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## *Shangrilaia* (Brassicaceae), a New Genus from China

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**ABSTRACT.** The new genus and species *Shangrilaia nana* (Brassicaceae) are described and illustrated, and their relationships to distinguishing characters from *Braya* and *Baimashania* are discussed.

**Key words:** *Baimashania*, Brassicaceae, *Braya*, China, *Shangrilaia*, Yunnan.

Although a comprehensive account of the Brassicaceae for the *Flora of China* has recently been published (Zhou et al., 2001), many new taxa and new nomenclatural adjustments have since been added for China, especially those that are based on plants from Sichuan, Tibet (Xizang), Yunnan, and Xinjiang provinces or autonomous regions (Al-Shehbaz, 2002a, 2002b, 2002c, 2002d, 2003, 2004a, 2004b; Al-Shehbaz & Koch, 2003; Al-Shehbaz & Warwick, 2004; Al-Shehbaz et al., 2002a, 2002b). Such additions clearly indicate that our knowledge of the Chinese mustards, especially from the provinces and regions above, is far from being complete, and further fieldwork is likely to bring additional novelties. A case in point is the present paper, which describes a new genus and species, *Shangrilaia nana*, from Yunnan Province.

***Shangrilaia*** Al-Shehbaz, J. P. Yue & H. Sun, gen. nov. TYPE: *Shangrilaia nana* Al-Shehbaz, J. P. Yue & H. Sun.

Herba nana, perennis, scaposa, pulvinata. Folia aciculari-linearia, ciliata, integra, persistentia, dense imbricata, basi complanata, pilis simplicibus instructa. Flores solitarii. Sepala ovata, nonsaccata. Petala alba, spathulata. Glandulae nectariferae confluentes. Ovula 6–12. Fructus ovoidei, teretes, breviter stipitati, valvis pubescentibus coriaceis; stylus tenuis, ad 1 mm longus; stigma integrum. Semina uniseriata, ovoidea; cotyledones incumbentes.

Dwarf, perennial, scapose, pulvinate herbs, with simple or few-branched caudex covered with leaves of previous years. Trichomes simple. Stems densely

leafy, internodes obsolete. Leaves acicular-linear, thick, densely overlapping, ciliate, persistent, with flattened, triangular base. Flowers solitary, terminating stem. Sepals ovate, deciduous, erect, not saccate at base. Petals white, spatulate, obtuse, clawed. Stamens 6, tetradynamous; filaments slender at base; anthers ovate, not apiculate at apex. Nectar glands confluent, subtending bases of all stamens; median glands present. Ovules 6 to 12 per ovary. Fruit dehiscent silicle, ovoid, terete, short stipitate; valves leathery, with a distinct midvein at least basally, pubescent; replum flattened at least basally; septum perforate, veinless; style slender, to 1 mm long; stigma capitate, entire. Seeds uniseriate, wingless, ovoid, not mucilaginous when wetted; cotyledons incumbent.

Initial attempts to identify the plants on which *Shangrilaia* is based, using Zhou et al. (2001), Appel and Al-Shehbaz (2003), or the interactive keys (<http://flora.huh.harvard.edu:8080/actkey/index.jsp>) to the Brassicaceae genera of the world or that of the flora of China, yielded unsatisfactory results. Those keys inadequately led to either *Baimashania* Al-Shehbaz or *Braya* Sternberg & Hoppe, and the characters of the new genus did not match those of these two genera. It became abundantly clear that a new genus is needed to accommodate them. *Shangrilaia*, which is named after the city Shangri-La (formerly Zhong Dian), differs from both *Baimashania* and *Braya* in having exclusively simple instead of a mixture of simple and branched trichomes, perforate instead of complete septa, and acicular-linear instead of distinctly flattened leaves. It also differs from *Baimashania* in having incumbent instead of accumbent cotyledons, ovoid and terete instead of linear and latiseptate (flattened parallel to the septum) fruits, thick leathery instead of papery valves, veinless instead of veined septum, and flattened instead of rounded replum. From

