

# *Begonia kui* (sect. *Coelocentrum*, Begoniaceae), a new species from Vietnam

Ching-I PENG<sup>1,\*</sup>, Tung-Yu HSIEH<sup>2</sup>, and Quang Hieu NGYUEN<sup>3</sup>

<sup>1</sup>Herbarium (HAST), Research Center for Biodiversity, Academia Sinica, Nangang, Taipei 115, Taiwan

<sup>2</sup>Department of Horticulture Science, National Chung-Hsing University, 250 Kuo Kuang Road, Taichung, Taiwan

<sup>3</sup>New York Botanical Garden, 200<sup>th</sup> Street and Southern Boulevard, New York, NY 10458, USA

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**ABSTRACT.** *Begonia kui*, a new species of sect. *Coelocentrum*, is described and illustrated. *Begonia kui* is somewhat similar to *B. variegata* Y. M. Shui & W. H. Chen, differing in the leaf apex obtuse or rounded (vs. shortly acuminate); leaf margin with a white maculation (vs. with a dark brown band); inflorescences pilose (vs. glandular-hispid); outer tepals pinkish or reddish (vs. greenish or greenish-yellow), abaxially shortly pilose (vs. glandular-hispid); androecium zygomorphic or nearly so (vs. actinomorphic); and ovaries and fruits glabrous (vs. glandular-hispid). *Begonia kui* is available from floral markets in northern Taiwan, possibly originated from Thai Nguyen Province in northern Vietnam.

**Keywords:** *Begonia kui*; *Begonia variegata*; New species; sect. *Coelocentrum*; Vietnam.

## INTRODUCTION

We report a handsome *Begonia* that has been commonly propagated for sale in the flower markets in northern Taiwan since 2006, but without a scientific name. The owner of the flower shop from whom we purchased the plants and made the type specimen indicated that this highly ornamental species was a contaminant of other horticultural plants imported from Vietnam. During the first author's visit to the Institute of Ecology and Biological Resources, Hanoi in 2004, Prof. Nguyen Tien Hiep showed us his collection of images of *Begonia* he photographed in the field in northern Vietnam. One of them, from Thai Nguyen Province, clearly matches the flower shop species in every respect. Since species of *Begonia* in sect. *Coelocentrum* are adapted to limestone and are highly restricted in distribution, we believe that this handsome new species is endemic to northern Vietnam. The conservation status of this species is not known. However, like most species of *Begonia*, it can be propagated with ease by seeds or leaf cuttings.

