



A new required combination and the synonymization of *Pomatosace* with *Androsace*

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The new combination, *Androsace filicula*, is here formally proposed based on the basionym *Pomatosace filicula* and supported by morphological and molecular evidence, with the monotypic genus *Pomatosace* being synonymized with *Androsace*.

Androsace Linnaeus (1753:141) is a large genus in Primulaceae. Schneeweiss *et al.* (2004), Wang *et al.* (2004), and Boucher *et al.* (2012) have conducted the phylogenetic analyses of *Androsace* and related genera using plastid and nuclear genes. Furthermore, Larson *et al.* (2023) have employed Angiosperm353 probes to reconstruct the phylogeny relationship of Primulaceae based on high-throughput data. It is agreed by all authors that the traditionally defined *Androsace* is not monophyletic, with some other genera embedded within. Two genera have been synonymized with *Androsace*, named *Douglasia* Lindley (1827:385) and *Vitaliana* Sesler in Donati (1758:69). This leaves *Pomatosace* Maximowicz (1881:499) as the only satellite genus that remains untreated.

Pomatosace is a monotypic genus with its only species, *Pomatosace filicula* Maximowicz (1881:499), endemic to west China with a distribution in east Qinghai, northwest Sichuan, and northeast Xizang (aka. Tibet). *P. filicula* is an annual or biennial herb with umbels. It has cup-shaped calyces, five-lobed corollas which are slightly shorter than calyces, constricted throats with ring appendages, and five-lobed limbs. It has five stamens in each flower, with very short filaments, adnate to the corolla tube, ovate anthers, blunt apices (Fig. 1). The above characteristics are either typical of *Androsace*, or within the range of *Androsace*'s variation (Chen & Hu 1989; Hu & Kelso 1996).

Capsules of *P. filicula* are subglobose, circumscissile, and different from *Androsace*'s five-lobed capsules which dehisce by valves (Chen & Hu 1989; Hu & Kelso 1996). Because of its capsule characteristics, *Pomatosace* was once considered closely related to *Bryocarpum* Hooker f. & Thomson (1857:200) and *Soldanella* Linnaeus (1753:144) (Pax & Knuth 1905). However, *Bryocarpum* and *Soldanella* are more closely related to *Primula* Linnaeus (1753:142) in phylogenetic analyses (Larson *et al.* 2023). Furthermore, *Primula* has many capsule dehiscence types (mainly by valves, rarely with an operculum or crumbling) (Chen & Hu 1989; Hu & Kelso 1996). So this is not a robust inter-genus distinguishing characteristic of Primulaceae.

The vegetative organs of *Androsace* are extremely diverse, ranging from annual or biennial to the cushion life form. Their leaves are entire, dentate or lobed, petiolate or sessile, isophyllous or anisophyllous, with all the above different characters being found in the genus. The pinnatifid leaves of *Pomatosace* can also be considered a special type within *Androsace*.

Thus, there is no morphological or molecular evidence to support the independent status of *Pomatosace*. Hereby the synonymization of *Pomatosace* and the new combination *Androsace filicula* are made below.

Taxonomic treatments

Androsace L. in Sp. Pl. 141. 1753, Type: *Androsace septentrionalis* L.

= *Pomatosace* Maxim. in Bull. Acad. Petersb. 27: 499. 1881, *syn. nov.* Type: *Pomatosace filicula* Maxim.

Androsace filicula (Maxim.) Heng C. Wang & Jiao Sun, *comb. nov.*

≡ *Pomatosace filicula* Maxim. in Bull. Acad. Imp. Sci. Saint-Petersbourg 3, 27: 500. 1881

Type: CHINA. Qinghai Province, Guide or Guinan County, Moqugou River, alpine meadows, 3350 m, June, 1880; CHINA, Qinghai Province, Xining City, Xi'nachuan River, 2740 m, July, 1880, *Przewalski, Nikolai M.* (lectotype PE! Barcode No. 00027738, not specified kind of type K! Barcode No. K000750586, K000750587, E! Barcode No. E00024938).



FIGURE 1. Photo of *Androsace filicula* (Maxim.) Heng C. Wang & Jiao Sun, *comb. nov.* (\equiv *Pomatosace filicula* Maxim.).

Distribution: Endemic to China (east Qinghai, northwest Sichuan, and northeast Xizang)

Note: No. 00027738 (Fig. 2) from PE was designated as lectotype. (Lin *et al.* 2017) No. E00024938 was labeled as “not specified kind of type” by RBGE. Kew does not provide kind of type for No. K000750586 and K000750587.



FIGURE 2. The lectotype of *Androsace filicula* (Maxim.) Heng C. Wang & Jiao Sun, *comb. nov.* (\equiv *Pomatosace filicula* Maxim.). Photo provided by the Institute of Botany, Chinese Academy of Sciences.

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