
The Chinese Endemic *Neomartinella* (Brassicaceae)

Ihsan A. Al-Shehbaz

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166-0299, U.S.A.

ABSTRACT. The previously monotypic *Neomartinella* is expanded to include two additional species. *Neomartinella grandiflora* is described as new, and the new combination *N. yungshunensis* is proposed. *Neomartinella* is revised, and its relationship to *Eutrema* is discussed.

When L veill  (1904) proposed the new genus *Martinella*, he was unaware that the name was a later homonym of *Martinella* Cooke & Masee of the Fungi Imperfecti (1889) and of *Martinella* Baillon of the Bignoniaceae (1891). L veill  (1916) proposed *Esquioliella* to replace his *Martinella*, but Pilger (1906) had already proposed *Neomartinella* ten years earlier.

Neomartinella was placed by Schulz (1936) in the tribe Arabideae, a tribal disposition that was followed by Lan (1987) and Li et al. (1995). In my opinion, the closest relative of *Neomartinella* is *Eutrema* R. Brown, a genus that Schulz (1924, 1936) placed in the tribe Sisymbrieae. Schulz (1936) depended primarily on the cotyledonary position to separate the Arabideae (cotyledons accumbent) from the Sisymbrieae (cotyledons incumbent), but this tribal distinction is clearly artificial, and both *Eutrema* and *Neomartinella* should be associated with *Cardamine* L., a genus that has been traditionally placed in the Arabideae. In fact, it is sometimes difficult to separate young plants of the three genera, and the characters that separate *Cardamine* from *Neomartinella* are discussed below. From *Eutrema*, *Neomartinella* is readily distinguished by its annual habit, obcordate, apically emarginate petals, accumbent cotyledons, 16 to 40 ovules per ovary, and usually leafless scapes. By contrast, species of *Eutrema* are rhizomatous perennials with oblong-spatulate, apically obtuse petals, incumbent cotyledons, 2 to 10 ovules per ovary, and leafy stems. The two genera resemble each other in having leaves with apiculate callosities that terminate the lateral veins, but in *Neomartinella* the callosities are restricted to the notches between the leaf teeth, whereas in *Eutrema* they occupy the apices of individual leaf teeth. Other similarities include long petiolate basal leaves with palmate venation, non-saccate sepals, white petals, strongly dilated filament bases, confluent nectar glands, nonapiculate

anthers, usually terete and torulose fruits, and wingless uniseriate seeds.

Although He and Lan (1997) proposed the new species *Neomartinella guizhouensis* S. Z. He & Y. C. Lan, this species name is definitely a new synonym of *Eutrema tenue* (Miquel) Makino, extending its range into Guizhou Province, China. *Eutrema tenue* grows in Sichuan, Yunnan, and Tibet (Xizang). As delimited herein, *Neomartinella* consists of three species, of which one, *N. grandiflora*, is described as new, and another, *N. yungshunensis*, is transferred from *Cardamine*. The present revision is based on the examination of all available collections in the major herbaria of China, Europe, and North America.

Neomartinella Pilger, in Engler & Prantl, Nat. Pflanzenfam., Nachtr. 3: 134. 1906. *Martinella* H. L veill , Bull. Soc. Bot. France 60: 290. 1904, not *Martinella* Baillon (1891), not *Martinella* Cooke & Masee (1889). *Esquioliella* H. L veill , Mondes Plantes, ser. 2, 18: 31. 1916. TYPE: *Neomartinella violifolia* (H. L veill ) Pilger.

Herbs annual. Trichomes absent. Stems few to several from basal rosette, simple, leafy or leafless. Basal leaves long petiolate, rosulate, simple, palmately veined, margin crenate-repand or rarely subentire, with distinct apiculate callosities that terminate ultimate veins and occupy marginal notches. Cauline leaves absent or similar to basal. Racemes ebracteate, elongated in fruit. Fruiting pedicels slender, erect to divaricate. Sepals ovate or rarely oblong, spreading, base of inner pair not saccate. Petals white, spreading; blade obcordate, apex emarginate; claw absent. Stamens 6, spreading, subequal in length; filaments strongly dilated at base; anthers ovate, not apiculate at apex. Nectar glands confluent and subtending bases of all stamens; median nectaries present. Ovules 16 to 40 per ovary. Fruit dehiscent siliques, linear to oblong, terete or rarely slightly latiseptate, sessile; valves papery, with an obscure midvein, torulose; replum rounded, visible; septum complete, membranous, translucent, veinless; style absent or distinct and to 1 mm, cylindrical or clavate; stigma capitate, entire.

Seeds uniseriate, wingless, oblong to orbicular, slightly flattened; seed coat minutely reticulate, not mucilaginous when wetted; cotyledons accumbent.