## NEW SPECIES

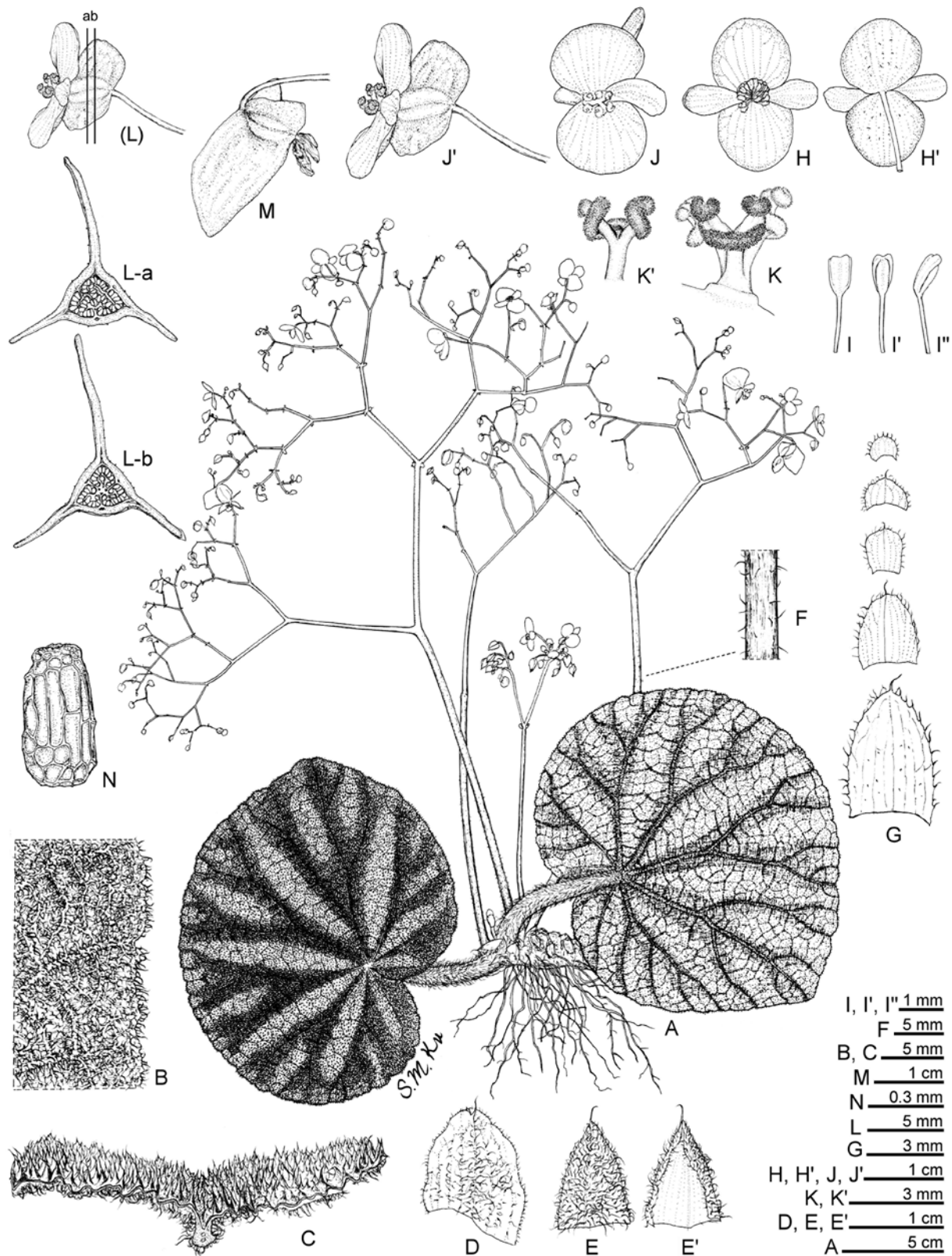
***Begonia kui*** C.-I Peng, sp. nov.—TYPE: Original locality not known; possibly from Thai Nguyen Province in northern Vietnam. Type specimens pressed from plants purchased from a floral market in Dali City, Taichung

County, Taiwan and cultivated in the experimental greenhouse of Academia Sinica, 17 Jul 2006, *Ching-I Peng 20847* (holotype: HAST; isotypes: A, HN, IBK, MO, NY). 麗紋秋海棠 (Figures 1, 2)

*Begonia kui* aspectu similis *B. variegatae* Y. M. Shui & W. H. Chen, sed foliis apice obtusis vel rodundatis, margine albo-maculatis, inflorescentiis pilosis, tepalis exterioribus subroseis vel rubellis subtus brevipilosis, androecio zygomorpho vel subzygomorpho, capsulis glabris differt.

Herbs monoecious, epipetric, perennial, rhizomatous. *Rhizome* 5-10 cm or longer, 5-15 mm thick, internodes 6-10 mm long, sparsely hirsute. *Stipules* caducous, ovate-triangular, 7-14 mm long, 7-11 mm wide, weakly keeled, abaxially hirsute-villous, margin ciliate or ciliolate, apex aristate, arista 1-2.5 mm long, hair-like. *Leaves* 3-6, alternate, simple, asymmetric, unlobed, suborbicular, base cordate, margin denticulate and ciliolate, apex obtuse or subrounded, rarely acute, 9-20 cm long (basal lobes included), 8-16 cm wide, adaxially dark brown, adorned with white stripes in intercostal area and with white spots near the margins, abaxially red or reddish, texture thickly papery, surface rugose, adaxially pilose-setose or villous-setose (trichomes 1-2 mm long, with a conically swollen base), abaxially villous, villosity pronounced on veins and veinlets; venation basally 6-7-palmate, midrib indistinct, veins pinnate along midrib, with 1-3 major lateral veins on each side, other primary veins branching dichotomously or nearly so, tertiary veins reticulate and weakly percurrent, minor veins densely reticulate, all veins on abaxial surface prominently raised; petiole terete, 5-9 cm long, 4-8 mm thick, brownish, densely hirsute-villous. *Inflores-*

