



## *Glyptopetalum verticillatum* (Celastraceae), a new species from Yunnan, China

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The genus *Glyptopetalum* Thwaites (1856: 267) consists of approximately twenty species distributed in tropical and subtropical Asia (Liu & Funston 2008). It belongs to the family Celastraceae and is very close to the genus *Euonymus* Linnaeus (1753: 197). Hou (1962, 1963) provided the best overview of *Glyptopetalum*, describing plants of that genus as shrubs or small trees with 4-merous flowers, 4-locular ovaries, pendulous ovules, with one per locule, loculicidal capsules with persistent columella and branched raphes. In particular, he stressed that one ovule per cell, persistent columella and branched raphes are the most reliable characteristics for distinguishing *Glyptopetalum* from *Euonymus*. Simmons *et al.* (2012) consider both *Glyptopetalum* and *Torrabasia* as closely related to *Euonymus* based on their experimental data of two (of 20) species of *Glyptopetalum*. However, they recommend that *Glyptopetalum* continues to be recognized as distinct from *Euonymus*, based on the three reproductive differences noted by Hou (1963). Li *et al.* (2014) also support this view based on their molecular data. Consequently, we recommend that *Glyptopetalum* be recognized as a distinct genus in this paper.

During our botanical explorations of the genus *Glyptopetalum* in Yunnan province, China, a distinct taxon with verticillate leaves was discovered. After detailed review of literature and examination of the herbarium specimens of the genus and its related genera, this study confirmed the discovery of a new species. It is the only known species in the genus *Glyptopetalum* with whorled leaves.

### Taxonomy

*Glyptopetalum verticillatum* Q. R. Liu & S. Y. Meng *sp. nov.*

**Type:**—CHINA. Yunnan province: Yuanjiang county, Dashuiping, alt. 795 m, 23°33'45.4"N, 101°56'41.8"E, 10 July 2011, Q. R. Liu 201107018 (holotype BNU! Barcode No. BNU 0015315, isotype BNU (6 sheets)! CSH (1 sheet)! PE (1 sheet)!). Figures 1 & 2.

**Additional specimens examined:**—CHINA. Yunnan: Yuanjiang, Dashuiping, Q. R. Liu 201010048 (BNU!), 20110317001 (BNU!), 201107007 (BNU!), 201107017 (BNU!), 201107019 (BNU!), 201107020 (BNU!), 201203001 (BNU!), 2012030907 (BNU!), 2012030908 (BNU!), 20130301 (BNU!), 20130302 (BNU!), 20130303 (BNU!), 201403012 (BNU!), 201403013 (BNU!), 201403014 (BNU!), 201403015 (BNU!); S. Y. Meng 08004 (BNU!), 0904061 (BNU!); G. D. Tao 38785 (HITBC!, KUN!), 38065 (HITBC!, KUN!), 38206 (HITBC!, KUN!); S. Wang & Q. R. Liu, 201203001 (BNU!); Yunnan: Mengla, Menglun, Xishuangbanna Tropical Botanical Garden, *cult.* C. Du DC00141 (CSH!).

*Species affinis* *Glyptopetalum continentale* (Chun & F. C. How) C. Y. Cheng & Q. S. Ma, a qua differt foliis 3–5, verticillatis vel rarissime oppositis, foliis furvo-viridibus, apice leviter obtusis, fructibus 0.7–1.1 cm diam., seminibus 1/3–1/4 arillis circumdati.

*Glyptopetalum verticillatum* is similar to *G. continentale* (Chun & F. C. How) C. Y. Cheng & Q. S. Ma, but differs in that it has whorled leaves that are dark green with a slightly obtuse apex, fruits of 0.7–1.1 cm in diam. and ca. 1/3–1/4 of seeds covered by aril.

Evergreen shrubs, 1–3 m tall; bark grown, coarse; branchlet sturdy, green when young, terete, internodes 3–10 cm long. Leaves in whorls of 3–5, occasionally opposite on the old twigs; petioles short and sturdy, 2–5 mm long; blades thickly leathery, oblong or ovate-oblong, 6–17.5 cm × 3–7 cm, adaxially dark green, abaxially jade-green, base broadly cuneate or rounded, apex short acuminate or obtuse; margin crenulate, usually crispate after dried; midrib obvious on both surface, lateral veins 5–9 pairs, slender and both surfaces plane, obvious. Inflorescences 2.5–5 cm long, pedicel ca. 1.5 cm long. Cymes axillary, density, 2–3 dichotomously branched. Flowers yellow-green, 8–10 mm in diam.; petals 4, triangle, 4 mm long; stamens 4, inserted at the angles of the disk, filaments short. Ovary immersed in the disc, 4-lobed, 1-ovule in one cell. Capsules subglobose, 0.7–1.1 cm in diam., pericarp white, very thick and rigid, rough with minute tubercles. Seeds red, globose, anatropous, 0.6 × 0.4 cm; aril helmet, crimson when dry, covering ca. 1/4–1/3 of seed, raphe 4–6 branched.