

Osteomeles schwerinae C. K. Schneid. (Rosaceae): a new record for the flora of Taiwan

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Abstract. *Osteomeles schwerinae* C. K. Schneid. is reported for the first time from Taiwan. A key and several useful features that differentiate the present species from its only congener in Taiwan, *O. anthyllidifolia* var. *subrotunda*, are presented. A taxonomic treatment of the two species in Taiwan and a line-drawing which illustrates the present new record are provided.

Keywords: *Osteomeles*; *O. anthyllidifolia* var. *subrotunda*; *O. schwerinae*; Rosaceae; Taxonomy; Taiwan.

On a field trip to Nantou County made by the senior author in 1993, an unknown taxon assignable to the genus *Osteomeles* Lindl. (Liu & Hsieh 267) was collected and sent to the junior author for identification. It turned out that this collection represents *O. schwerinae* C. K. Schneid., a species not previously reported in the literature relating to the flora of Taiwan. *Osteomeles schwerinae* might be indigenous to Taiwan but avoided collection until recently because the collection locale (Figure 1) is not easily accessible. The population is large with more than 300 individuals, and the species is commonly found at higher elevations in the provinces Gansu, Guizhou, Sichuan, and Yunnan of mainland China.

Osteomeles, characterized by pinnately compound leaves and stony pomes, is a small genus of about five species, native to eastern Asia and Polynesia (Yu and Ku 1974; Liu and Su, 1977; Yu et al., 1985). Three species were previously described from central and southern mainland China, of which *O. anthyllidifolia* (Sm.) Lindl. var. *subrotunda* (C. Koch) Masamune (Ohashi, 1993) was the only species previously known to occur also in Taiwan. After a preliminary survey of the genus *Osteomeles* based on specimens from HAST, TAI, and KYO, we found that the identities and nomenclatures within the genus are highly confused and a comprehensive revisional study is definitely demanded. The distribution ranges of the genus are wide; the number of the leaflets per leaf and their shapes, sizes, and pubescent states within an individual species or even among the same collection number are highly variable; and the herbarium specimens available are geographically incomplete, especially those from mainland China and Polynesia. It is, therefore, our intention to do a thorough monographic study. At this time, we present only a taxonomical treatment of the two indigenous species in Taiwan, based on specimens available from HAST,

KYO, and TAI. The nomenclature, descriptions, and useful diagnostic characters of the two species are given as follows. In addition, the collection place and illustration of the new record are provided.

Key to the *Osteomeles* Species in Taiwan

- 1a. Stem prostrate; leaves with (7-)11–15 leaflets; leaflets coriaceous, obovate to obovate-oblong, ca. 6–10 mm long, apex rounded or slightly emarginate, abaxial surface moderately to densely pilose; calyx tube and lobe densely hirtellous.....
..... 1. *O. anthyllidifolia* var. *subrotunda*
- 1b. Stem erect; leaves with 19–31 leaflets; leaflet chartaceous to subcoriaceous when mature, elliptic to obovate, ca. 3–5 mm long, apex abruptly acuminate, abaxial surface sparsely hirtellous; calyx tube and lobe sparsely hirtellous..... 2. *O. schwerinae*

1. *Osteomeles anthyllidifolia* (Sm.) Lindl. var. *subrotunda* (C. Koch) Masam. in Ann. Rep. Taihoku Bot. Gard. 2: 124. 1932; Ohashi in Fl. Taiwan 2nd ed. Vol. 3, p. 84. 1993.

O. subrotunda C. Koch in Miq., Ann. Bot. Lugd.-Bat. 1: 250. 1864.

O. anthyllidifolia f. *subrotunda* (C. Koch) Koidz. in J. Coll. Sci. Univ. Tokyo 34(2): 44. 1913.

O. anthyllidifolia auct. non Lindl.: Hayata, Icon. Pl. Form. 3: 101. 1913; Li, Woody Fl. Taiwan 276. 1963; Liu & Su in Fl. Taiwan 3: 71. 1977.

