A new genus of Gesneriaceae in China and the transfer of *Briggsia* species to other genera

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ABSTRACT. Since the transfer of several species of *Briggsia* to *Oreocharis*, including the type species *Briggsia longifolia*, the remaining 16 species of *Briggsia* have been in taxonomic limbo. We address this unsatisfactory situation by transferring 10 further species into *Oreocharis* on morphological grounds and by raising a new genus, with two species, based on previously published molecular data and their morphological distinction from other genera. This leaves only four species for which, at present, no satisfactory solution is available but, for pragmatic reasons until further research can be done, we place them in *Loxostigma* to which they are morphologically most similar and in which one already has a combination. Several names are lectotypified.

**Keywords.** *Briggsia*, Didymocarpinae, Gesneriaceae, *Glabrella*, lectotypification, *Loxostigma*, new combinations, *Oreocharis*

**Introduction**

Species placed in the now synonymised genus *Briggsia* Craib in the Gesneriaceae, subtribe Didymocarpinae (Weber et al., 2013), have a complex taxonomic history, being moved in and out of a number of genera as taxonomic concepts changed, e.g. *Roettlera* Vahl, *Didymocarpus* Wall., *Chirita* Buch.-Ham. ex D.Don, *Didissandra* C.B.Clarke and *Loxostigma* C.B.Clarke. These numerous changes did not necessarily indicate a progressively better understanding of these taxa but rather the difficulties of placing species displaying conflicting characteristics in genera that were narrowly defined primarily on floral characteristics.

The genus *Briggsia* was established by Craib (1919a) with three new species. In a separate paper, but which was published in the same issue (Craib, 1919b), he transferred 11 species from *Didissandra* to *Briggsia* and defined *Briggsia* as having
species with a large, distinctly bilabiate ventricose corolla with gradually inarching filaments and four anthers cohering in pairs, irrespective of other characters such as growth habit as both caulescent and acaulescent species were included.

Of the three new species in Craib (1919a), Briggsia longifolia Craib was later designated as the lectotype (Burtt, 1954). Craib (1919b) described an additional variety along with the transfers from Didissandra. His concept of Briggsia included two truly caulescent species, i.e., B. amabilis (Diels) C.B.Clarke (later synonymised into B. kurzii (C.B.Clarke) W.E.Evans) and B. cavaleriei (H.Lév. & Vaniot) Craib (later transferred to Loxostigma as L. cavaleriei (H.Lév. & Vaniot) B.L.Burtt). It also contained Briggsia longipes Craib that can produce short stems up to six cm, with the remaining 11 species being acaulescent and rosette-forming. Chun (1946) later added two more rosette species, Burtt (1955) described a further rosette species, and Burtt (1958) transferred the rosette species Briggsia rosthornii (Diels) B.L.Burtt from Didissandra. In Pan (1988) one species was synonymised (Briggsia fritschii = B. mihieri) and six new species and three varieties were added to the genus, including two further caulescent species, B. longicaulis W.T.Wang & K.Y.Pan and B. dongxingensis Chun ex K.Y.Pan, with stems 20 to 60 cm long. In Wang et al. (1990), Pan reduced Briggsia crenulata Hand.-Mazz. to a variety of B. rosthornii (B. rosthornii var. crenulata (Hand.-Mazz.) K.Y.Pan). Lastly, a further truly caulescent species, Briggsia damingshanensis L.Wu & B.Pan was recently described (Wu et al., 2012), bringing the total to 22 species and four varieties. Briggsia dulongensis H.Li is an invalid name without a Latin description (Li, 1993).

