



Article

***Paraboea angustifolia* (Gesneriaceae): a new species from limestone areas in northern Guangxi, China**

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Abstract

Paraboea angustifolia is a new species of Gesneriaceae from Guangxi, China, which is here described and illustrated. It is similar to *Paraboea dictyoneura* in its corolla shape, but *P. angustifolia* can be distinguished by its linear-oblongate leaf blade measuring 8–30 × 1.5–3.0 cm (vs. oblanceolate to narrowly obovate-elliptic, 7–15 × 2.0–4.5 cm), 4–10 times (vs. 2.0–3.5 times) as long as wide, and a peduncle of 3–7 cm (vs. 8–21 cm), normally shorter than the leaves. Its capsules are nearly straight.

Introduction

Paraboea is a genus of rosulate or caulescent herbs found mainly on limestone substrates in southern China, northeastern India, the eastern Himalayas, Burma, Thailand, Cambodia, Laos, Vietnam, Malaysia, the Philippines and Indonesia (Middleton *et al.* 2010). The genus *Paraboea* has recently been revised by Xu *et al.* (2008) who recognised 89 species and five varieties. Since the publication of this revision three additional species have been described (Chen *et al.* 2008, Kiew 2010). The phylogenetic relationships between *Paraboea*, *Trisepalum* and *Phylloboea* were investigated using nuclear and chloroplast data (Puglisi *et al.* 2011). As *Paraboea* has been conserved against *Phylloboea* and *Trisepalum* (Middleton *et al.* 2010), the genera *Phylloboea* and *Trisepalum* were merged with *Paraboea*, and fifteen species were transferred to *Paraboea*. The enlarged genus *Paraboea* now comprises around 120 species (Puglisi *et al.* 2011).

In recent years many botanical novelties have been reported from limestone areas in China. Especially there are quite a few of new species reported from this region in a variety of families. For example in Asparagaceae (Liu *et al.* 2011), Balsaminaceae (Yu *et al.* 2009), Begoniaceae (Peng *et al.* 2012), Berberidaceae (Wu *et al.* 2009), Gesneriaceae (Wen *et al.* 2011, 2012a, 2012b, Hong *et al.* 2012, Wu *et al.* 2012a, 2012b, Xu *et al.* 2012), Rubiaceae (Mou & Zhang 2010) and Urticaceae (Wei *et al.* 2011).

In the course of floristic surveys in Mulun National Nature Reserve of northern Guangxi between 2009 and 2012, we collected a rare specimen of *Paraboea* with narrow leaves, which morphologically did not match any of the known species. Based on detailed examination of salient morphological and anatomical features (Wang *et al.* 1990, 1998, Li & Wang 2004, Chen *et al.* 2008, Xu *et al.* 2008, Kiew 2010), we conclude that it is a new species to science and thus it is described and illustrated here.

Taxonomic Treatment

Paraboea angustifolia Yan Liu & W.B.Xu, *sp. nov.* (Fig. 1 & 2)

Paraboea angustifolia is similar to *Paraboea dictyoneura* (Hance) B. L. Burtt in the corolla shape, but it can be distinguished by leaf blade linear-oblongate, 8–30 × 1.5–3.0 cm, 4–10 times as long as wide, peduncle 3–7 cm long, normally shorter than the leaves, capsule nearly straight.

