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Hemiboea lutea sp. nov. (Gesneriaceae) from Guangxi, China

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Hemiboea lutea F. Wen, G. Y. Liang & Y. G. Wei, a new species in Gesneriaceae is described and illustrated from Guangxi, China. It differs from the similar species *H. cavaleriei* by having sessile or subsessile leaves, longer peduncles (6–10 cm), spheroidal or triangular-spheroidal subinvolucre, 5-divided calyx with lobes fused for 1/3 of their length, revolute and uncinat apex of calyx lobes, larger bright yellow corolla (5–7 cm long), longer staminodes with indistinctly uncinat anther and longer pistil (3.5–3.7 cm).

Hemiboea C. B. Clarke belongs to Gesneriaceae, subfamily Cyrtandroideae, tribe Didymocarpeae, mainly distributed in China (Li 1983, 1987, 1996). Recently, the Chinese endemic genus *Metabriggsia* W. T. Wang (1983) was merged with *Hemiboea* (Weber et al. 2011). At the same time, a new species, *H. angustifolia* F. Wen & Y. G. Wei (Wen et al. 2011) and a new variety, *H. follicularis* C. B. Clarke var. *retroflexa* Yan Liu & Y. S. Huang (Huang et al. 2011) were reported and published. At present, this genus comprises at least 28 species and six varieties in China (Li and Wang 2004, Wei et al. 2010, Xu et al. 2010, Huang et al. 2011, Wen et al. 2011).

During the course of a floristic investigation in Guangxi in the winter 2008, we found an unknown species of *Hemiboea* in a granite and sandshale area in Yangshuo County, which resembled *H. cavaleriei* Lévl. It was found growing in evergreen broad-leaved forest. However, we only collected a few specimens with dehiscent capsules and we were unable to identify it to species level without flowering material. Dehiscent capsules are a common characteristic in *Hemiboea*. In 'Flora of China', the capsules of many species are described as showing 'loculicidal dehiscence', such that this character cannot be used for distinguishing between the species. However, we revisited the locality to collect flowering specimens in October 2009 and 2010. We focused on corolla size, sessile leaves and united calyx tube which separate this unknown species from other species in *Hemiboea*.

After consulting national floras and relevant literature (Li 1983, 1987, Wang 1990, Wang et al. 1998, Ho 2000, Nguyen et al. 2000, Li and Wang 2004, Wei et al. 2010, Xu et al. 2010, Huang et al. 2011, Wen et al. 2011), as well as herbarium specimens, we concluded that our specimens represent a new taxon, which is described and illustrated here. It belongs to *Hemiboea* section *Subcapitatae* C. B. Clarke.

Hemiboea lutea F. Wen, G. Y. Liang & Y. G. Wei sp. nov. (Fig. 1–2)

The new species differs from *H. cavaleriei* Lévl. by having sessile or subsessile leaves; longer peduncles, 6–10 cm long; irregular flattened spheroidal or triangular-spheroidal involucre; calyx lobes 5-splitted, fused for 1/3 of their length, united at base; revolute and uncinat apex of calyx lobes; larger corolla (5–7 cm long); longer staminodes, the lateral ones ≥ 1 cm long, the central one 6–7 mm long with indistinctly uncinat anther; disc 2.5–3.0 mm high; and pistil 3.5–3.7 cm long.

Type: China. Guangxi: Yangshuo County, Dayuan Forestry Farm, 24°58'17"N, 110°24'34"E, 580 m a.s.l., 12 Oct 2009, Wen Fang 091012 (holotype: IBK, isotype: BJFC).

Etymology

The specific epithet is derived from the bright yellow flowers of this species.

