



Two New Combinations in *Oreocharis* Benth. (Gesneriaceae) from China

Authors: Chen, Wen-Hong, Shui, Yu-Min, and Möller, Michael

Source: Candollea, 69(2) : 179-182

Published By: The Conservatory and Botanical Garden of the City of Geneva (CJBG)

URL: <https://doi.org/10.15553/c2014v692a10>

Two new combinations in *Oreocharis* Benth. (Gesneriaceae) from China

Wen-Hong Chen, Yu-Min Shui & Michael Möller

Abstract

CHEN, W.-H., Y.-M. SHUI & M. MÖLLER (2014). Two new combinations in *Oreocharis* Benth. (Gesneriaceae) from China. *Candollea* 69: 179-182. In English, English abstract.

Recent molecular phylogenetic studies indicated that no less than ten genera of *Gesneriaceae* are nested in *Oreocharis* Benth., and the circumscription of the genus was extended accordingly. The enlarged genus has a distribution predominantly in China. On the basis of recent molecular phylogenetic studies, two further species are transferred to *Oreocharis* here: *Briggsia speciosa* (Hemsl.) Craib and *Ancylostemon dimorphosepalus* W. H. Chen & Y. M. Shui and the necessary new combinations are provided.

Key-words

GESNERIACEAE – *Ancylostemon* – *Briggsia* – *Oreocharis* – China – new combinations

Addresses of the authors: WHC: University of the Chinese Academy of Sciences, Beijing 100049, China and Key Laboratory of Plant Diversity and Biogeography of East Asia, Kunming Institute of Botany, Chinese Academy of Sciences, 132 Lanhei Road, Kunming 650201, Yunnan, China.

YMS: Key Laboratory of Plant Diversity and Biogeography of East Asia, Kunming Institute of Botany, Chinese Academy of Sciences, 132 Lanhei Road, Kunming 650201, Yunnan, China.

MM: Royal Botanic Garden Edinburgh, 20A Inverleith Row, Edinburgh EH3 5LR, Scotland, U.K. and Key Laboratory of Plant Diversity and Biogeography of East Asia, Kunming Institute of Botany, Chinese Academy of Sciences, 132 Lanhei Road, Kunming 650201, Yunnan, China. Email: m.moeller@rbge.ac.uk

Submitted on August 1, 2014. Accepted on September 8, 2014.

Edited by M. W. Callmander

Introduction

The genus *Oreocharis* Benth. (Gesneriaceae), as newly circumscribed based on molecular phylogenetic studies (MÖLLER & al., 2011a; MÖLLER & al., 2011b), contains over 80 species, predominantly distributed in China, with some outliers in Thailand, Myanmar, Bhutan, NE India, and Japan (MÖLLER & CLARK, 2013). Nine genera had been in their entirety merged in the newly circumscribed *Oreocharis*: *Ancyllostemon* Craib, *Bournea* Oliv., *Dayaoshania* W. T. Wang, *Deinocheilos* W. T. Wang, *Isometrum* Craib, *Opithandra* B. L. Burtt, *Paraisometrum* W. T. Wang, *Thamnocharis* W. T. Wang, and *Tremacron* W. T. Wang (MÖLLER & al., 2011b).

Another genus, *Briggsia* Craib, was only partly merged into *Oreocharis*, including its type species *B. longifolia* Craib (MÖLLER & al., 2011b). *Briggsia* s.s. includes caulescent and rosette-forming species. All the species nested in the “*Oreocharis* clade” in a molecular phylogenetic study were rosette-forming species and were formally transferred to *Oreocharis* (see MÖLLER & al., 2011b). The species currently remaining in *Briggsia* s.s. (c. 12 rosette forming and three caulescent species) are currently the subject of further studies. Nevertheless, new molecular phylogenetic studies already revealed that at least *Briggsia speciosa* (Hemsl.) Craib and the recently described *Ancyllostemon dimorphosepalus* W. H. Chen & Y. M. Shui (CHEN & al., 2012) belong to *Oreocharis* (CHEN & al., 2014). Those two species are here formally transferred to *Oreocharis*.

Taxonomy

While studying *Didissandra* C. B. Clarke specimens collected by G. Forrest in China as circumscribed by CLARKE (1883), i.e. possessing four anthers cohering in pairs, CRAIB (1920b) recognised readily definable groups and moved species to three different genera, he had previously described: *Ancyllostemon*, *Briggsia*, and *Isometrum* (CRAIB, 1920a). *Briggsia* was characterized based on its large ventricose corolla with gradually inarching filaments (Fig. 1E), while the other two genera had medium sized corollas, which are slightly ventricose in *Ancyllostemon* and not ventricose in *Isometrum*. He further described the filaments in the latter two genera as straight with a bent at almost right angle at the apex bringing the anthers in contact (Fig. 1I), with the corolla distinctly bilabiate in *Ancyllostemon*, *Briggsia* and *Didissandra* (now *Coralodiscus* Batalin), and equally lobed in *Isometrum*. In this concept, *Didissandra speciosa* Hemsl. (Fig. 1A-E) fitted well into *Briggsia* and CRAIB (1920b) formally transferred the species to *Briggsia* as *Briggsia speciosa* (Hemsl.) Craib.