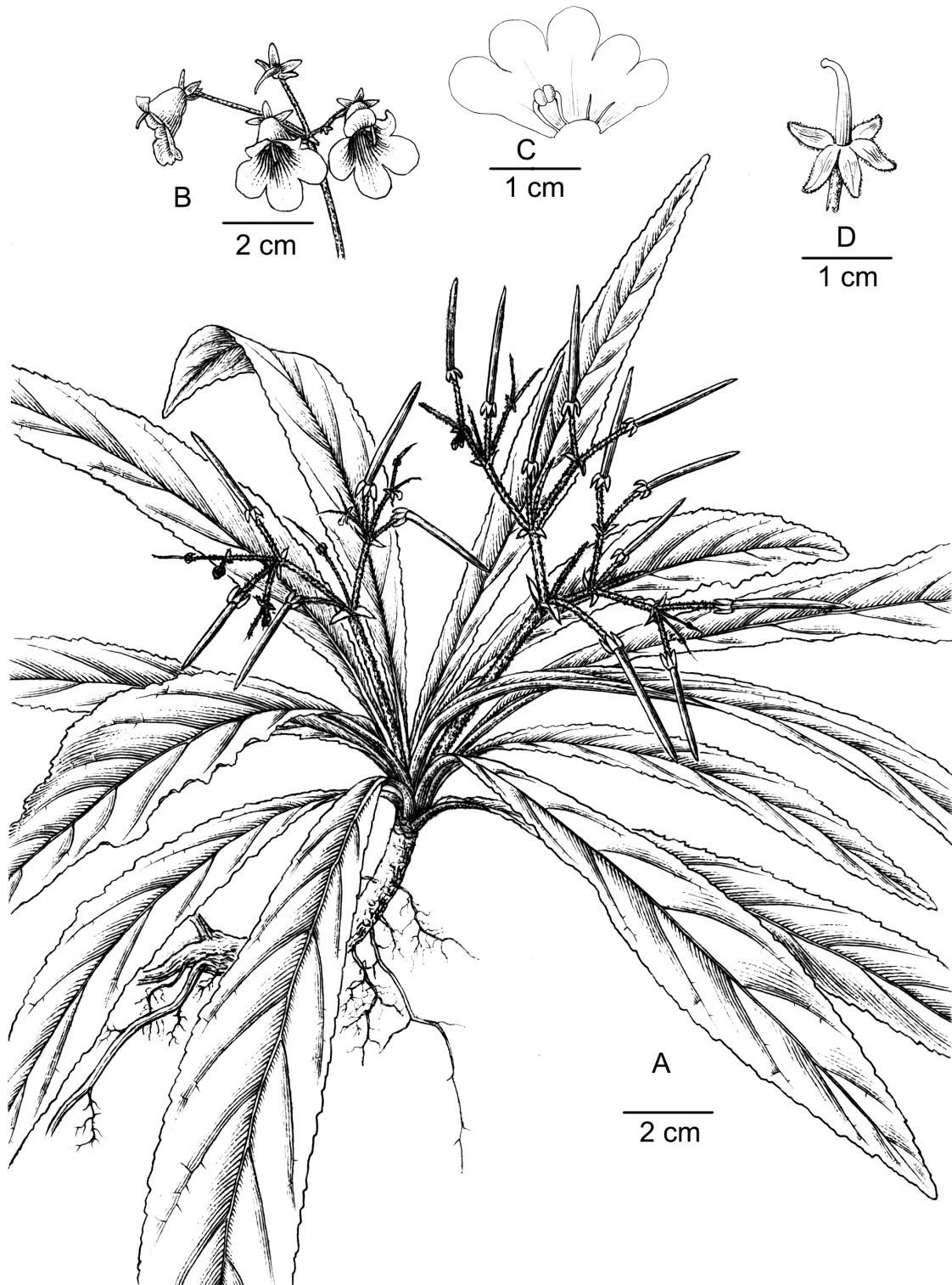


FIGURE 1. *Paraboea angustifolia*. A) fruiting habit; B) inflorescence; C) opened corolla; D) pistil. Drawn by Yun-Xi Zhu and Wen-Hong Lin.

Type.—CHINA. Guangxi: Huanjiang County, Mulun National Nature Reserve, 680 m, 25°07' N, 107°58' E, 3 June 2009, Wei-Bin Xu & Bo Pan 09537 (holotype IBK, isotypes IBK, PE).

