

Orchis aceratorchis Soó, *Ann. Hist.-Natl. Mus. Natl. Hung.* 26: 350. 1929.

Herb, terrestrial, 6–20 cm high, slender, glabrous; rhizome short, fleshy. Stem with two sheathing and tubular cataphylls at base, 1-leaved. Leaf erect or suberect, oblong-spatulate to spatulate, 3–5 × 1.2–2.6 cm, sheathing, gradually attenuate at base, obtuse at apex. Inflorescence terminal, erect, to 18 cm long, often much shorter; peduncle without sterile bracts; rachis 0.5–3.5(–7) cm long, with 1–6 secund flowers; floral bracts herbaceous, erect, lanceolate, acuminate; lower longer than flowers, upper slightly shorter. Flowers spreading, 9–14 mm in diam., purplish pink or white; ovary and pedicel indistinguishable, cylindric-fusiform, 8–15 mm long. Sepals subequal, oblong or elliptic-oblong, 5–8 × 2.5–4 mm, obtuse or subacute, 3–5-veined; median sepal erect, laterals spreading. Petals erect, connivent with the median sepal and forming a hood together with it, broadly oblong-lanceolate or elliptic-lanceolate, 4–7 × 2–3.5 mm, oblique at base, obtuse or subacute at apex, 1–5-veined. Lip similar to petals, spreading, unlobed, unspurred, ecallose, slightly concave, ovate-lanceolate to ovate-oblong, 4–6.8 × 2.8–3.8 mm, slightly undulate at margins, obtuse or subacute at apex. Column 3–4 mm long; anther erect, ellipsoid, 2–2.5 mm long, obtuse or



Fig. 1. Herbarium specimen of *Galearis tschiliensis* (Schltr.) P.J. Cribb, S.W. Gale & R.M. Bateman, collected by F. Kingdon-Ward in Arunachal Pradesh (India). Reproduced with permission of the Board of Trustees of the Royal Botanic Gardens, Kew.

slightly retuse; loculi parallel and separated by a narrow connective, basal thecae projections very short; auricles small, sculptured; pollinia with two separate viscidia enclosed in a prominent two-lobed bursicle; stigma subreniform, concave, large; central rostellum lobe small [drafted after the Indian specimen, the protologue, Chen *et al.* (1999) and Chen *et al.* (2009)].

Illustrations & Photographs: S.C. Chen, *Acta Phytotax. Sin.* 20: 2, fig. 1.7–8. 1982 (line drawing); S.C. Chen *et al.*, *Native Orchids China*: 4. 1999 (colour photo); J.J. Wood & P.J. Cribb in Pridgeon *et al.*, *Gen. Orchid.* 2: 244, f. 56.1, pl. 75. 2001 (drawing and colour photo); S.C. Chen *et al.*, *A Field Guide to the Orchids of China*: 51. 2009 (colour photo); S.C. Chen *et al.*, *Fl. China Ill.* 25: 133, f. 133.8–9. 2010 (line drawing); <http://www.orchidspecies.com/acertschiliensis.htm> (colour photo); <https://orchid.unibas.ch/phpMyHerbarium/documents/51/2060051m.jpg> (colour photo).

Flowering & fruiting: June–September.

Habitat: The species is found in forests and meadows at elevations ranging from 1600 to 4100 m (Chen *et al.*, 2009). The Indian specimen was collected in a grassy bog at 12000 ft (c. 3360 m).

Distribution: The species is distributed in China in a broad curved band from the province of Hebei in the northwest of the country to Yunnan and Xizang (5 Tibet Autonomous Region) in the southwest (Wood & Cribb, 2001). It has been recorded from the following Chinese provinces: Hebei, Shanxi, Shaanxi, Gansu, S Qinghai, NW Sichuan, Yunnan, Xizang (Chen *et al.*, 2009). In addition, the species is here recorded from the valley of the Di Chu in the eastern part of Arunachal Pradesh, very close to the point where India, China and Myanmar meet (the distance of the Di Chu valley ranges from about 2 to 7 km from the Chinese border, and from 5 to 40 km from the Myanmar border). The occurrence in Arunachal Pradesh is hardly surprising, given the occurrence of this species in the neighbouring Chinese province of Xizang. Because of the proximity to Myanmar, it is here suspected that it may also turn up in this country one day.

