

Viola changii sp. nov. (Violaceae) from Guangdong, southern China

Jin-Song Zhou and Fu-Wu Xing

J.-S. Zhou and F.-W. Xing (xinfw@scbg.ac.cn), South China Botanical Garden, the Chinese Academy of Sciences, CN-510650 Guangzhou, Guangdong, China. JSZ also at: Graduate Univ. of the Chinese Academy of Sciences, CN-100049 Beijing, China.

Viola changii J. S. Zhou & F. W. Xing sp. nov. (Violaceae), a new species from the Guangdong Province, China is described and illustrated. It is compared with the morphologically similar *V. lucens*.

Viola L. is the largest genus in the family Violaceae, with 525–600 species in the world (Clausen 1964, Ballard 1996). Wang (1991) recognized 111 species in China, about 21 species occur in the Guangdong province (Xing 2000). The mountains of eastern Asia are one of the centers of morphological and taxonomic diversity of the genus *Viola* L. (Ballard et al. 1999).

Viola ser. *Australasiaticae* Okamoto (Okamoto et al. 1993), formerly treated as *V. subsect. Serpentes* W. Becker under *V. sect. Viola* by Becker (1925), consists of about 10 species mainly distributed in the southern and southeastern part of Asia. The series is characterized by an acaulescent stoloniferous habit (Becker 1925, Steenis 1934, Wang 1991).

During an expedition to Nanling National Nature Reserve, Guangdong, as part of the project ‘Study on the systematics of the Genus *Viola* L. (Violaceae) in China’, a specimen of *Viola* was found that was easily identified as a member of *V. ser. Australasiaticae* Okamoto, but which could not be placed in any of the previously described taxa of this series. Thus, this plant is here described as a new species.

Viola changii J. S. Zhou & F. W. Xing sp. nov. (Fig. 1)

Species nova *Violae lucenti affinis, sed foliis ovatis vel ovate orbiculatis, 1.5 × 1.2 cm, supra atrovirentibus, subtus purpureis; pedicellis longioribus, 6–8 cm, floribus albis vel purpureis; differt.*

Type: China, Guangdong Province, Shaoguan City, Nanling National Forest Park, Qinshuigu, rocky crevices along margins of evergreen broad-leaved forests. alt. 600 m. 20 Mar 2007 J. S. Zhou 1580 (Holotype, IBSC).

Perennial herb, to 8–10 cm tall at anthesis. Acaulescent with horizontal rhizome, producing stolons at anthesis. Stolon with rosulate leaves at apex, usually producing adventitious roots. Leaves ovate or ovate-orbicular, 1.5 × 1.2 cm, narrowly cordate at base, obtuse or acute at apex, with obtusely crenate or subentire margin; leaf blade abaxially dark purple, puberulous only along veins, adaxially dark green, densely puberulous; petioles 1–2 cm long, densely puberulous; stipules 5 × 1.5 mm, lanceolate, acuminate at apex, sparsely fimbriate-laciniate along margin, base adnate to the petiole. Flowers 1.8–2.2 cm across, white to pale purple with dark violet veins on the basal petals; peduncles 6–8 cm long, slender, puberulous, with two bracteoles at the middle; bracteoles 5 × 1 mm, linear with entire margin and acuminate apex, puberulous; sepals 5 × 1 mm, linear-lanceolate to linear, acute at apex, sparsely fimbrio-ciliate along margin; sepal appendage up to 0.3–0.4 mm long, rounded, fimbrio-ciliate; petals obovate, the lateral ones bearded, the basal ones shorter than the others, acute at apex; spur 2 mm long, obtuse; stamens 5, 3 × 0.8 mm; style 4–4.5 mm long, geniculate at base, clavate distally, stigma narrowly winged along the lateral sides, at apex with a short beak. Capsule 6–7 mm long, ellipsoid, glabrous; seeds ovoid, 0.8 mm long. Flowering in March–May, fruiting in July–September.

Distribution and habitat

Viola changii is currently only known from type locality and Conghua, Guangdong. It grows in rocky crevices along margins of an evergreen broad-leaved forests and in moist places, at an altitude of 500–600 m. Other common species in these habitats are *Castanopsis eyrei*, *C. fabri*, *Machilus thunbergii*, *Schima superba*, *Daphne odora* var. *atrocaulis*, *Rubus reflexus*, *Rosa laevigata*, *Smilax china*, and *Diplopterogium chinensis*.