The advent of molecular phylogenetic methods has enabled us to examine problematic species’ placement with new suites of characters. These techniques have already proven useful for delimiting other problematic Gesneriaceae genera (Weber et al., 2011a, 2011b, 2011c; Middleton & Möller, 2012; Middleton et al., 2013) and have also led to the descriptions of new genera (Wei et al., 2010; Middleton & Möller, 2012; Middleton et al., 2014, submitted). Möller et al. (2011b) used the results of molecular phylogenetic studies to greatly enlarge the genus Oreocharis Benth. to include all species of nine other genera (Ancylostemon Craib, Bournea Oliv., Dayaoshania W.T.Wang, Deinocheilos W.T.Wang, Isometrum Craib, Opithandra B.L.Burtt., Paraismetrum W.T.Wang, Thamnocharis W.T.Wang and Tremacron Craib), and part of Briggsia. In Möller et al. (2011b) five species and four varieties of Briggsia were transferred to Oreocharis, including the type species B. longifolia, leaving the remaining species in a taxonomic limbo. On the basis of additional molecular studies on the enlarged genus Oreocharis, a further species, Briggsia speciosa Craib, is in the process of being transferred to Oreocharis by Chen et al. (2014). All Briggsia species transferred to Oreocharis thus far have been rosette-forming plants. This leaves 16 species unplaced, including the caulescent species. The molecular phylogenetic studies conducted so far indicate that these caulescent species are not closely related to the acaulescent species now placed in Oreocharis (Möller et al., 2011a). Furthermore, the truly caulescent Briggsia dongxingensis and B. kurzii do not form a clade. They
appear in two different positions in the phylogenetic trees so far published and are in unsupported positions with respect to clades containing Petrocosmea Oliv., Loxostigma and Pseudochirita W.T.Wang species, intermixed with Raphiocarpus Chun species. For Briggsia damingshanensis no molecular data are available, but the species differs only marginally from B. dongxingensis from the same region in Guangxi province (Wu et al., 2012). The (indirect) link of the truly caulescent species to Loxostigma is interesting since in the Flora of China (Wang et al., 1998), their generic placement in Briggsia was questioned by Weitzman and Skog who suggested that B. dongxingensis and B. longicaulis probably belong to Loxostigma. Vitek et al. (2000) placed Briggsia kurzii in Loxostigma but acknowledged that this has not been followed by other authors. However, though phylogenetically close, a case for the placement of these truly caulescent species in Loxostigma is not easily made since Loxostigma is closely related to Pseudochirita. Loxostigma and Pseudochirita share the presence of rhizomes and mainly differ in the former having four stamens and appendaged seeds, the latter two stamens and unappendaged seeds. Rhizomes, diandry and appendaged seeds are unknown in the truly caulescent Briggsia species. Because of these morphological differences and their uncertain phylogenetic position a taxonomic placement of these species is, at present, difficult to predict. However, given their current nomenclaturally unacceptable position we include them in Loxostigma where Briggsia kurzii already has a combination. We are well aware, however, that more work is needed here and their status may change in the future.

Briggsia longipes and B. mihieri form a strongly supported sister clade. Their phylogenetic position is isolated from the other former Briggsia species and all other didymocarpoid genera (Möller et al., 2011a) and a new genus is necessary to satisfactorily place these species. The two species can be clearly differentiated from other species formerly placed in Briggsia by their glabrous petiole and leaf blade (only puberulous when young), combined with their short, 5–6 cm, stems. The remaining ten unplaced Briggsia species are truly stemless and possess a dense pubescence on the petioles and adaxial and abaxial leaf surfaces. These are characteristics they share with most members of the expanded Oreocharis and the transfers are, therefore, made here. This is preferred to the alternative of withholding their transfer until leaf material for DNA analysis eventually becomes available. This might be years since some species are rare and have not recently been collected and thus the herbarium material is also unsuitable for DNA extraction. The traditional taxonomic approach using morphological data was undertaken in the case of the dismantling of Chirita (Weber et al., 2011a) for those species that were not included in the molecular analyses, and for the recently described Somrania D.J.Middleton which was established on the basis of morphology alone (Middleton & Triboun, 2012; see also Puglisi, 2014).

We have designated a number of lectotypes below. In each case we have chosen the most complete specimen showing the range of characters from amongst the available candidates. An appendix is attached listing all Briggsia names and their current status.
Taxonomic Treatments


Differs from other Chinese genera of Gesneriaceae by the combination of indistinct short stem, 5–6 cm long; glabrous petiole and leaf blade, leaf base cuneate or narrowly peltate; fertile stamens 4, cohering in pairs at apex; capsule straight in relation to the pedicel, not twisted; and seeds unappendaged. TYPE: *Glabrella mihieri* (Franch.) Mich. Möller & W.H. Chen

Plants stemless or stems to 5–6 cm tall, glabrous. Leaves basal or crowded at apex of short stem; petiole glabrous; leaf blade narrowly obovate to elliptic, glabrous, apex rounded to acute; lateral veins 3 to 5 on each side of midrib. Cymes few-flowered; peduncle (5–)8–23 cm; bracts 2, linear to narrowly triangular or lanceolate, 1–4 × 0.5–1.5 mm, glabrous, margin entire. Calyx segments lanceolate to narrowly ovate to narrowly triangular, margin entire. Corolla blue-purple or pale purple to pale yellow, inside usually spotted, (3.2–)4–6 cm, outside glabrous to sparsely glandular pubescent or puberulent, inside puberulent; tube 2.1–4 × 1.1–1.8(–2.6) cm; adaxial lip 5–9 mm, lobes semioblong, 3–7 × 6–9 mm, apex rounded; abaxial lip 1–1.4 cm, lobes oblanceolate or semioblong, 6–7 × 4–8 mm, apex obtuse to rounded. Adaxial stamens adnate to corolla 8–9 mm above base, abaxial ones adnate to corolla 8–1.2 cm above base, 1.2–1.7 cm long; filaments glabrous or sparsely glandular pubescent; anthers ovoid, thecae not confluent; staminode 0.8–1 mm. Pistil 2.5–3 cm; ovary pubescent; style 0.7–2 mm, glabrous to sparsely pubescent. Capsule 3.4–7 cm, glabrescent, straight in relation to the pedicel, not twisted. Seeds numerous, unappendaged. Fl. Sept–Oct, fr. Nov–Dec.