Specimen examined: INDIA, **Arunachal Pradesh**, Anjaw district, valley of the Di Chu, in grassy bog, 12000 ft (c. 3660 m), 27.7.1926, F. Kingdon-Ward 7197 (K!).

Notes: This specimen has previously only been labelled as '*Galearis* sp.', presumably because of the overall similarity to the other species of that genus. It could here positively be identified as *G. tschiliensis* (Schltr.) P.J. Cribb, S.W. Gale & R.M. Bateman. Originally the species was described as *Aceratorchis tschiliensis* Schltr. (Limpricht, 1922), which name became widely accepted for nearly 90 years. Soó (1929) treated this species under *Orchis*, but this was not followed later. In the treatment of *Aceratorchis* in *Genera Orchidacearum*, Wood & Cribb (2001: 245) stated that "The genus needs to be compared with *Galearis* and other rhizomatous members of the tribe", thereby suggesting a possible affinity to this genus. Chen *et al.* (2009) and Bateman *et al.* (2009) indeed included the species in the genus *Galearis*. Perner & Luo (2007: 135) even suggested that *A. tschiliensis* is conspecific with *Galearis roborovskyi* (Maxim.) S.C. Chen, P.J. Cribb & S.W. Gale (not seen; fide Bateman *et al.*, 2009: 436), presumably considering it as a peloric form of the species.

The flowers of *G. tschiliensis* are pink in all of the available colour illustrations of the species.

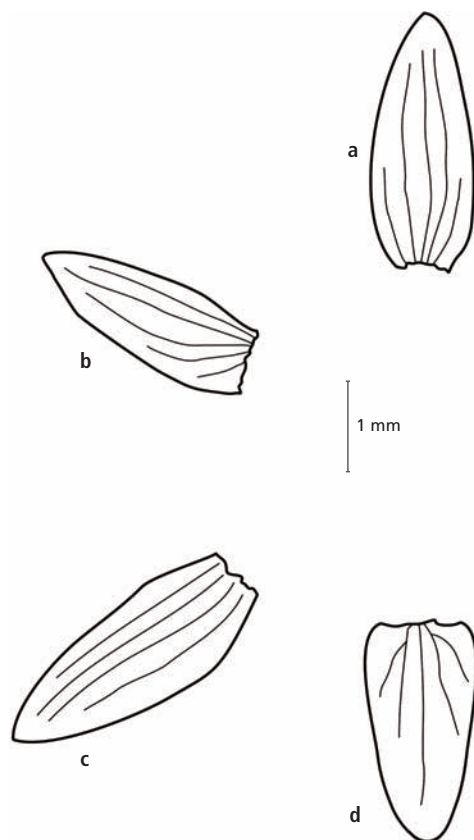


Fig. 2. *Galearis tschiliensis* (Schltr.) P.J. Cribb, S.W. Gale & R.M. Bateman: a. Median sepal; b. Petal; c. Lateral sepal; d. Lip. Drawn from *Kingdon-Ward* 7197 (K).

However, the conspecific *G. albiflora* has white flowers, and this is also the case in the Indian specimen. The most obvious floral difference of *G. tschiliensis* from the other species of the genus is the lip, which is unlobed and unspurred, thus resembling the other perianth lobes; this is the generic character of the formerly accepted genus *Aceratorchis*. This situation was interpreted as being close to the ancestral condition of Orchidaceae by Chen (1982) who therefore considered *Aceratorchis* as probably being the most primitive genus of tribe Orchideae. However, as indicated by the rather complicated gynostemium architecture of the species, the simple labellum may be a secondary condition, as already suggested by Dressler (1993). Bateman *et al.* (2009) argued that the simple perianth of *G. tschiliensis* may represent an atavistic reversal through heterochronic developmental shifts.

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