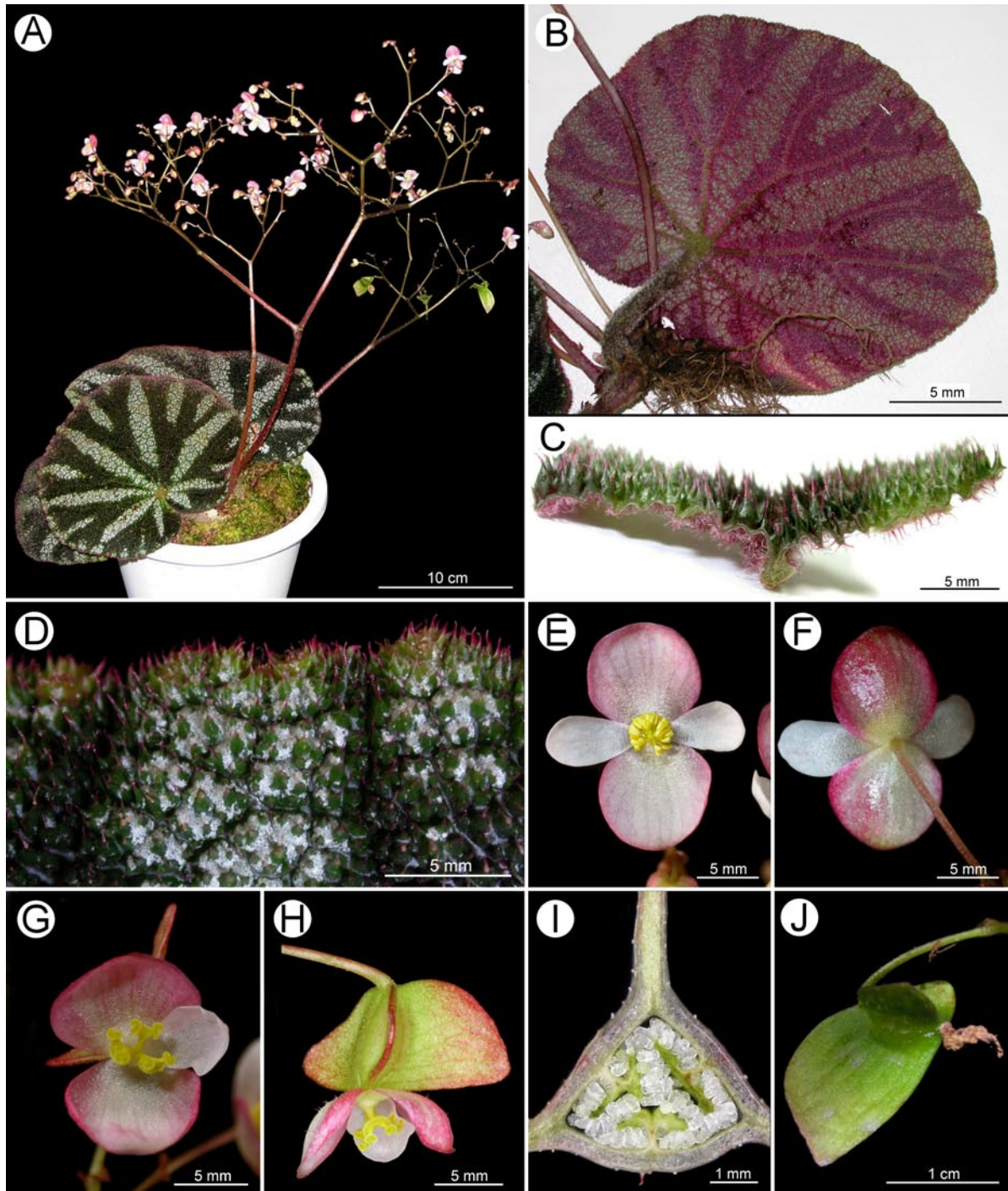
\*Corresponding author: Email: [bopeng@sinica.edu.tw](mailto:bopeng@sinica.edu.tw); Tel: +886-2-2789-3821; Fax: +886-2-2789-1623.