Description

Perennial herb or subshrub. Stems ascending or erect, slender, 100–160 cm tall or taller, 3.0–4.5 mm in diameter, green, rounded, glabrous, simple or branched, with 10–18 nodes or more. Leaves opposite, the lower ones commonly caducous; petiole absent or very short, glabrous; leaf blade, elliptic-lanceolate to ovate-lanceolate or broadly lanceolate, 8.0–14.5 × 4.5–6.8 cm, adaxially glabrous to sparsely pubescent, abaxially glabrous, acuminate at apex, cuneate to narrowly cuneate at base, occasionally oblique; margin serrate, with 18–26 serrations on each side; lateral veins 8–12 on each side of the midrib. Cymes subterminal or terminal, sometimes axillary, simple or 1-branched, with 4–8 or more

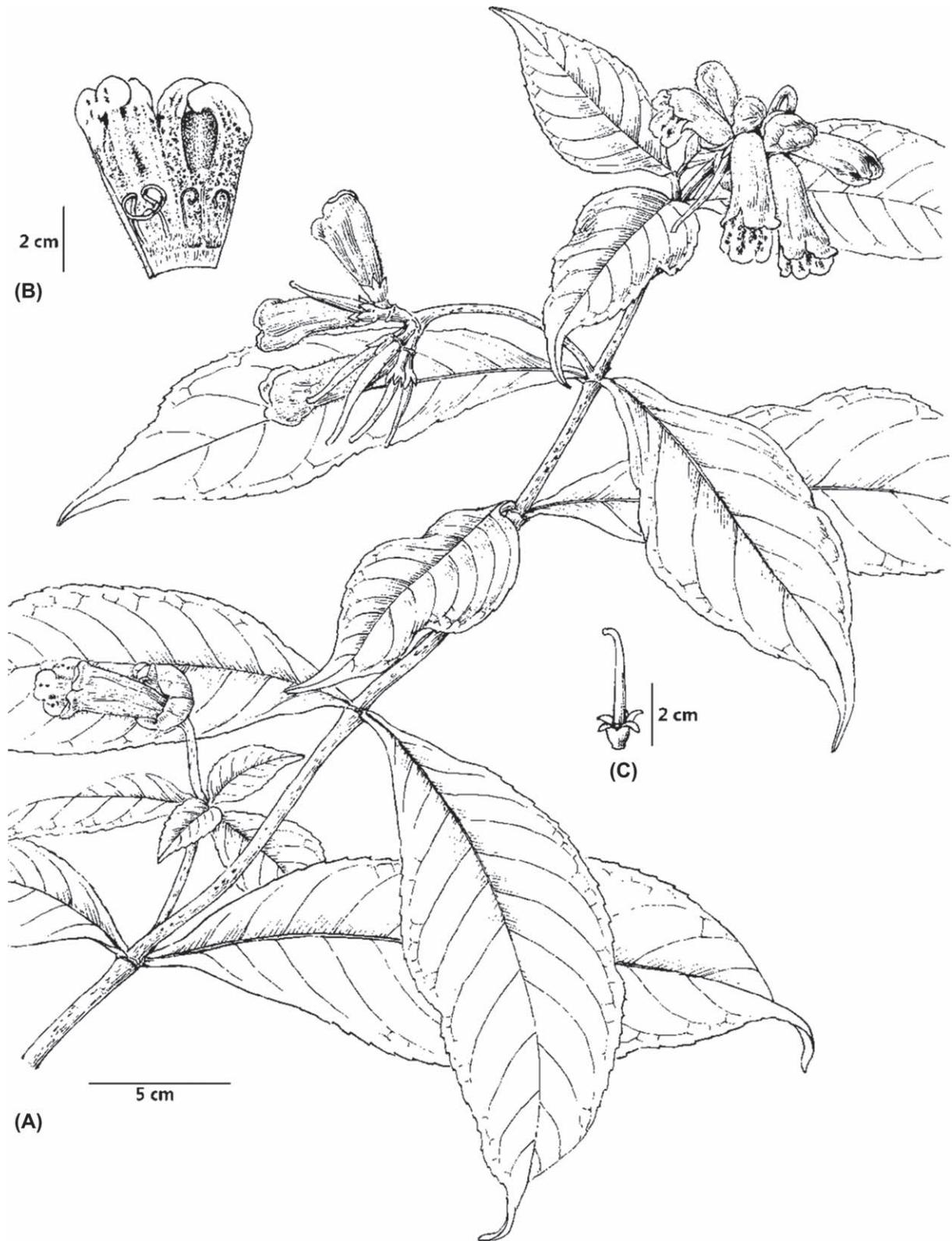


Figure 1. *Hemiboea lutea* sp. nov. (A) habit, (B) corolla opened, showing stamens and staminodes, (C) pistil, showing calyx, calyx lobes, style and stigma. Drawn by Lin Wen-Hong from the holotype.

