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Didymocarpus heucherifolius var. *yinzhengii* (Gesneriaceae), a new taxon from Hunan, China

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Abstract

Didymocarpus heucherifolius var. *yinzhengii* from Hunan, China, is described and illustrated here. It is most closely related to the more widespread *D. heucherifolius heucherifolius* which shares calyx decided to the base and a number of similar vegetative characters. However, the new taxon is readily distinguished from the letter by the following: larger flowers (corolla up to 4cm long), corolla glabrous outside, puberulent inside at the base and staminodes absent.

Introduction

Didymocarpus Wall. (1819: 378) at present consists of 31 species in China. W.T. Wang examined them and recognized two sections: (1) sect. *Didymocarpus* and (2) sect. *Heteroboea* W.T. Wang auct. non Benth. (1990:445–446). Section *Heteroboea* comprises about 11 species including *Didymocarpus dissectus* F. Wen *et al.* (2013:1–5) described recently, endemic to China. It is regarded as a distinct group characterized by a rosulate habit, having a thick rootstock (Weber & Burrt 1998; Burrt 1998). Their inclusion in *Didymocarpus* on grounds of the capitate stigma is not considered justified by other recent workers (Wood 1974; Weber A. and Burtt B. L. 1998). Wood (1974) and Weber at al. (2000) argued that they should be transferred to *Chirita* Buch.-Ham. ex D. Don. Unfortunately, *Chirita* was canceled in 2011(Wang *et al.* 2011. Weber *et al.* 2011). However, until botanists find a proper genus to place them in, they are still temporarily retained in *Didymocarpus* (Wen F. *et al.*, 2013).

Several *Didymocarpus* specimens collected by the first author in Yongxing county were originally identified as *D. heucherifolius* Hand.-Mazz (1936:881) based on calyx divided to the base, more or less orbicular, petiolate leaves, often cordate at the base and coarsely toothed, with subpalmate venation. However, our examination of the material and critical comparision with other *Didymocarpus* species revealed significant differences in floral morphology. We herein describe this taxon as a new variety.

Taxonomic Treatment

Didymocarpus heucherifolius var. ***yinzhengii*** J.M. Li & S. J. Li, var. nov. (Fig.1 A–E & Fig.2 A–C)

Affinis D. heucherifolio, a quo floribus majusculis (ad 4 lin. longis), corollis extus glabris, intus basin pilosis, staminodiis absentibus.

Type:—CHINA. Hunan: near Yongxing county. alt. 300m, 26°17' 10"N, 113°11'25"E, 6 May 2011, *Jia-Mei Li 1105062* (holotype HEAC!); ibid. *Jia-Mei Li 11501* (paratype IBK!).

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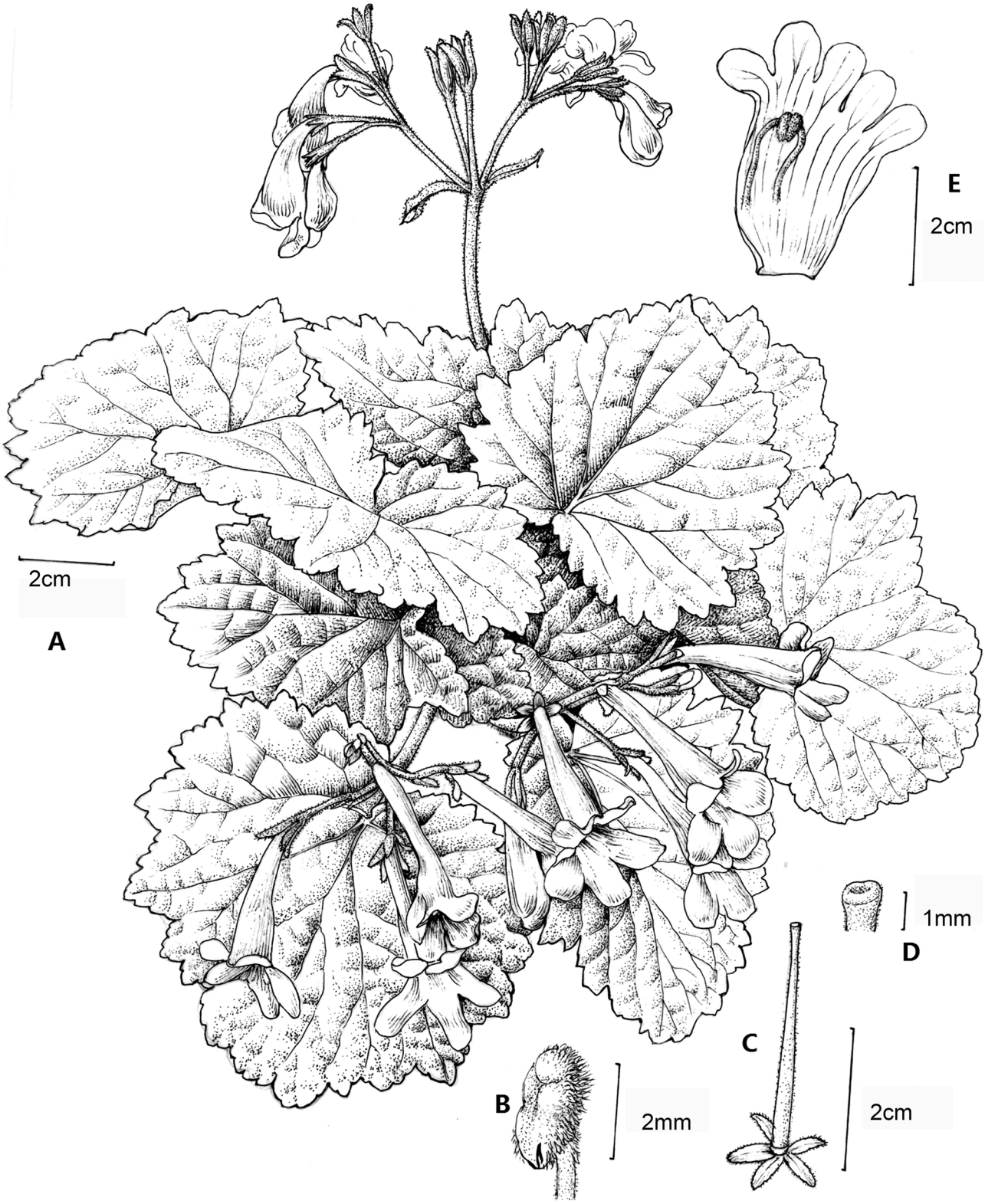