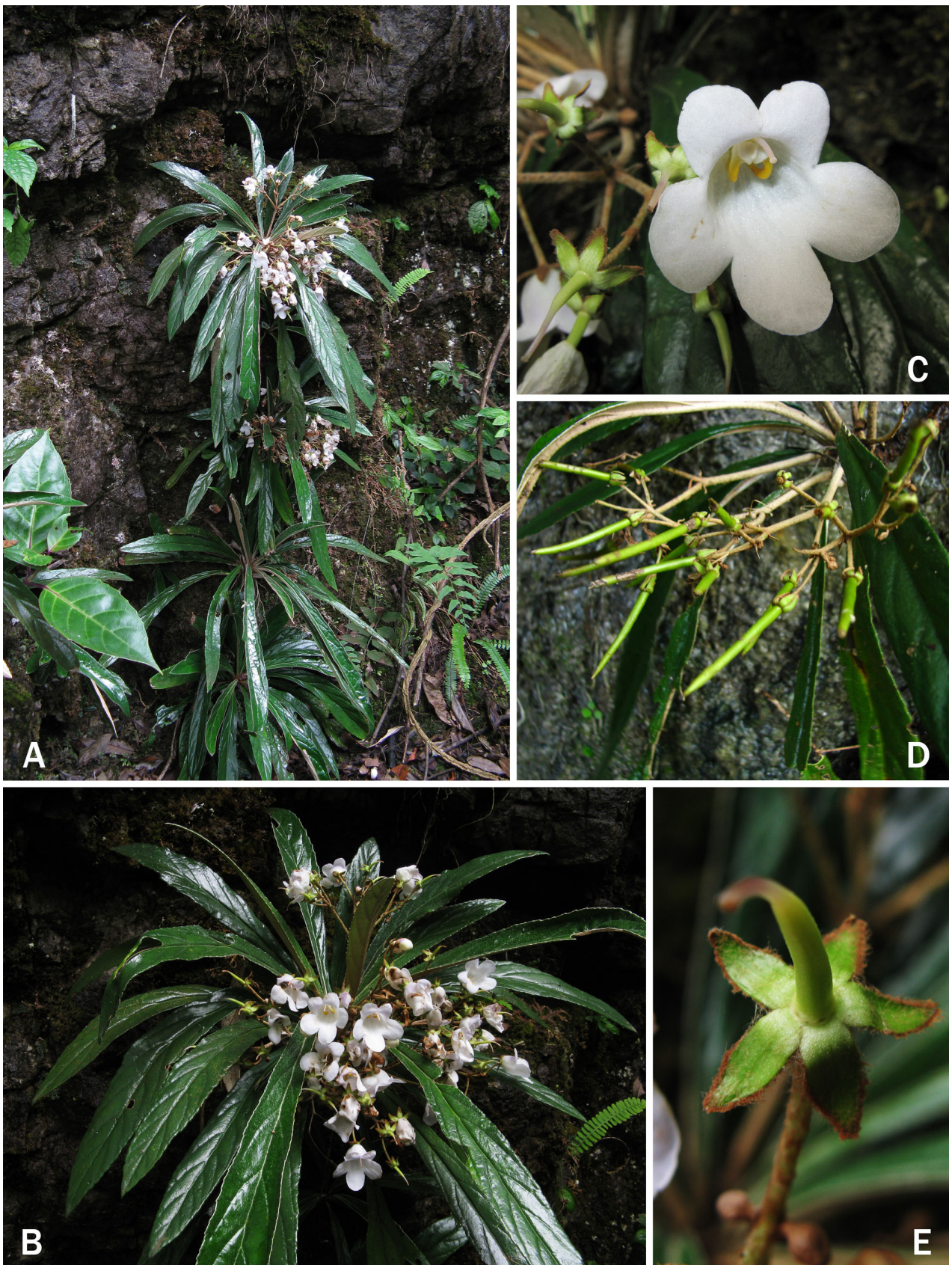


FIGURE 2. *Paraboea angustifolia*. A) habitat; B) flowering habit; C) flower face view; D) fruits; E) pistil.