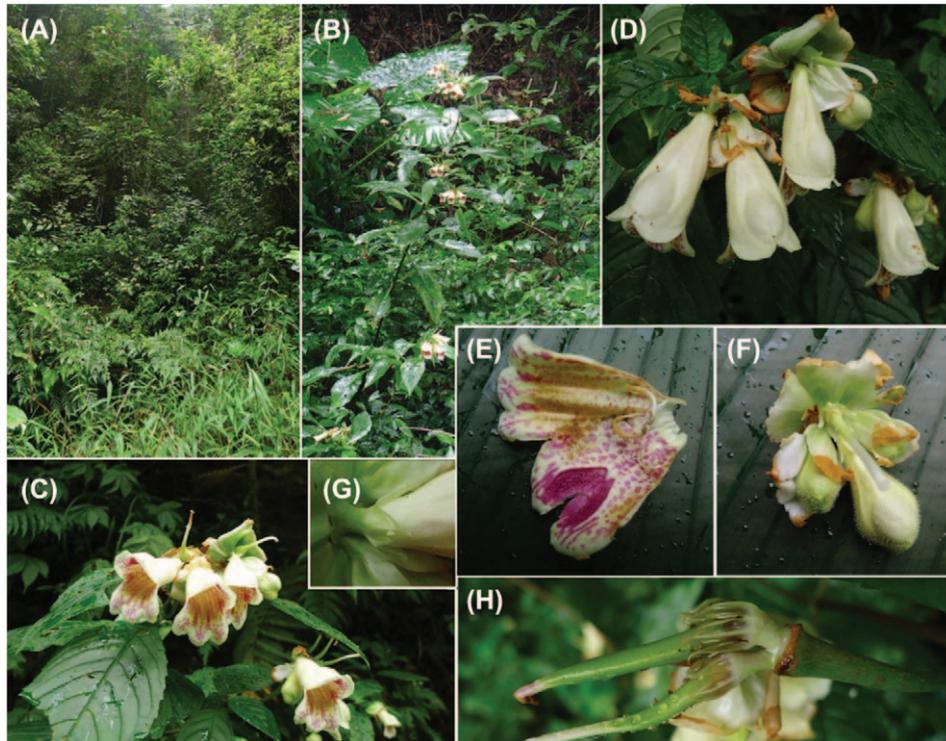


Figure 2. *Hemiboea lutea* sp. nov. (A) habitat, (B) habit, (C) flowers (showing face view), (D) flowers (showing back view and involucre), (E) opened flower (showing stamens and staminodes), (F) involucre and involucre, (G) calyx lobes, (H) capsule.