FIGURE 1. *Didymocarpus heucherifolius* var. *yinzhengii* J.M. Li & S. J. Li var. nov. (from the paratype, drawn by W. H. Lin).—A, flowering plant;—B, anther;—C, calyx and pistil;—D, detail of stigma;—E, dissected corolla and stamens

Perennial herbs acaulescent; *Rhizome* horizontal, up to 1.5cm thick, 3–4cm long, roots fibrous; *Leaves* papery, clustered at the apex of the rhizome, apparently whorled, orbicular, up to 5.5×7.2 cm, base cordate, apex rounded, margin irregularly triangular denticulate, lateral veins 3–4 on each side of midrib, palmate, the upper surface with dense eglandular short hairs and sparsely long hairs, lower surface with sparse short hairs and

sparse long hairs confined to the veins; petiole 2–8 cm, with long fuscous hairs; *Cymes* scapiform, up to 4 on a stem, each 4-many flowered; peduncle up to 15 cm, spreading villous; *Bracts* free, elliptic, 9–15 mm, serrate, long ciliate; *Pedicel* up to 2.5 cm, with densely eglandular hairs; *Calyx* divided to the base, ca. 10–12 mm, 5-lobed, lobes unequal, oblong-oblanceolate-linear, 10–12 mm × 1.8–2.2 mm, 1–3 sparse denticulate teeth on each side, puberulent outside, glabrous inside; *Corolla* pink, up to 4 cm, glabrous outside, puberulent inside at the base, tube funnelform-tubular, up to 3 cm long; *Filaments* 10–12 mm, glandular; anthers up to 3 mm, puberulent; *Staminodes* absent; *Pistil* up to 3 cm, pilose to puberulent; stigma capitate, ovary ca. 1.6 cm, puberulent; *Capsule* up to 9 cm.

Ecology, Phenology and Etymology:—The new variety has so far been found only on a slope of Danxia region near Yongxing county. Population size of the new species requires assessment, but at least 500 plants were seen by us at the type location. It flowers in April to May a little earlier than *D. heucherifolius* var. *heucherifolius*. The specific epithet of this new species is named to honor Dr. Yinzheng Wang, fellow of State Key Laboratory of Systematic and Evolutionary Botany, Chinese Academy of Sciences, in recognition of his contribution to our knowledge of the family Gesneriaceae, particularly in Tribe Didymocarpeae Endl. (1839:716). His research interests include the evolution of floral symmetry in Gesneriaceae and phylogenetics of Tribe Didymocarpeae.