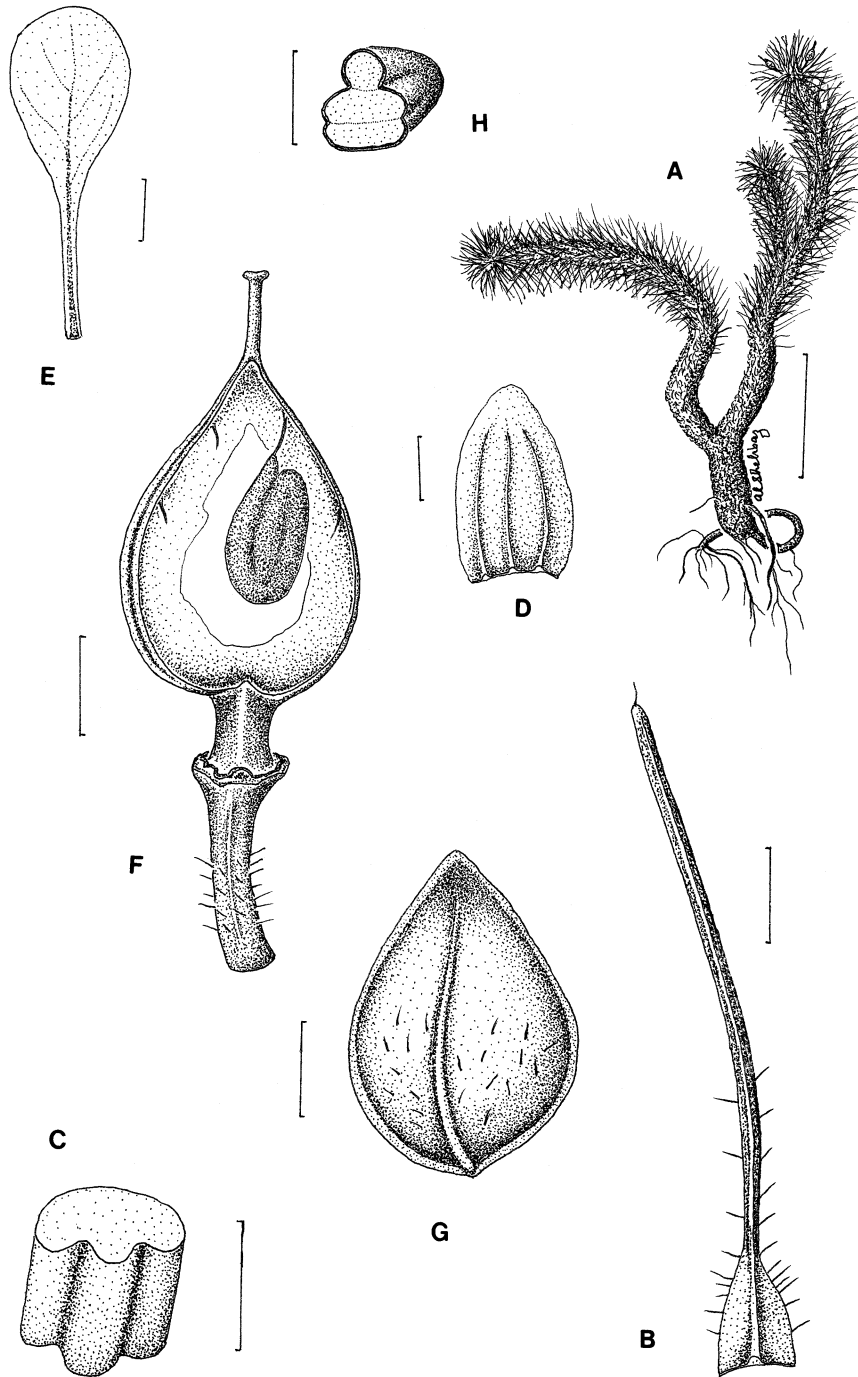


Figure 1. *Shangrilaia nana* Al-Shehbaz, J. P. Yue & H. Sun. —A. Plant. —B. Leaf. —C. Portion of leaf showing abaxial surface. —D. Sepal. —E. Petal. —F. Fruit and pedicel with valve removed to show seed and perforated septum. —G. Fruit valve. —H. Section of seed showing incumbent cotyledons. Scale: A = 1 cm; B, D–G = 1 mm; C = 0.2 mm, H = 0.5 mm. Drawn by Al-Shehbaz from the holotype (Yue 0366).

*Braya*, it is also readily distinguished by having solitary flowers at the end of the stem instead of flowers in racemes or corymbs on a well-developed peduncle, as well as in having confluent instead of four separate nectar glands.