Prostrate shrub, much-branched; young branches polished. Leaves odd-pinnate, 2–3.5 cm long, 1.5–2.0 cm wide; leaflets (7-) 11–15, coriaceous, obovate to obovate-oblong, 6–10 mm long, 4–6 mm wide, rounded or obscurely to slightly emarginate at apex, rounded to obtuse at base, margins entire and revolute, upper surface rugose

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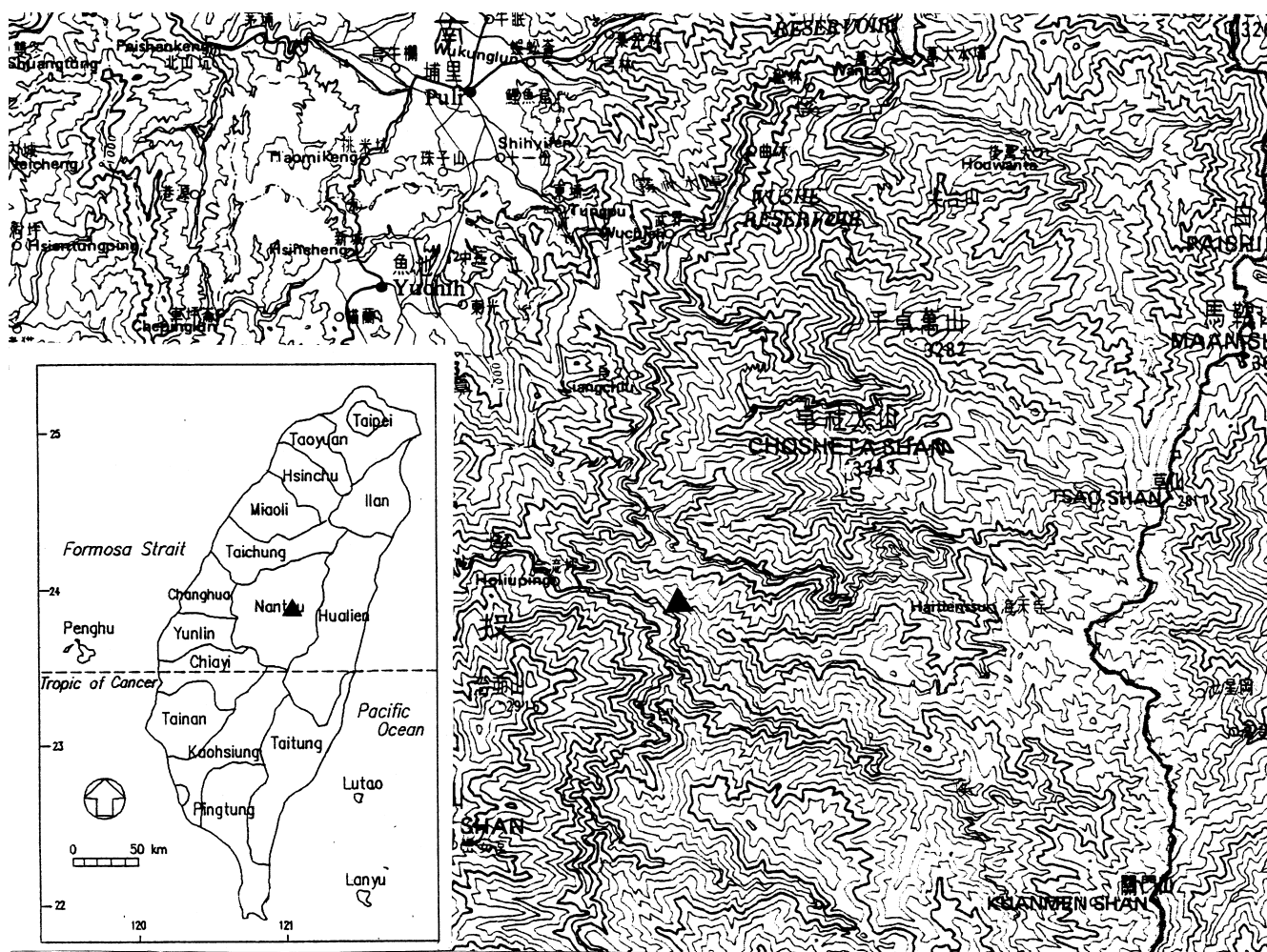


Figure 1. Detailed collection locale (solid triangle) of *Osteomeles schwerinae* in Taiwan

and sparsely pilose, then glabrate, lower surface moderately to densely pilose; petioles 5–8 mm long; stipules subulate, 3–4 mm long, caducous. Inflorescences cymose, 4–5-flowered; petals white, broadly ovate. Fruits globose, about 5 mm in diameter, crowned with persistent sepals.

Specimens examined. TAITUNG HSIEH: Lanyu, Yehyu to Langtao, Hsu 9482 (TAI), Leu et al. 2176 (HAST); without further locality, Sasaki s.n. in 1942 (TAI).