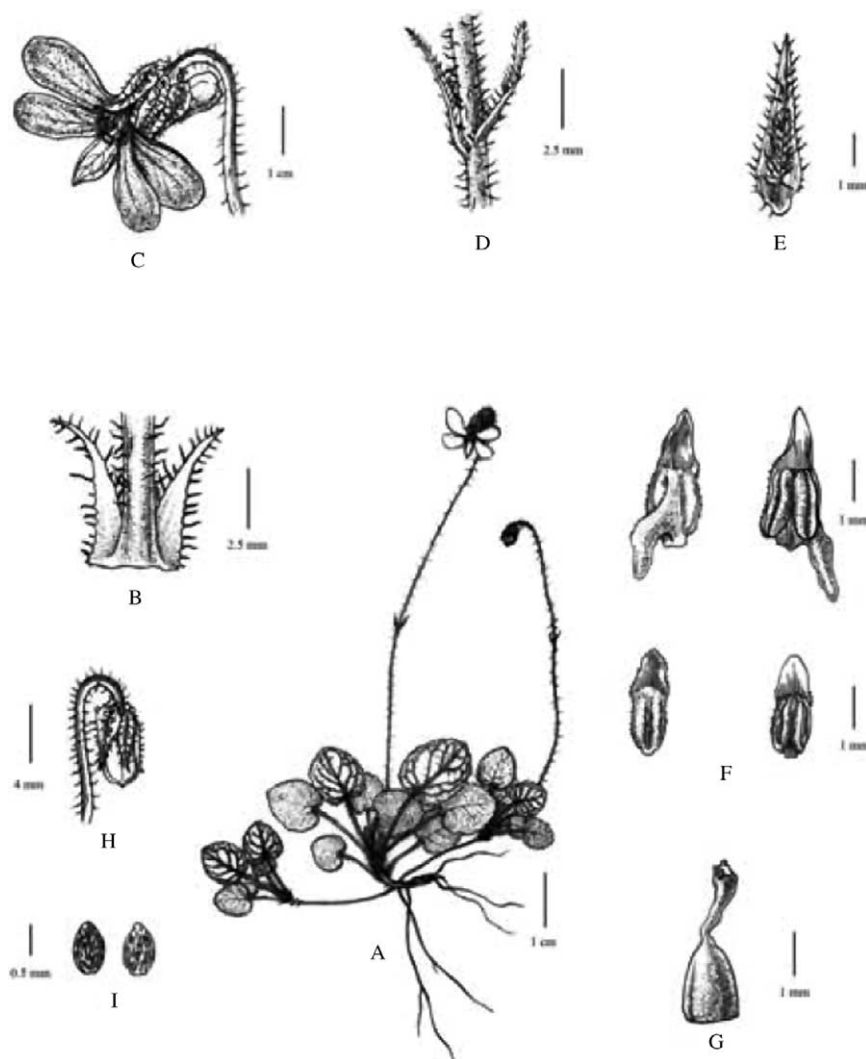


Fig. 1. *Viola changii* (from holotype, drawn by Yunxiao Liu). (A) plant at anthesis, (B) stipule, (C) petals, (D) bracteole, (E) sepals, (F) stamen, (G) pistil, (H) capsule, (I) capsule.

Table 1. Morphological differences between the species *Viola changii* and *V. lucens*.

	<i>V. changii</i>	<i>V. lucens</i>
Hight at anthesis	10–12 cm	5–6 cm
Leaves	ovate or ovate-orbicular, 1.5×1.2 cm, margin obtusely crenate or subentire, abaxially dark purple, puberulous only along veins, adaxially dark green, densely puberulous	oblong-ovate or oblong, $1-2 \times 0.5-1.3$ cm, margin crenate, both surfaces light green, densely white villous
Pedicel	6–8 cm long, with 2 bracteoles at the middle	3–4 cm long, with 2 bracteoles above the middle
Flower	white to light purple	light purple

Taxonomic remarks

Viola changii is closely related to *V. lucens* (Becker 1928), which occurs in Guizhou, southwest China (Zhou et al. 2007). *Viola changii* differs from *V. lucens* mainly by its oval leaves, 1.5×1.2 cm, with obtusely crenate or subentire margin, leaves that are abaxially dark purple and puberulous only along veins but adaxially dark green and densely puberulous, and by the pedicel being 6–8 cm long, with two bracteoles at the middle. The differences between the two species are summarized in Table 1.

Etymology

The specific epithet is in honour of the well-known expert of the flora of China, Prof. Chang Chao-chien (1900–1972), who was the first person who carried out research on the genus *Viola* in China.

Acknowledgements – The study was financially supported by the National Natural Science Foundation of China ('Study on systematics in the genus *Viola* (Violaceae) of China'; grant no. 30470137) and the Administrative Bureau of National Nature

Reserve ('Comprehensive survey on the plants in Nanling National Nature Reserve'). The authors are grateful to Mrs Yun-xiao Liu for preparing the illustration.

References

- Ballard, H. E. 1996. Phylogenetic relationships and infrageneric groups in *Viola* (Violaceae) based on morphology, chromosome numbers, natural hybridization and internal transcribed spacer (ITS) sequences. PhD thesis. – Univ. of Wisconsin.
- Ballard, H. E. et al. 1999. Shrinking the violtes: phylogenetic relationships of infrageneric groups in *Viola* (Violaceae) based on internal transcribed spacer DNA segments. – Syst. Bot. 23: 439–458.
- Becker, W. 1925. *Viola*. – In: Engler, A. and Prantl, K. (eds), Die Natürlichen Pflanzenfamilien. Verlag von Wilhelm Engelmann, Leipzig. 21: 363–376.
- Becker, W. 1928. New Chinese species of *Viola*. – Bull. Misc. Info., R. Bot. Gard. Kew 6: 247–252.
- Clausen, J. 1964. Cytotaxonomy and distributional ecology of western North American violets. – Madroño 17: 173–204.
- Okamoto M. et al. 1993. Morphology and chromosome number of *Viola pilosa*, and its systematic position. – Taxon 42: 781–787.
- Steenis, C. G. G. J. van 1934. On the origin of the Malaysian mountain flora. Part 1. Facts and statements of the problem. – Bull. Jand. Bot. Buitenzorg., ser. 3, 13: 135–262.
- Wang, Q. R. 1991. *Viola*. – In: Wang, Q. R. (ed.), Flora Reipublicae Popularis Sinicae 51: 8–129. Science Press, Beijing, in Chinese.
- Xing, F. W. 2000. Violaceae. – In: Wu D. L. (ed.), Flora of Guangdong 4: 65–79. Guangdong Science and Technology Press, Guangzhou, in Chinese.
- Zhou, J. S. et al. 2007. Two new synonyms of *Viola* Linn. (Violaceae). – J. Trop. Subtrop. Bot. 15: 366–368, in Chinese.