**Figure 1.** *Begonia kui* C.-I Peng. A, Habit; B, Portion of leaf margin, abaxial surface; C, Portion of leaf, cross section; D, Stipule, expanded; E, E', Stipule, abaxial and adaxial surfaces, showing subcuticulate and involute stipules; F, Portion of peduncle; G, Bracts; H, Staminate flower, face view; H', back view; I, Stamen, dorsal view; I', ventral view; I'', side view; J, Carpellate flower, face view; J', side view; K, Style and stigma, dorsal view; K', ventral view; L, Cross section of ovary; M, capsule; N, Seed. (All from C.-I Peng 20847, the type at HAST).

*cences* axillary, 1-5, arising directly from rhizome, many-flowered, flowers 50-170 in a dichasial cyme branched 6-9 times; staminate flowers 40-140, carpellate flowers 10-30; peduncle well developed, taller than leaves, terete, erect, 9-17 cm long, 2-3.5 mm thick, reddish brown, pilose or sparsely so. Bracts caducous, ovate-triangular, broadly elliptic, oblong, obovate or lunate, margin serrulate and

ciliate, apex acute to rounded, 1.5-14 mm long, 1.5-9 mm wide, brownish, abaxially with some minute subsessile glandular hairs. *Staminate flowers*: pedicel 9-23 mm long, with few minute subsessile glandular hairs; tepals 4, outer 2 suborbicular or widely ovate, base rounded, margin entire, eciliate, apex rounded or obtuse, 8-13 mm long, 8-12.5 mm wide, abaxially reddish to red and adaxially



**Figure 2.** *Begonia kui* C.-I Peng. A, Habit; B, Leaf, abaxial surface; C, Leaf cross section, showing trichomes and midrib; D, Leaf margin, adaxial surface; E, Staminate flower, face view; F, Staminate flower, back view; G, Carpellate flower, face view; H, Carpellate flower, side view; I, Ovary, middle cross section; J, Capsule. (All from C.-I Peng 20847, the type at HAST).

pinkish or reddish toward the margin and apex, abaxially subglabrous or sparsely shortly pilose (trichomes reddish, 0.3-0.6 mm long); inner 2 tepals oblanceolate, obovate or narrowly so, base cuneate, margin entire, eciliate, apex rounded or obtuse, 9-14 long, 3.5-6 mm wide, white, glabrous; androecium zygomorphic or near so, stamens 22-40, golf club-shaped; filaments subequal, 1-1.5 mm long, base slightly fused; anthers  $\pm$  ascending, 2-locular, slightly compressed, oblong-obovoid, connective apex emarginate, 0.85-1 mm long, 0.6-0.7 mm wide, yellow. *Carpellate flowers*: pedicel 7.5-13 mm long, with few minute sessile glandular hairs, bracteole absent; tepals 3 (rarely 4), caducous, if persistent not thickened when fruiting; outer 2 tepals suborbicular or obovate, margin entire, eciliate, 8-11 mm long, 10-12 mm wide, abaxially reddish to red and adaxially pinkish or reddish toward the margin and apex, abaxially subglabrous or sparsely shortly pilose; inner tepal narrowly obovate or obovate, base cuneate, apex rounded or obtuse, 7-8 mm long, 5-6.5 mm wide, white, glabrous; ovary trigonous-ellipsoid, 7-9 mm long, 4-5 mm thick (wings excluded), greenish or reddish, glabrous or near so; wings 3, unequal; lateral wings narrower, 5-6 mm tall; abaxial wing obliquely rectangular-triangular or obliquely triangular, concave along outer margin, 8-9 mm tall, 7-8 mm wide; locule 1, placentation intruded parietal (axile at base); placentae 3, each 2-branched; styles 3, slightly tilted, fused at base, apically C-shaped; stigmatic band spiraled. *Capsule* nodding, with stipe 8-15 mm long, greenish and reddish when fresh, 8-10 mm long, 5-6 mm thick (wings excluded), apex with persistent styles; lateral wings 4.5-5 mm tall; abaxial wing 13-16 mm tall, 9-11 mm wide. *Seeds* numerous, brown, ellipsoid or broadly so, 0.48-0.6 mm long, 0.27-0.32 mm thick, chalazal end rounded or truncate, micropylar end obtuse or slightly constricted, outer periclinal walls of mature seeds concave; collar cells elongated, straight, nearly rectangular, 9-12 cells in a ring, occupying 1/2-2/3 of seed length.

