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Rediscovery of *Oreocharis reticulata* (Gesneriaceae) and Supplementary Floral Description (Postprint)

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Abstract

Floral morphology is a key character for infrageneric classification and interspecific delimitation in the genus *Oreocharis*. The lack of floral organ descriptions has directly led to the existence of some questionable species. *Oreocharis rhytidophylla* C. Y. Wu ex H. W. Li, last collected in 1956 and published in 1983, remained questionable in *Flora Reipublicae Popularis Sinicae*, Gesneriaceae of China, and *Flora of China* due to the absence of floral characteristics, with no further collection records for this species in the subsequent 60+ years. After years of tracking and investigation, the authors rediscovered and collected voucher specimens with flowers at its type locality in 2017. Based on the collected specimens with flowers, we confirm this species as a natural species and supplement the description of floral morphological characteristics based on the newly collected material. The rediscovery of *Oreocharis rhytidophylla* provides important evidence for exploring its systematic position.

Full Text

Preamble

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Rediscovery and Confirmation of *Oreocharis rhytidophylla* (Gesneriaceae) with Supplementary Description of Flowers

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Abstract

Floral morphology serves as a critical trait for infrageneric classification and species delimitation in *Oreocharis*, and the absence of flower descriptions has historically led to questionable taxa. *Oreocharis rhytidophylla* C. Y. Wu ex H. W. Li was last collected in 1956 and formally described in 1983, but due to the lack of floral characteristics, it remained doubtful in *Flora Reipublicae Popularis Sinicae*, *Plants of Gesneriaceae in China*, and *Flora of China*. For over 60 years following its initial description, no additional collections were recorded. After years of targeted fieldwork, we rediscovered the species at its type locality in 2017 and collected voucher specimens with flowers. Based on these flowering specimens, we confirm that *O. rhytidophylla* represents a natural species and provide a supplementary description of its floral morphology. This rediscovery offers crucial evidence for exploring its systematic position within the expanded genus.

Keywords: supplementary description, floral morphology, expanded *Oreocharis*, Wuliangshan

Introduction

Classification systems for *Oreocharis* have traditionally relied on floral morphological characters, which exhibit remarkable diversity within the genus, including corolla symmetry, color, shape, and the number of stamens and staminodes (Wang et al., 1990, 1998; Li & Wang, 2004). It is common for species within the genus to share similar flowers but possess completely different leaves, or vice versa. For example, *O. parviflora* Lei Cai & Z.K. Wu is most closely related to *O. henryana* Oliv. in floral morphology, yet their leaves are entirely distinct (Cai et al., 2017). Similarly, *O. purpurata* B.Pan, M.Q.Han & Yan Liu resembles *O. pinnatilobata* (K.Y.Pan) Mich.Möller & A.Weber in leaf morphology but differs significantly in floral characters (Han et al., 2017).

Oreocharis rhytidophylla C. Y. Wu ex H. W. Li remained taxonomically doubtful until flowering material became available. The species was initially described based on type specimens lacking flowers, distinguished primarily by reticulate venation on both surfaces of its rugose leaves (Li, 1983). Consequently, it was excluded from Chinese *Oreocharis* treatments and only mentioned briefly due to the absence of floral data (Pan, 1987; Wang et al., 1990, 1998; Li & Wang, 2004). Since 2008, we have conducted numerous expeditions to the type locality and collaborated with staff from the Wuliangshan National Natural Reserve to locate the species, though these efforts proved unsuccessful for a decade. In 2017, however, we successfully collected specimens with flowers during a survey of the type locality in Jingdong County, Yunnan Province. The species' rarity is underscored by this rediscovery, as the most recent previous collection dated from 1956 (P. Y. Qiu 53376) (Li, 1983). Here, we provide a supplementary description of its floral characters and confirm its taxonomic position as a natural species within the expanded genus.

Taxonomic Treatment

Oreocharis rhytidophylla C. Y. Wu ex H. W. Li in Bull. Bot. Res. 3(2): 9, photo 5. 1983; K. Y. Pan in Acta Phytotax. Sin. 25(4): 290. 1987.

CHINA. Yunnan: Jingdong County, Wuliangshan Mt., Liandao River, foot of Jiading Mountain, 2 November 1956, P. Y. Qiu 53376 (holotype, KUN0484429!; isotype, KUN0548908!, PE00030857-60!).