Perennial rosulate herbs. Rhizomes subterete, 6–15 cm long, 5–12 mm in diameter. Leaves 8–30, congested at the apex of the rhizome, subsessile or with a short petiole up to 2 cm long, leaf blade 8–30 × 1.5–3.0 cm, 4–10 times as long as wide, linear-oblongate, thick papery, bases attenuate, margins more or less serrulate, apices acute to obtuse, upper leaf surfaces with arachnoid covering when young, but glabrescent in age, lower leaf surfaces with grayish matted indumentum, lateral veins 4–8 on each side of midrib, smooth adaxially and prominent abaxially. Inflorescences cymose, axillary, 1–3-branched, 4–16-flowered; peduncles 3–7 cm long, ca. 2 mm in diameter, with grayish matted indumentum; bracts 2(or 3), 4–7 × ca. 2 mm, linear-lanceolate, margins entire, apices acute, with grayish matted indumentum outside; pedicels 0.7–2.0 cm long, ca. 0.8 mm in diameter, with grayish matted indumentum. Calyx 4–7 × ca. 1.5 mm, 5-parted nearly to the base, lobes linear-lanceolate, with grayish matted indumentum outside and glabrous inside, margins entire. Corolla 1.5–2.0 cm long, white to purplish, outside and inside glabrous; tube 8–12 mm long, 8–10 mm in diameter at the mouth; the limb distinctly 2-lipped, adaxial lip 2-lobed to near base, lobes broadly ovate, 4–5 × ca. 5 mm, abaxial lip 3-lobed to over middle, lobes broadly ovate, 5–6 × ca. 6 mm. Stamens 2, adnate to the corolla base; filaments 6–7 mm long, glabrous; anthers reniform, ca. 3.5 mm long; staminodes 2, glabrous, ca. 4 mm long, adnate to the corolla tube base. Pistil glabrous; ovary ca. 5–7 mm long, ca. 1.5 mm in diameter, style ca. 4 mm long, stigma capitate. Fruit an nearly straight capsule, 4.5–6.0 cm long, ca. 2–3 mm in diameter, glabrous.

Distribution, habitat and ecology:—*Paraboea angustifolia* is only found in northern Guangxi on limestone substrate, and only two populations have so far been identified by us during extensive surveys between 2009 and 2012, however, the locality of occurrence is now protected by lying within the Mulun National Nature Reserve. *Paraboea angustifolia* grows in crevices of steep rock faces or cliffs of karst Tiankeng, at an elevation between 600 and 700 m. Associated plant species are: *Anemone begoniifolia* H.Lév. & Vaniot, *Begonia cavaleriei* Lévl., *Carex* sp., *Cyrtogonellum caducum* Ching, *Echinacanthus lofouensis* (Lévl.) J.R.I. Wood, *Lysionotus denticulosus* W.T.Wang, *Nephrolepis cordifolia* (L.) C.Presl, *Peperomia blanda* (Jacq.) Kunth, *Pholidota leveilleana* Schltr., *Pilea basicordata* W.T.Wang ex C.J.Chen, *Thalictrum ichangense* Lecoy. ex Oliv.

Phenology:—This new species has been observed in flower from April to May, and fruits from June to July.

Etymology:—The epithet refers to its narrow leaves.

Vernacular name:—Chinese mandarin: xiye zhumaójutai, which translates as ‘narrow leaved *Paraboea*’.

Characters:—*Paraboea angustifolia* is similar to *Paraboea dictyoneura* (Hance) Burt (1984: 427) in its corolla shape, but *P. angustifolia* can be distinguished by its linear-oblongate leaf blade measuring 8–30 × 1.5–3.0 cm (vs. oblongate to narrowly obovate-elliptic, 7–15 × 2.0–4.5 cm), 4–10 times (vs. 2.0–3.5 times) as long as wide, and a peduncle of 3–7 cm (vs. 8–21 cm), normally shorter than the leaves. Its capsules are nearly straight. The differences between the new species and the related species are shown by the following key:

1. Capsules \geq 3 cm long 2
- Capsules < 2 cm long 4
2. Veinlets on the lower leaf surfaces almost invisible *Paraboea hainanensis*
- Veinlets on the lower leaf surfaces conspicuously reticulate 3
3. Leaf blades linear-oblongate leaf blade measuring 8–30 × 1.5–3.0 cm, 4–10 times as long as wide *Paraboea angustifolia*
- Leaf blades oblongate to narrowly obovate-elliptic, 7–15 × 2.0–4.5 cm, 2.0–3.5 times as long as wide *Paraboea dictyoneura*
4. Leaf blade more or less attenuate at base; filaments with strongly swollen knees *Paraboea crassifolia*
- Leaf blades more or less rounded at base; filaments without knees *Paraboea neurophylla*

Additional specimens examined (paratype):—CHINA. Guangxi: Huanjiang County, Mulun National Nature Reserve, 1 May 2011, *Yu-Song Huang, Yun-Biao Liao & Ri-Cheng Peng Y0186* (IBK). The same locality, 16 August 1994, *Fa-Nan Wei & Yan Liu M0238* (IBK).

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