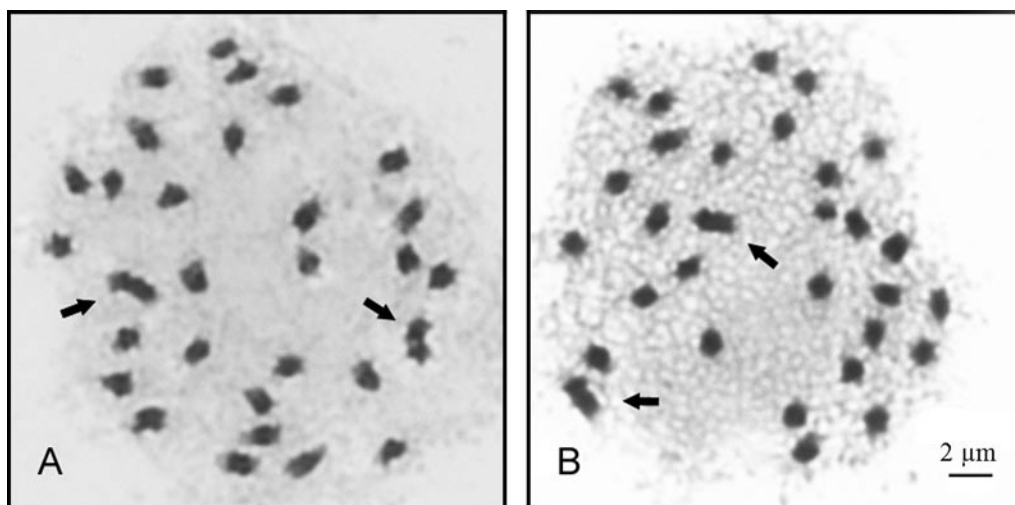
*Distribution*. Thai Nguyen Province, Vietnam; exact locality unknown.

*Etymology*. The specific epithet commemorates Mr. Shin-Ming Ku, a keen student of *Begonia* sect. *Coelocentrum*, who contributed much to our understanding of the taxonomy of this group of plants in the karst region of southern China during the last several years.

*Phenology*. Flowering May to December in cultivation; fruiting July to January.

*Notes*. *Begonia kui* is a unique species in sect. *Coelocentrum*. It is somewhat similar to *B. variegata* Y. M. Shui & W. H. Chen, differing in the leaf apex obtuse or rounded (vs. shortly acuminate); leaf margin with a white maculation (vs. with a dark brown band); inflorescences pilose (vs. glandular-hispid); outer tepals pinkish or reddish (vs. greenish or greenish-yellowish), abaxially shortly pilose (vs. glandular-hispid); androecium zygomorphic or nearly so (vs. actinomorphic); and capsules glabrous. It is also somewhat similar to *B. picturata* Yan Liu, S. M. Ku & C.-I Peng (Liu et al., 2005) and *B. retinervia* D. Fang, D. H. Qin & C.-I Peng (Fang et al., 2006), but differs in the leaf maculation pattern (*B. picturata* with a pale ring; *B. retinervia* with pale bands along main veins), the many-flowered inflorescences, and characters in flowers and fruits. A detailed comparison of the salient characters of the four species is shown in Table 1.

As all other species of *Begonia* sect. *Coelocentrum* for which chromosome numbers are known (Ku et al. 2004; Peng et al., 2005a, 2005b; Liu et al., 2005; Fang et al., 2006; Ku et al., 2006), *B. kui* has a somatic chromosome number of  $2n = 30$ . It has an asymmetrical karyotype, with one pair of long, metacentric chromosomes and 28 short chromosomes (Figure 3).



**Figure 3.** A-B, Somatic chromosome spreads of *Begonia kui* ( $2n = 30$ ), showing a pair of long, metacentric chromosomes (arrows) and 28 short chromosomes.

