

A new species of *Chirita* (Gesneriaceae) from Yunnan, China

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A new species of Gesneriaceae, *Chirita maguanensis* Z.Y.Li, H.Jiang & H.Xu, is described from Southern Yunnan, China. It is similar to *C. eburnea* Hance in its large, fleshy, white and parallel-veined bracts, but differs by having broad and oblique leaves with a repand-crenate or crenate margin, suborbicular bracts, membranous, white calyx, purple corolla-tube, 2-parted lower lip of stigma and lower disc. © 2008 The Linnean Society of London, *Botanical Journal of the Linnean Society*, 2008, 158, 269–273.

ADDITIONAL KEYWORDS: endemic species – taxonomy.

INTRODUCTION

Chirita section *Gibbosaccus* C.B.Clarke (Clarke, 1883) comprises 109 species that are mainly distributed in southern China and Vietnam (Wood, 1974; Wang, 1985; Wang, Pan & Li, 1990; Wang *et al.*, 1998; Nguyen & Kiew, 2000; Burt, 2002; Li & Wang, 2004). In 2004, one of the authors (HJ) found a wild *Chirita* plant during his field work in the tropical forest of Southern Yunnan province. He collected specimens and took photographs of this plant. During the past three years, the living plants were monitored in the field and an ecological survey was carried out. In addition, plants were cultivated and examined in the greenhouse of the Beijing Botanical Garden. The studies revealed that the plants represented an undescribed species of *Chirita* section *Gibbosaccus*, which is readily distinguished from other species of this section by the larger, suborbicular bracts. The discovery of the new species raises the number of species in section *Gibbosaccus* to 110.

SPECIES DESCRIPTION

Chirita maguanensis Z.Y.Li, H.Jiang & H.Xu, sp. nov. (section *Gibbosaccus*) (Figs 1, 2). Affinis *C. eburneae* Hance, quae foliorum laminis late ovatis vel late ellipticis, saepe obliquis, supra profunde viridibus, margine dense repando-crenatis vel crenatis, siccitate rigide coriaceis; bracteis majoribus suborbicularibus, basi truncatis; calyce membranaceo albo subtranslucido post anthesin deciduo; corollae tubo purpureo; disco humiliore 0.5–0.8 mm alto distinguitur.

Type: China: Yunnan Province, Maguan County, Miechang, on the way to Dajichang, Jiangjia, Zuan-dong mountain near Yanzijiao village, alt. 1810 m, 1.vii.2004, H. Jiang 03485 (holotype, PE; isotypes, PE, YAF) (Fig. 1).

Additional collection: Ibid., alt. 1800 m, 23.vii.2006, H. Jiang 04223 (PE, YAF).

Etymology: The species is named after Maguan County in Yunnan province.