Notes. The cited collections were made on coral rocks near the sea. Koch originally described *O. subrotunda* on the basis of Bürger's collection (n. v.) from the islands in the south of Japan proper. He also noted that no flowers or fruits were available for study. Masamune (1932) treated Koch's species as a variety of *O. anthyllidifolia*. Earlier, Hemsley (1900) had reported that *O. subrotunda* also occurs in Guangdong Province on mainland China. Obviously, Yu and Ku (1974) adopted Hemsley's view that *O. subrotunda* is specifically distinct from the *O. anthyllidifolia* and extended the definition of the species to include also the taxa from the Ryukyus, the Bonin Islands, and the Philippines. We have examined a number of collections from the former two islands and found that

their style bases are villous rather than glabrous as illustrated by Hemsley in his plate 2644 and mentioned by Yu and Ku in their key and specific description. Unfortunately, no materials from Guangdong Province assignable to *O. subrotunda* are available for further scrutiny, and the species from the Bonin Islands are especially variable. Again, we urge a critical revisional study of the genus.

2. *Osteomeles schwerinae* C. K. Schneid. Ill. Handb. Laubh. 1: 763. t. 430 m, 431 o-r. 1906 & In Fedde, Repert. Spec. Nov. Regni Veg. 3: 222. 1906; E. Wils. in Sarg. Pl. Wilson. 1: 184. 1912; Hand.-Mazz. Symb. Sin. 7: 461. 1933; Iconogr. Commoph. Sinic. 2: 207. t. 2143. 1972; Fl. Reipub. Popul. Sin. tomus 36: 208, f. 24: 1-5. 1974; Yu et al. in Woody Fl. China 990. 1985.

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O. chinensis Lingelsh. & Borza in Fedde, Repert. Spec. Nov. Regni Veg. 13: 386. 1914.