flowers; peduncle 6–10 cm long, glabrous; involucre nearly triangular-spheroidal or cordate, 4.0–8.0 × ca 2.5 cm, whitish green or green, glabrous, opening recoiling after, mucronate at apex, apex commonly revolute after opening; subinvolucre irregular flattened spheroidal or triangular-spheroidal, commonly longitudinally wrinkled. Pedicel 2.0–3.5 mm long, glabrous. Calyx white, 5-lobed, fused for 1/3 of its length; lobes unequal, triangular; margin entire, revolute; apex revolute and uncinatate; base united; the largest upper lobe ca 6.5 mm long, ca 6.5 mm wide at base, the remaining lobes obliquely triangular, 6.5–7.0 mm long and ca 5 mm wide at base, glabrous, waxy; the flowers of the involucre with smaller calyx, but morphologically identical to the larger flowers in involucre, ca 1 × 4 mm. Corolla yellow or pale yellow outside, with longitudinal purplish red spots on lip lobes inside; throat brownish yellow with long, ca 0.5–0.7 cm hairs, densely pubescent outside with hairs ca 0.1–0.2 mm long, glabrous inside; tube thick cylindrical, 4.5–5.0 cm long, yellow, 1.6–2.0 cm in diameter at the mouth, ca 3–4 mm in diameter at the base, on the inside with a ring of hairs adnate to 6.0–7.0 mm above the corolla base; limb distinctly 2-lipped, its adaxial lip 2-lobed with lobes semioblate, ca 0.4 × 3.5 cm, the abaxial lip 3-lobed towards the middle, yellow or pale yellow, with lateral lobes oblong or ligulate, ca 1.5 × 1.0 cm, and central lobe oblate or oblong, ca 0.8 × 1.4 cm. Stamens 2, with apex adherent, adnate to ca 15 mm above the corolla base; filaments linear, strongly curled from the middle, glabrous; anthers elliptic, glabrous, ca 3 × 2 mm. Staminodes 3, glabrous; lateral staminodes adnate to ca 15 mm above the

corolla base, ≥ 10 mm long, uncinatate at apex; central staminode adnate to 12.0–13.5 mm above the corolla base, short linear, 6–7 mm long, inconspicuously uncinatate. Disc ring-like, 2.5–3.0 mm high, 0.3–0.4 mm wide, its margin irregular erose, glabrous. Pistil 3.5–3.7 cm long; ovary thick linear, 2.2–2.3 mm long, 2.5–2.7 mm in diameter, glabrous; style 13–14 mm long; stigma capitate, slightly depressed in the middle, 1.5–1.9 mm in diameter. Capsule linear, 3.0–3.5 cm long, ca 5 mm in diameter, glabrous, slightly curved.

Phenology

Flowering specimens were collected in October, and fruiting specimens in November and December.

Distribution and conservation status

Hemiboea lutea is endemic to Yangshuo County, north Guangxi Autonomous Region. This species is currently only known from its type locality. Current information shows that its population size is large, comprising more than 10 000 mature individuals. However, all of these individuals are in a single valley. We therefore assess *Hemiboea lutea* as 'Vulnerable' (VU) using the IUCN categories and criteria (IUCN 2001).

Similar species

Hemiboea lutea is similar to *H. cavaleriei* in general morphology, leaf blade shape and size, but differ in many aspects. The differences between these two species are summarized in Table 1.

Table 1. Morphological comparison of *Hemiboea lutea* sp. nov. and its closest related species *H. cavaleriei*.

Characteristics	<i>H. lutea</i>	<i>H. cavaleriei</i>
Petiole	Absent or very short	0.5–6.5 cm long
Leaf surfaces	Glabrous	Adaxial surface sparsely pubescent. Abaxial surface sparsely pubescent (sometimes only along veins)
Cyme	Subterminal or terminal, sometimes axillary	Only subterminal
Peduncle length (cm)	6–10	0.5–6.5
Involucel	Irregular, flattened spheroidal or triangular-spheroidal	Lacking
Calyx	5-parted, fused to 1/3 of their length	5-parted from the base, not fused
Calyx lobes	Unequal in shape and size, triangular to obliquely triangular with revolute and uncinat apex, united at base	Equal in size and shape, ovate-triangular, elliptic-lanceolate to linear-lanceolate with acute apex, not united at base
Corolla (cm)	5.0–7.0	3.0–4.8
Staminodes	Lateral ones ca 1 cm long, the central one 6–7 mm long, all with uncinat apex	Lateral ones 5–7 mm long, the central one ca 2 mm long, lateral ones with capitate apex, the central one with truncate apex
Disc height (mm)	2.5–3.0	1.0–1.2
Pistil length (cm)	3.5–3.7	1.7–2.5

Additional specimens examined (paratypes)

China. Guangxi: Yangshuo County, Dayuan Forestry Farm, 24°58'17"N, 110°24'34"E, 540 m a.s.l., 19 Oct 2009, WFBSJT101019 (IBK), 14 Oct 2011, WFBSJT111014 (IBK).

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