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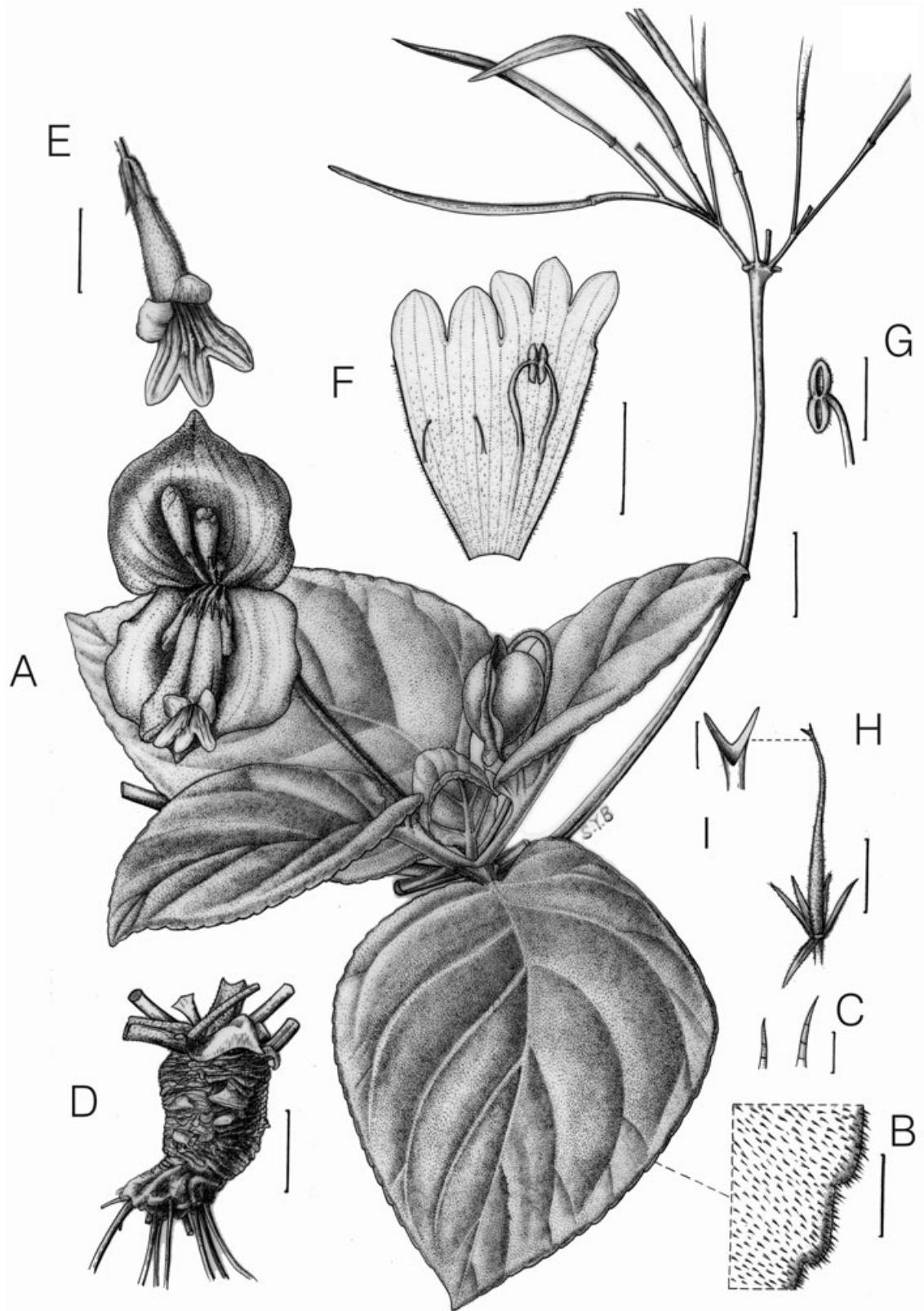


Figure 1. *Chirita maguanensis* Z.Y.Li, H.Jiang & H.Xu sp. nov. A, habit. B, leaf enlargement (upper surface). C, hairs. D, rhizome. E, flower. F, opened corolla showing stamens and staminodes. G, anther adaxial view. H, calyx and pistil with disc. I, stigma. Scale bars: A, 2 cm; B, 4 mm; C, 0.2 mm; E–F, 1 cm; G, 5 mm; H, 1 cm; I, 1 mm.