O. anthyllidifolia auct. non Lindl.: Franch. Pl. Delavay. 227. 1890; Hook. f. In Curtis's Bot. Mag. 120: t. 7354. 1894.

Figures 1 and 2

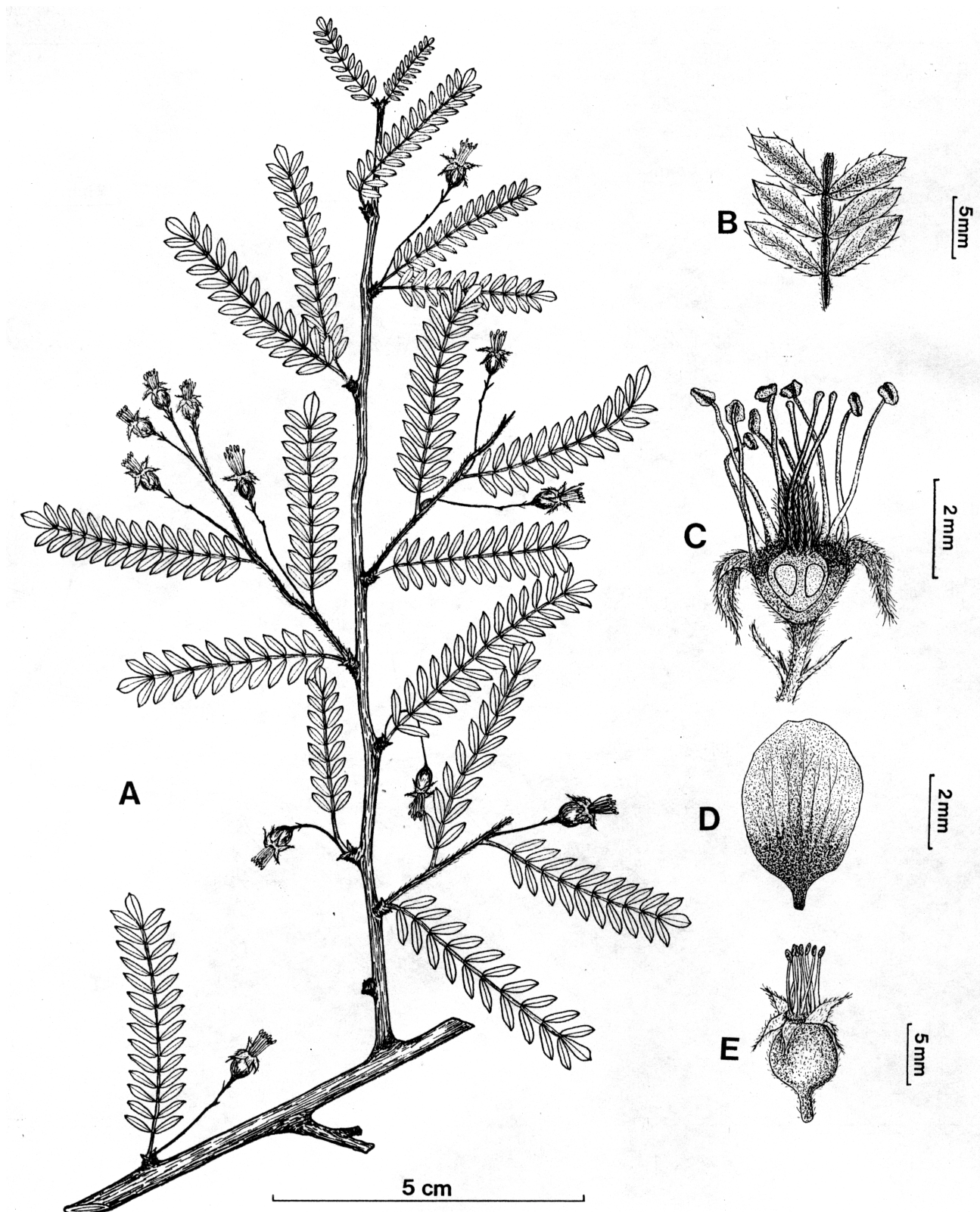


Figure 2. *Osteomeles schwerinae* (from Liu & Hsieh 267). A, habit; B, portion of leaf (adaxial view), showing the winged rachis and the unequal-sided leaflets at their bases; C, longitudinal section of flower; D, a petal; E, mature fruit.

Erect, deciduous to semi-evergreen shrub, up to 4 m tall; young branchlets slender, aggregated, terete, sparsely hirtellous and glabrescent; stipules linear to lanceolate, ca. 4 mm long, caducous but the base persistent; leaves odd-pinnate, ca. 3 cm long, 1 cm wide, clustered at the lateral short branches, the rachis winged, sulcate above; petioles slender, ca. 5 mm long, densely sericeous; leaflets 19–31, subsessile, elliptic to oblong-obovate (except the topmost which are usually angular-obovate), 3–5 mm long, 2–3 mm wide, sparsely hirtellous on the lower part of adaxial midrib and sparsely hirtellous on abaxial surface, obtuse and mucronulate at apex, unequal-sided at base; flowers often 3 (–5) forming a corymbose inflorescence at lateral short branch, each flower subtended by two subulate bracteoles, flowers sometimes solitary, the peduncle and the pedicels densely sericeous, the latter 3–7 mm long; calyx tube and lobes sparsely sericeous outside, glabrous inside, the lobes 5, lanceolate, ca. 2.5×1 mm, gradually acuminate at apex; petals white, obovate to elliptic, ca. 5×3 mm; stamens 15–21, the filaments 3–5 mm long; gynoecium of 5 pistils, the style linear, ca. 4 mm long, villose basally, connate and adnate to hypanthium; ovary 5-celled; mature peduncle 1–1.5 cm long; fruit ovoid to globose, sparsely sericeous at tip, ca. 5–8 mm in diam, crowned by the persistent calyx (which reflexed), filaments, and styles, pyrenes 5.

Specimens examined. NANTOU HSIEN: at the 6K mark of the Tanta Logging Way, Liu & Hsieh 267 (HAST, TAI).

Notes. The voucher specimen was collected in the upper-stream area of the Tsoshui River, Nantou Hsien, Taiwan (Figure 1). The population of *O. schwerinae* is situated on a southwest-facing slope at an elevation of approximately 1,000 meters. The inclination of the slope was more than 45 degrees. Rock types in the habitat were mainly argillite and slate complex of Lushan Formation of the Miocene Age (Ho, 1944). Apparently, the soils were prominently of slate pale colluvial type. The mean annual rainfall and temperature were estimated as 2,300 mm and 17.4°C, respectively (based on data by the Central Weather Bureau, 1985–1989).

The whole area, covered by a wide spectrum of shrubs and young trees, appeared to be a slope that naturally revegetated following a slide occurrence. The population

of *O. schwerinae* was composed of more than three hundred individuals up to 4 meters high. Associated plants, mainly pioneer and light-demanding, consisted of *Cyclobalanopsis glauca*, *Pistacia chinensis*, *Liquidambar formosana*, *Zelkova serrata*, *Spiraea tarokoensis*, *Glochidion rubrum*, *Pittosporum illicioides*, *Morus australis* and *Acer albopurpurascens*. Flowering of *O. schwerinae* occurred in April, and fruiting lasted to the end of May. Both flowers and fruits were abundant in 1992 and 1993.

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