The recently described *Ancyllostemon dimorphosepalus* (CHEN & al., 2012) holds morphological characters that do not allow an easy placement in any of Craib's three genera. The

corolla is not strongly bilabiate and the tube not ventricose, a characteristic of *Isometrum*. The anthers of the abaxial pair are cohering but those in the abaxial pair are free (Fig. 1I). This is somewhat intermediate between *Ancyllostemon*, *Isometrum* (where at least one species has free anthers, *I. eximium* K. Y. Pan) and *Oreocharis* (all anthers free). This indicates that the characteristic of anther coherence is rather labile and probably not a reliable generic character.

Recent molecular phylogenetic studies, showing that anther number and coherence are homoplastic (MÖLLER & al., 2011a; MÖLLER & al., 2011b), resolved the problem of assigning taxa to the correct genus in this group of Gesneriaceae by merging these three (and seven further) genera to a newly circumscribed *Oreocharis*. It seems that vegetative characters, e.g. basal rosette, loculicidal capsule dehiscence of the upper suture, are more accurate in the systematic of this group (MÖLLER & al., 2011b).

***Oreocharis speciosa* (Hemsl.) Mich. Möller & W. H. Chen, comb. nova** (Fig. 1A-E).

- = *Didissandra speciosa* Hemsl. in J. Linn. Soc., Bot. 26: 228. 1890.
- = *Briggsia speciosa* (Hemsl.) Craib in Notes Roy. Bot. Gard. Edinburgh 11: 264. 1920.

Lectotypus (designated here): CHINA. Prov. Hubei (Hupeh): Hsingshan, A. Henry 6411A (K [K000858093]!; iso-: E [E00396435]!).

Distribution and habitat. – *Oreocharis speciosa* is distributed in W Hubei (Enshi city), SW Hunan (Hongjiang county), and S Chongqing [previously E Sichuan] (Nanchuan county). The species grows on shady, damp rocks on slopes, at an altitude ranging from 300 to 1600 m.

Observations. – In the protologue of *Didissandra speciosa*, HEMSLEY (1890) lists A. Henry collections in Hubei from Patung, Nanto, Hsingshan and Tunghu, all deposited at K without designating an holotype. Four collections mounted on two herbarium sheets of A. Henry are currently deposited at K: A. Henry 6356 from Nanto [K000858092] and A. Henry 6411A from Hsingshan [K000858093], both mounted on one sheet, and A. Henry 3951 from Nanto [K000858094] and A. Henry 7668 from Patung [K000858095], mounted on another. The specimens of A. Henry 6411A [K000858093] and A. Henry 6356 [K000858092] are annotated by Skog as syntypes of *D. speciosa*. A slightly smaller and atypical plant mounted on the second sheet was annotated “*Oreocharis* ? sp. C. B. Clarke”. Another duplicate collection of A. Henry 6411A [E00396435] deposited at E is also annotated by Skog as a syntype of *D. speciosa*. Overall, A. Henry 6411A represents the more complete and accurate collection of this species and is here designated as the lectotype.



Fig. 1. – *Oreocharis speciosa* (Hemsl.) Mich. Möller & W. H. Chen (**A-E**) and *Oreocharis dimorphosepala* (W. H. Chen & Y. M. Shui) Mich. Möller (**F-I**). **A-B**. Habitat; **C**. Habit *in situ*; **D**. Top view, and **E**. Front view of flowers showing the arched filaments; **F**. Habit; **G**. Top view, and **H**. Front view of flowers; **I**. Cut-open view of a flower showing the straight filaments with a bent at almost right angle at the apex.

[photos: **A-E**: M. Möller; **F-I**: Y.-M. Shui]

Conservation status. – *Oreocharis speciosa* has a wide distribution range across three provinces in South China. Only two populations have been observed by two of the authors (YMS, WHC), one situated in S Chongqing in the Jinfoshan Mountain and one in W Hubei in Enshi in the Suo Bu Ya Stone Forest park (Fig. 1F-H). There are around hundred mature individuals and many immature plants in each known population, and the total number of individuals would be around 5000. The “Extent of Occurrence” (EOO) in Suo Bu Ya is around 100 m² and both locations receive some protection due to their occurrence in National Parks. We have not enough information for a definitive conservation assessment, but the species has been proposed by WEI & al. (2010) to be categorized as “Vulnerable” [VU A1c] following IUCN Red List Categories and Criteria (IUCN, 2012).