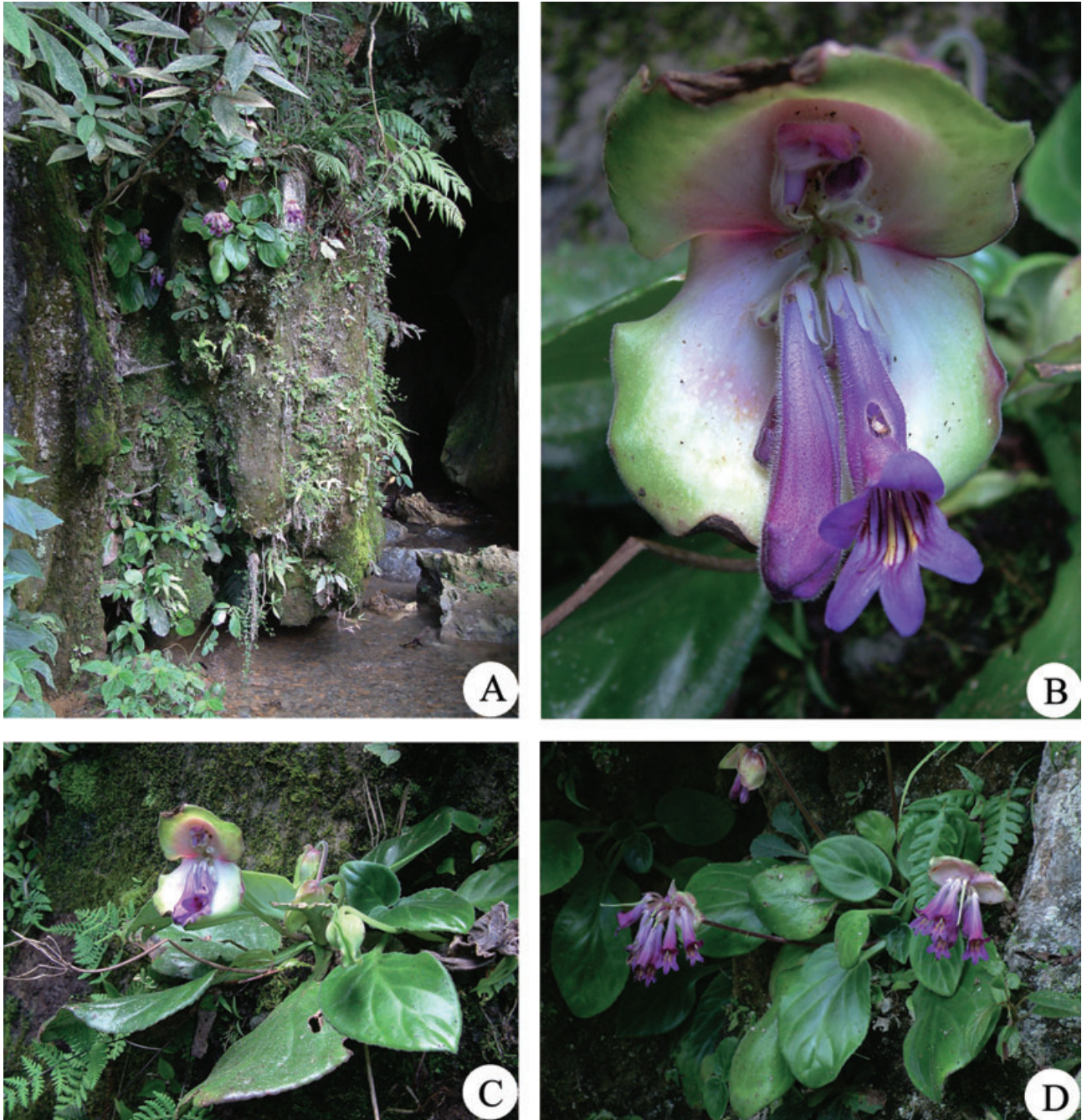


Figure 2. *Chirita maguanensis* A, natural habitat. B, flowers. C, D, habit.

Description: Perennial, stemless, rhizomatous herb. Rhizome terete, 2–6 cm long, 1.4–2.5 cm diameter. Leaves 6–10, clustered at the apex of the rhizome, rosulate, fleshy, rigid coriaceous when dry, densely white strigillose on both surfaces, hairs 0.1–0.8 mm long, with 2–6 cells; petiole 2.5–8 cm long, 7–8 mm wide, 5–7 mm thick, adaxial surface shallowly sulcate; blade broadly ovate to broadly elliptic, 11–12.5 cm, 6.5–10 cm wide, apex acute, base

obliquely cuneate, margin closely repand–crenate or crenate, slightly recurved; lateral veins 4–5 on each side, prominent beneath along with the midrib. Scapes axillary, 1–3, peduncles 14–22 cm, 2–4 mm thick, pedicels glandular and eglandular–pubescent; cymes branched twice, 7–9-flowered; bracts 2, opposite, free, suborbicular, fleshy, leathery when dry, white, with papery, crinkled and virescent margin, 3.8–4.5 cm, 4–4.5 cm wide, base subtruncate, apex