One species assigned to *Braya* by Zhou et al. (2001), *B. forrestii* W. W. Smith, was described as having exclusively simple trichomes. However, molecular studies by Warwick et al. (2004) clearly demonstrated that this species is quite distinct from the rest of *Braya* and perhaps should be excluded from that genus.

**Shangrilaia nana** Al-Shehbaz, J. P. Yue & H. Sun, sp. nov. TYPE: China. Yunnan: Shi-ka Shan, near Shangri-La, scree slope, sandy area, 27°47'N, 99°35'E, 4200 m, 5 Aug. 2003, *Ji-pei Yue 0366* (holotype, MO; isotype, KUN). Figure 1.

Herba pulvinata 1–2.5 cm alta, caudice simplici vel pauciramoso. Pili 0.2–0.5 mm longi. Folia aciculari-lineararia, 2–6 × 0.2–0.4 mm, dense imbricata, sparse ciliata, basi triangulari, 1–1.5 × 1–1.5 mm. Flores solitarii. Pedicelli fructiferi 0.5–2 mm longi, crassi. Sepala ovata, glabra, 2.5–3 × 1.5–2 mm. Petala alba, spathulata, 4–5 × 1.5–2.5 mm, unguibus 2–3 mm longis. Ovula 6–12. Fructus ovoidei, teretes, breviter stipitati, valvis 3–3.5 × 2–2.5 mm, pubescentibus coriaceis, septis ad maturitatem perforatis; stylus 0.4–1 mm longus. Semina ovoidea, 1–1.2 × 0.6–0.8 mm.

Pulvinate herbs 1–2.5 cm tall, caudex simple or few-branched. Trichomes simple, 0.2–0.5 mm long. Leaves acicular-linear, 2–6 × 0.2–0.4 mm, densely overlapping, with a prominent midvein abaxially; base flattened, subtriangular, 1–1.5 × 1–1.5 mm, margin entire, sparsely ciliate to subsetose at least basally or up to the middle, apex obtuse, often with 1 to 3 trichomes. Flowers solitary, in leaf axils, 1 to 4 terminating the stem. Fruiting pedicels stout, somewhat angled, 0.5–2 mm long, glabrous or sparsely pubescent with straight, horizontal trichomes, distinctly expanded at receptacle. Sepals ovate, glabrous, 2.5–3 × 1.5–2 mm, with prominent veins. Petals white, spatulate, 4–5 × 1.5–2.5 mm, obtuse; claw 2–3 mm long, slender at base. Filaments of median stamens 2–2.5 mm long, those of lateral stamens 1–1.2 mm long; anthers ovate, 0.5–0.6 mm long. Ovules 6 to 12 per ovary. Fruit ovoid, terete; valves leathery, 3–3.5 × 2–2.5 mm, with flat margin and prominent midvein at least basally, puberulent with simple trichomes; septum initially complete, becoming perforate at seed's maturity; gynophore stout, slightly wider than pedicel, 0.2–0.7 mm long; style slender, 0.4–1 mm long. Seeds ovoid, 1–1.2 × 0.6–0.8 mm. Fruiting August–September.

**Habitat.** Scree slopes on sandy soil; 4180–4200 m. Yunnan.

Both the type collection and the paratype have ample fruits, and the floral description is based on two flowers found on two plants. Collection of flowering material should be done in late June or early July. There is some variation in the pubescence of leaves, and most plants examined have trichomes at the leaf base and usually one or a few at the leaf apex. Although there are up to six ovules in each locule, usually one or two develop into mature seeds. The septum is complete during early fruit development, and fruits with mature seeds always have perforate septa.

**Paratypes.** CHINA. **Yunnan:** Shika Shan, Zhong Dian, 27°47'N, 99°35'E, 4180 m, 27 Sep. 2001, *J. P. Yue 054* (KUN, MO).

**Acknowledgments.** We are most grateful to Henk van der Werff for correcting the Latin and Victoria C. Hollowell for the editorial advice. We thank Fernand Jacquemoud and an anonymous reviewer for their valuable comments. We are much indebted to the Yunnan Natural Science Foundation (grants-in-aid 2002C0060M), the National Natural Science Foundation of China (grants 30270121 and 40332021), and the Innovation Program of the Chinese Academy of Science (grant KSCX2-1-09), all of which supported fieldwork and research of one of us (J. P. Yue).

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