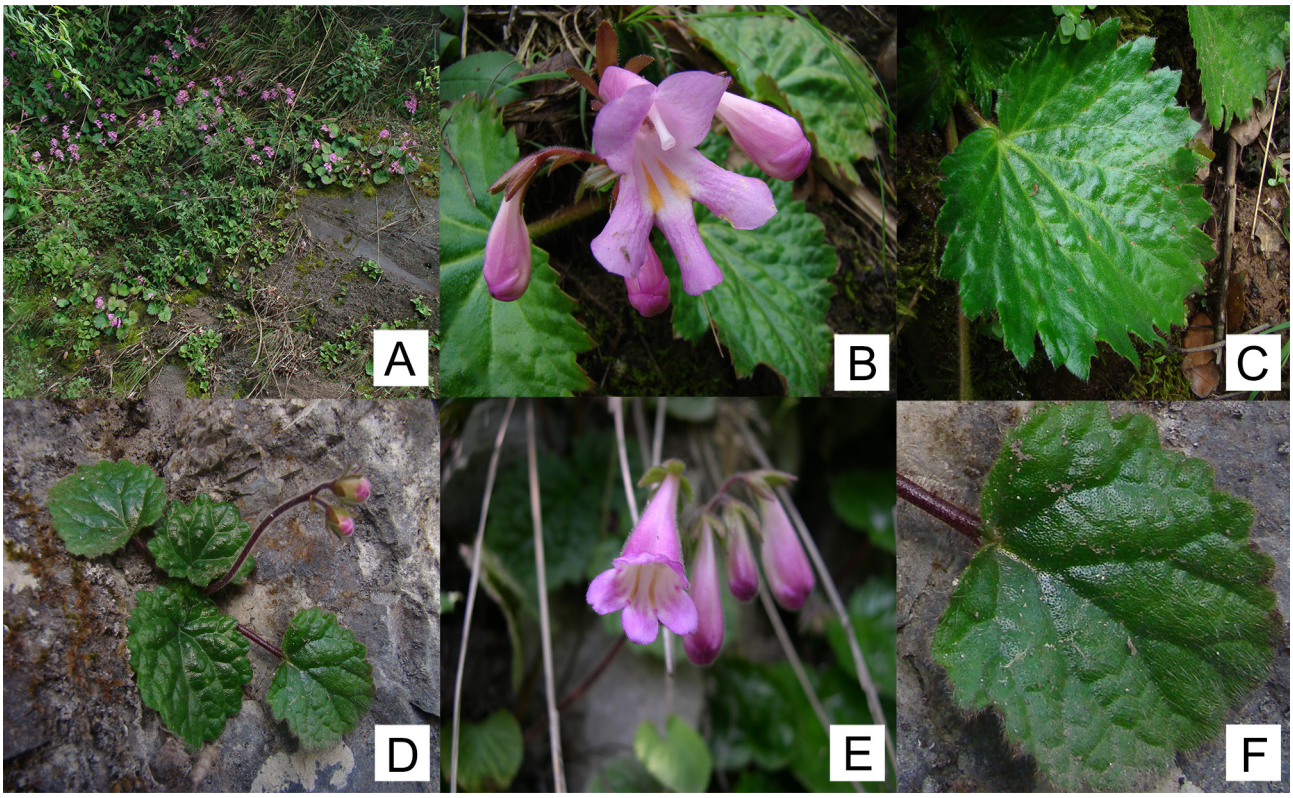

FIGURE 2. *Didymocarpus heucherifolius* var. *yinzhengii* J.M. Li & S. J. Li var. nov.—A, Habitat;—B, Flowers;—C, Leaf; *Didymocarpus heucherifolius*—D, Habitat;—E, Flowers;—F, Leaf.

Discussion

Didymocarpus heucherifolius var. *yinzhengii* and *D. heucherifolius heucherifolius* share calyx decided to the base and a number of similar vegetative characters, but the new variety differs from the latter in several morphological features, such as larger flowers (corolla up to 4 cm long), corolla glabrous outside, puberulent inside at the base, and staminodes absent (Figs.1, 2). A slightly more pronounced heteromorphy occurs in *D. heucherifolius* var. *yinzhengii* with a greater difference in size between the calyx lobes, as can be seen from

the photograph of the flower. An adaxial calyx lobe is slightly wider and more symmetrical than the other four in *D. heucherifolius* var. *yinzhengii* (Fig.2.B). In contrast, *D. heucherifolius* var. *heucherifolius* has uniformly sized calyx lobes (Fig.2.E).

The new variety is an allopatric, geographic isolate, disjunct from *D. heucherifolius* in both distance and habitat. *Didymocarpus heucherifolius* var. *yinzhengii* is confined to Danxia region in Hunan province, whereas *D. heucherifolius* var. *heucherifolius* has a broader geographical distribution in southern and easthern China, including five provinces, i.e. Guangdong, Jiangxi, Fujian, Zhejiang and Anhui (Li & Wang 2004).

In addition to field and herbarium studies, we carried out a preliminary internal transcribed spacer (ITS), *trn*L-F and *atp*B-*rbc*L analysis to determine the new variety species status. Our results show that the new variety belongs to sect. *Heteroboea* and is closely related to *D. heucherifolius* var. *heucherifolius* and its allies.

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