Three species: endemic to China.

KEY TO THE SPECIES OF *NEOMARTINELLA*

1a. Stems leafy; style clavate 1. *N. yungshunensis*

1b. Stems leafless; style absent or cylindrical.

2a. Style absent or rarely to 0.2 mm long; sepals 1.5–2 mm long; petals 4–5.5 mm long; ovules 16 to 20 per ovary; fruit oblong-linear to oblong, 5–12 mm long; at least some flowers on solitary pedicels 2. *N. violifolia*

2b. Style cylindrical, to 1–1.2 mm long; sepals ca. 3.5 mm long; petals ca. 8 mm long; ovules 30 to 40 per ovary; fruit linear, young ones longer; flowers in racemes . . . 3. *N. grandiflora*

1. ***Neomartinella yungshunensis*** (W. T. Wang)

Al-Shehbaz, comb. nov. Basionym: *Cardamine yungshunensis* W. T. Wang, Keys Vascular Pl. Wuling Mts. 578. 1995. TYPE: China. Hunan: Yungshun, Xiaoxi, 480–520 m, 27 May 1988, *Exped. Wulingshan 271* (holotype, PE).

Herbs 20–41 cm tall, glabrous throughout. Stems erect, simple, leafy, few to several from base. Basal leaves rosulate; petiole 3–11 cm long; leaf blade ovate or broadly so, 2–6 × 1–5 cm, base subcordate to truncate, margin repand, with apiculate callosities to 0.5 mm, apex rounded to obtuse. Middle stem leaves similar to basal but smaller, often subentire. Inflorescence a lax raceme, ebracteate. Fruiting pedicels ascending, filiform, 1–2 cm long. Sepals ovate, 1.5–2 × 1–1.2 mm. Petals white, obcordate, 4–5 × 2–2.5 mm. Filaments white, 1.5–2 mm long; anthers ovate, 0.6–0.8 mm long. Ovules (20 to)30 to 40 per ovary. Fruit linear, (0.8–)1.5–3.5 cm × 1–1.5 mm, terete, torulose; valves with an obscure midvein; style clavate, 0.6–1 mm long. Seeds oblong, slightly flattened, 0.8–1.1 × 0.6–0.7 mm. Flowering in April, fruiting in May.

In his original description of *Cardamine yungshunensis*, Wang (1995) indicated that the species is closely related to *C. violifolia* O. E. Schulz. However, he overlooked the fact that the fruits in *C. yungshunensis* are terete and distinctly torulose, the valves do not dehisce explosively nor do they twist upon dehiscence, the replum is narrowly terete, and the floral parts (sepals, petals, and stamens) are spreading, whereas in *Cardamine* the fruits are flattened and not torulose, the valves dehisce explosively and become twisted, the replum is typically flattened or winged, and the floral parts are erect. Therefore, *C. yungshunensis* is perfectly at home in *Neomartinella* and not *Cardamine*. As indicated be-

low, *C. violifolia* is often confused with *Neomartinella violifolia*, but careful examination of the characters above should readily distinguish the two genera.

Specimens examined. CHINA. **Hunan:** Yungshun, Xiaoxi, *Exped. Wulingshan 159* (PE); Yuanling Zian, Qim-eijie, *Anonymous 35* (IBSC).

2. ***Neomartinella violifolia*** (H. Léveillé) Pilger, in Engler & Prantl, Nat. Pflanzenfam., Nachtr. 3: 134. 1906. *Martinella violifolia* H. Léveillé, Bull. Soc. Bot. France 60: 290. 1904. *Esquirolia violifolia* (H. Léveillé) H. Léveillé, Mondes Plantes, ser. 2, 18: 31. 1916. TYPE: China. Guizhou (as Kouy-Tchéou): environs de Gan-pin, Parois du Ta-long, Tsin-gay, Mont Kao-tchay, 11 Feb. and 8 Mar. 1898, *Martin & Bodinier 2069* (holotype, E; isotype, P).

Herbs (4–)7–17(–20) cm tall, scapose, glabrous throughout. Stems erect, simple, leafless, few to several from base. Basal leaves rosulate; petiole (1.5–)3–10(–14) cm long; leaf blade cordate to reniform or suborbicular, (0.8–)1.5–4(–5) × (0.6–)1–3.5(–4) cm, base cordate, margin crenate-repand or rarely subentire, with apiculate callosities to 1 mm, apex rounded to obtuse. Cauline leaves absent. Fruiting pedicels suberect to spreading, filiform, (1–)1.5–4(–7) cm long, a few solitary and originating from center of rosette. Sepals ovate, 1.5–2 × 1–1.2 mm. Petals white, obcordate, 4–5.5 × 2–3 mm. Filaments white, 1.5–2 mm long; anthers ovate, 0.4–0.5 mm long. Ovules 16 to 20 per ovary. Fruit oblong-linear to oblong, 5–12 × 1–1.5 mm, slightly compressed, subtorulose; valves with an obscure midvein; style absent or rarely to 0.2 mm long. Seeds suborbicular, slightly flattened, 0.6–0.9 mm diam. Flowering February–April, fruiting March–May.