Supplementary Description of Flowers

Inflorescences axillary, cymes 2-4, 2-4-branched, 4-16-flowered; peduncle densely long brown lanate, up to 14 cm; bracts 3, verticillate, 12-15 × 2.5-3 mm, abaxially brown lanate, adaxially glabrous. Calyx 5-parted nearly to base, lobes equal, oblong-lanceolate, 10-12 × 1.1-1.2 mm, margin entire, apex obtuse, adaxially glabrous, abaxially brown lanate. Corolla yellow, 3.5-3.7 cm long, glabrous; corolla tube cylindrical, 2.7-3 cm long, 5-6 mm in diameter; adaxial lip 2-lobed, lobes equal, oblong, 5-6 × 3.6-4 mm, apex rounded or obtuse; abaxial lip 3-lobed, lobes oblong, nearly equal, 6-8 × 3-5 mm, apex rounded; stamens 4, included, adaxial anthers coherent in pairs, abaxial anthers free, adaxial stamens 1.7-2 cm long, adnate to corolla tube 8-9 mm from base, abaxial stamens 1.6-1.8 cm long, adnate to corolla tube 1.4-1.5 cm from base; filaments white, slender, linear, densely glandular-pubescent; anthers oblong, 2-loculed, dehiscing broadly; staminode 1, clavate, 0.5 mm long, adnate to abaxial side of corolla tube near base. Pistil 2.7-3.0 cm long, glandular pubescent; ovary linear with ridges, 1.7-1.8 cm long, glabrous; style 1-1.2 cm long; stigma 1, disciform, retuse. Disc ring-shaped, yellowish, 2-2.1 mm high, margin slightly undulate with 5 irregularly shallow lobes.

Additional Specimens Examined

CHINA. Yunnan: Jingdong County, Lingjie Town, Modaohe Village, in broad-leaved forests, 24°24' 57.17" N, 100°38' 19.26" E, 2331 m a.s.l., in flower, 30 August 2017, S. W. Guo B2017-1083 (KUN!). The same place, 2200 m a.s.l., 12 January 1939, M. K. Li 2936 (KUN 0208330!, KUN 075288!, KUN 075289!).

Distribution, Habitat and Phenology

Oreocharis rhytidophylla C. Y. Wu ex H. W. Li (Li, 1983) is currently known only from southern Yunnan, where it grows in evergreen and deciduous broad-leaved mixed forests on moist rocks or cliffs at approximately 2331 m elevation. Flowering occurs from August to September, with fruiting from September to October.

Discussion

Oreocharis rhytidophylla resembles *O. benthamia* var. *reticulata* Dunn in its netted leaf venation but differs in having a strongly bullate adaxial leaf surface

(Pan, 1987; Wang et al., 1990, 1998; Li & Wang, 2004). It also shares corolla characters with *O. hirsuta* Barnett and *O. yunnanensis* Rossini & J. Freitas but can be distinguished by its anthers being coherent in pairs adaxially and free abaxially (Tan et al., 2013; Rossini & J. Freitas, 2014). Additionally, it is similar to *O. hekouensis* (Y.M.Shui & W.H.Chen) Mich.Möller & A.Weber in its elliptic leaf blade and larger calyx but differs in its conspicuously reticulate abaxial leaf surface (Chen & Shui, 2006; Möller et al., 2011).

Acknowledgments

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Plate I Holotype of *Oreocharis rhytidophylla* C. Y. Wu ex H. W. Li (KUN 0484429)

Note: A. Landform; B. Habitat; C. Plant; D. Adaxial leaf; E. Abaxial leaf; F. Apex of adaxial leaf; G. Lateral view of corolla showing the glabrous surface and calyx; H. Bird' s-eye view of opened corolla showing the interior surface of corolla tube, stamens, filaments, staminode, free anthers and connected anthers (filaments: fi; staminode: st); I. Apex of abaxial leaf; J. Pistil with disc (pistil: pi; disc: di); K. Young pistil; L. Front view of corolla showing the adaxial anthers free and abaxial anthers coherent in pairs (anthers: an). Scale bars: D, E = 3 cm; F, G, H, I, J = 2 cm; K, L = 1 cm.

Plate II *Oreocharis rhytidophylla* C. Y. Wu ex H. W. Li (Photographed by Guo Shiwei)

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