acute, inner surface glandular–puberulous, outside sparsely strigillose, parallel-veined. Calyx membranous, white, subtranslucent, 8–9 mm, 5-sect; segments slightly unequal, linear–lanceolate, 1.5–1.9 mm wide, apex acuminate, 5-nerved, margin entire, outer surface glandular and eglandular–pubescent, inner side pubescent. Corolla 2.6–2.8 cm, purple, with dark purple lines inside and two yellow streaks in the throat, outside glandular and eglandular–pubescent, inside sparsely pubescent; tube funnel-form; 1.8–2 cm, *c.* 1 cm diameter at mouth; upper lip 6 mm long, 2-sect, lobes broadly ovate; lower lip 8 mm long, 3-lobed from near middle, lobes oblong-ovate. Stamens 2, abaxial; filaments adnate to *c.* 1.4 cm above corolla base, lanceolate–linear, 1.1 cm, strongly geniculate just below the middle, up to 1 mm wide, upper part 0.4 mm wide, sparsely glandular–puberulous; anthers pale yellow, reniform–oblong, 4.5 mm, 2 mm wide, fused face to face, margin woolly. Staminodes 2, adaxial, adnate to *c.* 1.3 cm above corolla base, narrowly linear, 4.5 mm, sparsely short glandular–puberulous, apex capitate, glabrous. Disc ring-shaped, obscurely lobed, 0.5–0.8 mm high, glabrous. Pistil *c.* 2.7 cm long; ovary linear, 1.6 cm, 1.5 mm wide, glandular and eglandular–pubescent; style 1 cm, 0.4 mm wide; lower lip of stigma broadly obtrapezoid, 1.1 mm, 1 mm wide, 2-parted, lobes subulate, apex recurved. Capsule linear, 3.5–6.5 cm long, *c.* 2 mm wide, glandular and eglandular–pubescent, brownish. Seeds fusiform, dark brown, 0.3–0.4 mm, angled, glabrous.

DISTRIBUTION, ECOLOGY AND CONSERVATION STATUS

To date, *Chirita maguanensis* is only known from the type locality, i.e. Zuandong mountain (GPS: N 22°57.448', E 104°01.225') located near Yanzijiao village, Miechang, Maguan County. Maguan County is located in the south-eastern part of Yunnan Province, adjacent to Vietnam. The climate is warm and humid. According to recent records of the Meteorological Station of Maguan County at 1332.9 m elevation, the annual mean temperature is 14.7 °C, with a mean January temperature of 9.4 °C and a mean July temperature of 19.7 °C. The mean annual rainfall is 1218.7 mm, with most rain falling in summer (June to August), while little rain falls in November. The annual mean relative humidity is 85%.

The plants grow in rocky crevices on moist shady cliffs of limestone and along forest edges at about 1800 m altitude. The typical habitat includes steep south-east-facing slopes of 70–90 degrees, where the soil is fertile mountain yellow earth derived from limestone. The soil layer is thin, with a pH of 6.2–6.5. Flowering is from July to August.

The forest consists of evergreen broad-leaved trees such as *Castanopsis fabri* Hance, *Michelia martini* (H.Lev.) H.Lev., *Illicium majus* Hook.f. & Thoms., *Sloanea hemsleyana* (Ito) Rehd., *Aphananthe cuspidata* (Blume) Planch. and *Camellia crassicumna* H.T.Chang. Shrubs include *Ficus tsiangii* Merr. ex Corner, *F. chapaensis* Gagnep., *Euonymus balansae* Sprague, *Lindera communis* Hemsl., *Hydrangea aspera* D.Don, *Debregeasia orientalis* C.J.Chen and *Pachysandra axillaris* var. *stylosa* (Dunn) M.Cheng. Lianas, including *Actinidia indochinensis* Merr., *Elaeagnus sarmentosa* Rehd., *Sinomenium acutum* (Thunb.) Rehd. & Wils., *Cissampelopsis volubilis* (Blume) Miq. and *Amydrium sinense* (Engl.) H.Li, abound. The main accompanying herbs on rocks are *Pilea plataniflora* C.H.Wright, *Elatostema balansae* Gagnep., *Pellionia radicans* (Sieb. & Zucc.) Wedd., *Begonia maguanensis* S.H.Huang & Shui, *Impatiens wuchengyihii* S.Akiyama, H.Ohba & S.K.Wu, *Mazus pulchellus* Hemsl., *Paraboea sinensis* (Oliv.) B.L.Burt, *Galium bungei* Steud. var. *hispidum* (Kitag.) Cuf., *Mulgedium umbrosum* (Dunn) Shih and *Asparagus lycopodineus* Wall. ex Baker and ferns such as *Pteris deltoodon* Baker, *Aleuritopteris albomarginata* (C. B. Clarke) Ching, *Woodwardia unigemata* (Makino) Nakai, *Asplenium crinicaule* Hance, *A. wrightioides* Christ, *Polystichum omeiense* Christ and *Neolepisorus ensatus* (Thunb.) Ching.