In the original description of *Martinella violifolia*, Léveillé (1904) cited one collection, *Martin & Bodinier 2069*, that was made on two different dates, 11 February and 8 March 1898. Launer (1965) correctly indicated that the holotype is at E, and this specimen, which has two plants at different stages of fruit maturity, has both collection dates written on the label. It is assumed that the plant with young fruits, which should be selected as the type, was probably collected in March, while the one with only flowers was collected in February.

The habit and leaves of *Neomartinella violifolia* strikingly resemble those of *Cardamine violifolia* and *Eutrema yunnanense*, and the three species can easily be misidentified. In fact, one collection from Sichuan, *Farges s.n.*, is a mixture of all three spe-

cies. Young plants of these species can be separated as follows: *N. violifolia* has the apiculate callosities in the marginal notches (for an accurate illustration, see Ying et al., 1993), whereas both *C. violifolia* and *E. yunnanense* have these callosities at the apices of individual teeth. The last two species have leafy stems, and in *C. violifolia* the stem leaves are compound and minutely auriculate, whereas in *E. yunnanense* the stem leaves are always simple and not auriculate at base.

Neomartinella violifolia is reported herein for the first time from Hubei and Sichuan, and the species was not included in the floristic accounts of these provinces (Kuan, 1986; Tan et al., 1999) or for China (Lan, 1987). One collection number, *Cavalerie 3091*, was used for samples collected from Guizhou in 1910 and Yunnan in 1907.

Specimens examined. CHINA. **Guizhou:** Tsin-gay, Mont Kao-tchay, *Laborde & Bodinier 2069 bis* (P); Gan Chouen, *Cavalerie 3091* (E, MO, P); Gan Pui, *Esquirol 2027* (E, K, P). **Hubei:** Patung, *Henry 5439* (K). **Hunan:** Tianping Shan, *Anonymous 35* (KUN); Yuandao Dong, *Anonymous 111* (KUN). **Sichuan:** Tchen Keou-Tin, *Farges s.n.* (P); Nanchuan Xian, Jinfo Shan, *Tan Da 91* (PE). **Yunnan:** Guan'an Xian, Ma-kai, *Wang 87432* (KUN, PE); Yan-tze-dong, *Wang 87565* (IBSC, KUN, PE); Pien-Jiang, *Cavalerie 3091* (B, E, K, P, W).

3. *Neomartinella grandiflora* Al-Shehbaz, sp. nov. TYPE: China. Hunan: Jiulongan, damp places by stream banks, 600 m, 17 Apr. 1985, *Luo Yibo 2121* (holotype, PE).

Herba scaposa glabra. Folia basalia rosulata, longi-petiolata, late ovata vel suborbiculata, crenato-repanda, callis apiculiformibus in sinibus marginis sitis; folia caulina carentia. Racemi ebracteati; pedicellae fructiferae 1–1.5 cm longae. Sepala ca. 3.5 mm longa. Petala alba, anguste obcordata, ca. 8 × 3 mm. Ovarium 30- ad 40-ovulatum. Fructus immaturi lineari, ca. 2 cm × 1 mm, subtorulosi; stylum 1–1.2 mm longum. Semina ignota.

Herbs ca. 15 cm tall, scapose, glabrous throughout. Stems erect, simple, leafless, few from base. Basal leaves rosulate; petiole 4–12 cm long; leaf blade broadly ovate to suborbicular, 2–6 × 1.5–3.5 cm, base subcordate to subtruncate, margin crenate-repand, with apiculate callosities to 0.5 mm, apex rounded. Cauline leaves absent. Fruiting pedicels suberect to ascending, 1–1.5 cm long, all on raceme. Sepals oblong, ca. 3.5 × 1.5 mm. Petals white, narrowly obcordate, ca. 8 × 3 mm. Filaments white, ca. 3.5 mm long; anthers ovate, ca.

0.6 mm long. Ovules 30 to 40 per ovary. Immature fruit linear, ca. 2 cm × 1 mm, subtorulose; style slender, 1–1.2 mm long. Mature seeds not seen. Flowering in April.

Neomartinella grandiflora is known only from the two collections cited here. It has the largest flowers in the genus, and is readily distinguished from the other two species by the characters in the key above.

Paratype. CHINA. **Sichuan:** Tchen-kéou-tin, *R. P. Farges s.n.* (P).

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