Oreocharis dimorphosepalus (W. H. Chen & Y. M. Shui) Mich. Möller, **comb. nova** (Fig. 1F-I).

= *Ancylostemon dimorphosepalus* W. H. Chen & Y. M. Shui in Ann. Bot. Fenn. 49: 391. 2012.

Typus: CHINA. **Prov. Yunnan:** Yuanyang County, Shangxincheng Community, in broad-leaved forests along ravines, 23°03'45"N 102°56'56"E, 2368 m, 1.VIII.2010, fl., Y. M. Shui & al. 85333 (holo-: KUN [KUN0149160]!; iso-: PE!).

Distribution and habitat. – *Oreocharis dimorphosepalus* occurs only in Yuanyang County in SE Yunnan. The plants grow at the foot of tree trunks in evergreen forests between 2270 and 2620 m.

Conservation status. – The situation of *O. dimorphosepalus* is precarious. YMS and WHC have observed only 13 mature individuals in the field during 2009-2012 surveys. The species usually grows on the foot of tree trunks with a very low frequency of occurrence. So far, only three trees have been observed harbouring the plant in Yuanyang County. Thus, we propose to provisionally assess *O. dimorphosepalus* as “Critically Endangered” [CR D] following IUCN Red List Categories and Criteria (IUCN, 2012).

Acknowledgements

We thank Hannah Atkins and John McNeill for input on nomenclatural issues and Mark Hughes on IUCN Red Listing. We are very grateful to Martin Callmänder and Alain Chautems for their critical comments that significantly improved the manuscript. We greatly acknowledge support by the National Natural Science Foundation of China (grants no. 31000258, 31470306), and by the Open Project of the Key Laboratory for Plant Diversity and Biogeography of East Asia, Kunming Institute of Botany (grant no. KLBB201304), and the Chinese Academy of Sciences (Visiting Professorship Scheme). The

Royal Botanic Garden Edinburgh is supported by the Rural and Environment Science and Analytical Services division (RESAS) in the Scottish Government.

References

- CHEN, W. H., Y. M. SHUI, J. B. YANG, H. WANG, K. NISHII, F. WEN, Z. R. ZHANG & M. MÖLLER (2014). Taxonomic status, phylogenetic affinities and genetic diversity of a presumed extinct genus, *Paraisometrum* W.T. Wang (Gesneriaceae) from the karst regions of Southwest China. *PLoS ONE* in press.
- CHEN, W. H., Y. M. SHUI, C. L. HUA, C. Y. YU & K. WEN (2012). *Ancylostemon dimorphosepalus* (Gesneriaceae), a new species from China. *Ann. Bot. Fenn.* 49: 391-394.
- CLARKE, C. B. (1883). *Cyrtandreae*. In: CANDOLLE, A.-P. DE & C. DE CANDOLLE (ed.), *Monogr. Phan.* 5(1). Masson, Paris.
- CRAIB, W. G. (1920a). Gesneracearum novitates. *Notes Roy. Bot. Gard. Edinburgh* 11: 233-254.
- CRAIB, W. G. (1920b). *Didissandra* and allied genera in China and N India. *Notes Roy. Bot. Gard. Edinburgh* 11: 255-268.
- HEMSLEY, W. B. (1890). Gesneraceae. In: FORBES, F. B. & W. B. HEMSLEY (ed.), an enumeration of all the plants known from China proper, Formosa, Hainan, Corea, the Luchu Archipelago, and the Island of Hongkong, together with their distribution and synonymy. Part VIII. *J. Linn. Soc., Bot.* 26: 224-234.
- IUCN (2012). *IUCN Red List Categories and Criteria: Version 3.1*. 2nd edition. IUCN Species Survival Commission, Gland & Cambridge.
- MÖLLER, M., A. FORREST, Y. G. WEI & A. WEBER (2011a). A molecular phylogenetic assessment of the advanced Asiatic and Malesian didymocarpoid Gesneriaceae with focus on non-monophyletic and monotypic genera. *Pl. Syst. Evol.* 292: 223-248.
- MÖLLER, M., D. MIDDLETON, K. NISHII, Y. G. WEI, S. SONTAG & A. WEBER (2011b). A new delineation for *Oreocharis* incorporating an additional ten genera of Chinese Gesneriaceae. *Phyto-taxa* 23: 1-36.
- MÖLLER, M. & J. L. CLARK (2013). The state of molecular studies in the family Gesneriaceae: a review. *Selbyana* 31: 95-125.
- WEI, Y. G., F. WEN, M. MÖLLER, A. MONRO, Q. ZHANG, Q. GAO, H. F. MOU, S. H. ZHONG & C. CUI (2010). *Gesneriaceae of South China*. Guangxi Science and Technology Publishing House, Yanshan, Guilin & Guangxi.