The population of *Chirita maguanensis* covers only an area of about 450 m² and includes 326 individuals. It is noteworthy that *Ageratina adenophora* (Spreng.) R.M.King & H.Rob. (*Eupatorium adenophorum* Spreng.), an exotic weed native to Central America, has invaded this area and has reached the periphery of the population (Fig. 2B). According to the IUCN red list categories and criteria, version 3.1 (IUCN, 2001), the species should be categorized as critically endangered (CR): B1 (ii).

RELATIONSHIPS

Chirita maguanensis is to be placed in section *Gibbosaccus* based on its perennial, rosulate and rhizomatous habit, 5-sect calyx, ventrally fused anthers and smaller stigma. The new species is most closely related to *C. eburnea* Hance, which is widespread in the nine provinces of southern China, including Yunnan. It is similar to *C. eburnea* Hance in its large, fleshy, white and parallel-veined bracts, but differs in a number of characters (see Table 1).

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Table 1. Distinctive characters of *Chirita maguanensis* and *Chirita eburnea*

	<i>C. maguanensis</i>	<i>C. eburnea</i>
Shape of leaf blade	Broadly ovate or broadly elliptic	Ovate to narrowly elliptic
Leaf symmetry	Usually oblique	Usually equilateral
Leaf margin	Closely repand-crenate or crenate	Entire
Leaf texture	Fleshy, rigid coriaceous when dry	Soft and friable, papery when dry
Leaf colour – upper side	Deep green	Light or yellow green
Shape and size of bracts	Suborbicular, 3.8–4.5 cm long, 4–4.5 cm wide	Ovate to elliptical, 1–4.2 cm long, 0.6–2.8 cm wide
Calyx texture	Membranous, subtranslucent, deciduous after anthesis	Thick papery, never translucent, persistent after anthesis
Calyx colour	White	Light green
Colour of corolla tube	Purple, with two yellow streaks in the throat	White, with five deep orange markings in the throat
Shape of lower lobe of stigma	2-parted to 2/3, lobes subulate	2-lobed less than 1/3, lobes suborbiculate to ovate
Disc height	0.5–0.8 mm	1.5–2 mm

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REFERENCES

- Burtt BL. 2002.** New Gesneriaceae: a *Chirita* from Vietnam and a *Monophyllaea* from Sulawesi. *Gardens' Bulletin Singapore* **54**: 239–242.
- Clarke CB. 1883.** Cyrtandreae. In: De Candolle AC, ed. *Monographiae phanerogamarum* 5(1). Paris: Masson.
- IUCN. 2001.** *IUCN red list categories and criteria*. Version 3.1. Gland & Cambridge: IUCN Species Survival Commission.
- Li ZY, Wang YZ, eds. 2004.** *Plants of Gesneriaceae in China*. Zhengzhou: Henan Science and Technology Publishing House.
- Nguyen TH, Kiew R. 2000.** New and interesting plants from Ha Long Bay, Vietnam. *Gardens' Bulletin Singapore* **52**: 185–202.
- Wang WT. 1985.** Notulae de Gesneriaceae Sinensibus (II). *Bulletin of Botanical Research* **1**: 35–75.
- Wang WT, Pan KY, Li ZY. 1990.** Gesneriaceae. In: Wang WT, ed. *Flora Reipublicae Popularis Sinicae* 69. Beijing: Science Press.
- Wang WT, Pan KY, Li ZY, Weitzman AL, Skog LE. 1998.** Gesneriaceae. In: Wu CY, Raven PH. eds. *Flora of China* 18. Beijing: Science Press; St. Louis: Missouri Botanical Garden.
- Wood D. 1974.** A revision of *Chirita* (Gesneriaceae). *Notes from the Royal Botanic Garden Edinburgh* **33**: 123–205.