**Distribution.** Two species, endemic to China.

**Etymology.** After the distinctly hairless leaves.

**Key to Glabrella**

1a. Leaf blade base cuneate, margin crenate-serrate; calyx segments 4–7 × 1.5–3 mm; peduncle glabrous to glabrescent ................................................. *G. mihieri*

1b. Leaf blade base peltate or rounded to nearly cuneate, margin entire to shallowly serrate; calyx segments 8–11 × 2–5 mm; peduncle sparsely brownish villous, rarely glabrescent ................................................................. *G. longipes*

Distribution. China: Chongqing (Hechuan Xian), Guangxi (Longlin Xian, Tianlin Xian), SE Yunnan.


Loxostigma C.B.Clarke


Distribution. China: Guangxi (Dongxing Xian); N Vietnam.


**Distribution.** China: SW Sichuan, NW Yunnan; NE India: Sikkim; Nepal; Bhutan; Myanmar [Burma]


**Distribution.** China: Sichuan (Butuo Xian, Dechang Xian, Kangding Xian).


**Distribution.** China: Yunnan (Yuxi Xian).

**Oreocharis agnesiae** (Forrest ex W.W.Sm.) Mich. Möller & W.H. Chen, **comb. nov.**

**Distribution.** China: Sichuan (Muli Xian), Yunnan (Yongsheng Xian).

Kongbo, Molo, Lilung Chu, 3050 m, 26 Jun 1938, F. Ludlow, G. Sherriff & G. Taylor 5670 (holotype BM [BM000041735], image seen).

**Distribution.** China: S Gansu, N Sichuan, W Yunnan, Xizang; N Myanmar.

**Etymology.** To commemorate B.L. Burtt’s contribution to the taxonomy of the genus *Oreocharis*.


**Distribution.** China: Guizhou (Pingfa Xian, Dushan Xian).


**Distribution.** China: Zhejiang (Yunhe Xian).


**Distribution.** China: W Hubei.

**Etymology.** Named to reflect its small size.


**Distribution.** China: Guizhou.

**Distribution.** China: Guizhou (Pingfa Xian).


**Distribution.** China: Yunnan (Ruili Xian).

**Etymology.** Named after a collection locality, the Shweli valley.


**Distribution.** China: Yunnan (Dongchuan Xian).

**Etymology.** Named after the old spelling of the collection locality, Dongchuan.

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**References**


Appendix. List of *Briggsia* names with their current status (*bold*).


*Briggsia agnesiae* (Forrest ex W.W.Sm.) Craib = *Oreocharis agnesiae* (Forrest ex W.W.Sm.) Mich.Möller & W.H.Chen

*Briggsia amabilis* (Diel) Craib = *Loxostigma kurzii* (C.B.Clarke) B.L.Burtt


*Briggsia beauverdiana* (H.Lév.) Craib = *Briggiopsis delavayi* (Franch.) K.Y.Pan

*Briggsia cavaleriei* (H.Lév. & Vaniot) Craib = *Loxostigma cavaleriei* (H.Lév. & Vaniot) B.L.Burtt

*Briggsia chienii* Chun = *Oreocharis chienii* (Chun) Mich.Möller & A.Weber


*Briggsia damingshanensis* L.Wu & B.Pan = *Loxostigma damingshanensis* (L.Wu & B.Pan) Mich.Möller & H.Atkins

*Briggsia delavayi* (Franch.) Chun = *Briggiopsis delavayi* (Franch.) K.Y.Pan


*Briggsia dulongensis* H.Li, nom. inval.


*Briggsia forrestii* Craib = *Oreocharis shweliensis* (Craib) Mich.Möller & W.H.Chen

*Briggsia fritschii* (H.Lév. & Vaniot) Craib = *Glabrella mihieri* (Franch.) Mich.Möller & Y.M.Shui


*Briggsia kurzii* (C.B.Clarke) W.E.Evans = *Loxostigma kurzii* (C.B.Clarke) B.L.Burtt


*Briggsia longifolia* Craib = *Oreocharis longifolia* (Craib) Mich.Möller & A.Weber


*Briggsia longipes* (Hemsl. ex Oliv.) Craib = *Glabrella longipes* (Hemsl. ex Oliv.) Mich.Möller & Y.M.Shui
Briggsia mairei Craib = Oreocharis tongtchouanensis (Craib) Mich.Möller & W.H.Chen
Briggsia mihieri (Franch.) Craib = Glabrella mihieri (Franch.) Mich.Möller & Y.M.Shui
Briggsia pinfaensis (H.Lév.) Craib = Oreocharis pinfaensis (H.Lév.) Mich.Möller & W.H.Chen
Briggsia rosthornii (Diels) B.L.Burtt = Oreocharis rosthornii (Diels) Mich.Möller & A.Weber
Briggsia rosthornii var. crenulata (Hand.-Mazz.) K.Y.Pan = Oreocharis rosthornii var. crenulata (Hand.-Mazz.) Mich.Möller & A.Weber
Briggsia speciosa (Hemsl.) Craib = Oreocharis speciosa (Hemsl.) Mich.Möller & W.H.Chen
Briggsia stewardii Chun = Oreocharis stewardii (Chun) Mich.Möller & A.Weber