**Table 1.** Comparison of *Begonia kui*, *B. variegata*, *B. picturata* and *B. retinervia*.

	<i>B. kui</i> (Figures 1, 2)	<i>B. variegata</i> (Liu et al., 2005: Figure 8)	<i>B. picturata</i> (Liu et al., 2005: Figures 1, 2)	<i>B. retinervia</i> (Fang et al. 2006: Figures 7, 8)
Stipule apex	Hair-like	Horn-like	Hair-like	Hair-like
Leaf				
Shape	Suborbicular	Suborbicular	Ovate, broadly ovate to suborbicular	Suborbicular
Apex	Obtuse or subrounded, rarely acute	Shortly acuminate	Shortly acuminate	Obtuse, rounded, acute or shortly acuminate
Size (cm)	ca. 9-20 × 8-16	ca. 16-28 × 13-20	(7-10-15(-20) × (5.5-)7-10(-14)	(4-)8-14(-25) × (3.5-)7-13(-22)
Upper surface	Rugose	Densely strongly conically bullate	Rugose or rugulose	Rugose
Maculation	With white stripes in intercostal area and a narrow white band at leaf margin	With wide dark brown bands along main veins and at leaf margin, yellowish green elsewhere	With a wide white, greenish-white, or pale green ring in the middle or with digitate dark brown bands along main veins and at leaf margin, pale green, yellowish green or whitish elsewhere	With white bands along major veins
Indumentum on adaxial surface	Pilose-setose or tomentose-setose	Long setose or hirsute	Tomentose-setose	Pilose-setose or tomentose-setose
Peduncle	Pilose or sparsely pilose	Glandular hispid	Villous	Glabrous or very sparsely villous
Inflorescence	50-170 flowered	50-120 flowered	5-16 flowered	5-40 flowered
Flower				
Outer tepals				
Color	Abaxially reddish to red and adaxially pinkish or reddish toward the margin and apex	Greenish or greenish-yellowish	Pinkish or white	Pink to pinkish-white
Indumentum on abaxial surface	Subglabrous or sparsely shortly pilose	Glandular hispid	Villous-setose or hispid-setose	Glabrous
Androecium	Zygomorphic or subzygomorphic	Actinomorphic	Zygomorphic	Zygomorphic
Anthers	Yellow	Yellow	Yellow with red margins along anther sacs	Yellow
Capsule	Glabrous	Glandular hispid	Villous-setose or hispid-setose	Crisp-villous
Chromosome number	2n = 30 (Figure 3)	Not known	2n = 30 (Liu et al., 2005)	2n = 30 (Fang et al., 2006)
Distribution	Vietnam	Vietnam	China	China

**Acknowledgments.** We thank Shin-Ming Ku and Ming-Chao Yu (HAST) for the handsome line drawing and technical assistance with the color plate; Yoshiko Kono (HAST) for the chromosome spread; Qiner Yang (PE) for the Latin diagnosis; Nguyen Tien Hiep (HN) for the useful distribution information; and David E. Boufford (GH) and Thomas G. Lammers (OSH) for improving the manuscript.

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## 越南產秋海棠屬側膜組一新種：麗紋秋海棠

彭鏡毅<sup>1</sup> 謝東佑<sup>2</sup> Quang Hieu NGYUEN<sup>3</sup>

<sup>1</sup>中央研究院生物多樣性研究中心植物標本館 (HAST)

<sup>2</sup>國立中興大學園藝學系

<sup>3</sup>美國紐約植物園

本文報導秋海棠屬側膜組一新種：麗紋秋海棠 (*Begonia kui*)，提供線繪圖與彩色照片以資辨識。麗紋秋海棠與彩紋秋海棠 (*B. variegata*) 相似，區別在於葉片先端不呈短漸尖；葉面於脈間區有白色條斑、近葉緣處常有白色斑塊而非呈暗褐色環狀邊；外花被片帶紅色或粉紅色，遠軸面具短柔毛或近於光滑；雄蕊群兩側對稱或近似如此；子房與果實光滑無毛等特徵。該植物於台灣的花市出售，根據越南河內的生態與生物資源研究所 Tien Hiep Nguyen 教授提供之生態照片，本種植物可能原產於越南太原省。

**關鍵詞：**麗紋秋海棠；彩紋秋海棠；新種；側膜組；越南。