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RESEARCH ARTICLE

Begonia hosensis (sect. *Reichenheimia,* Begoniaceae), a new species from Sarawak, Malaysia

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ABSTRACT: *Begonia hosensis*, a new species of sect. *Reichenheimia* from Sarawak, Malaysia is here described and illustrated. *Begonia hosensis* resembles *B. andersonii*, differing in the stipule prominently keeled and female flower 5- (vs. 4-) tepaled. Ecologically, the two species are also separable: *B. hosensis* occurs on granitic cliffs ca. 400 km east of Kuching, the only known locality of *B. andersonii*, a limestone species.

KEY WORDS: Begoniaceae, *Begonia hosensis*, Borneo, Malaysia, new species, Sarawak, sect. *Reichenheimia*.

INTRODUCTION

The Hose Mountains are a remote mountain range located in central Sarawak, Malaysia. Topography within the Hose Mountains is extremely rugged, and this is largely why the region has remained untouched by logging activities. The region has been poorly explored botanically due to difficulty of access. As a relatively isolated range, the Hose Mountains have a high potential for endemism of montane plant species (Lee, 2002). Six species of *Begonia*, namely *B. andersonii* Kiew & S. Julia, *B. burttii* Kiew & S. Julia, *B. juliasangii* Kiew, *B. payung* S. Julia & Kiew, *B. rhodochaeta* S. Julia & Kiew, *B. speluncae* Ridl., were previously known for *Begonia* sect. *Reichenheimia* in Sarawak (Kiew and Julia, 2007, 2009). *Begonia chlorosticta* (sect. *Petermannia*), an exceptionally ornamental plant from the Hose Mountains has been documented by Sands (1982). In this paper we report the discovery of another new species, *Begonia hosensis* (sect. *Reichenheimia*), from the same region. A careful study of plants collected from the field and in cultivation as well as detailed comparison with herbarium specimens confirms our collection as a new species, which we describe below.

TAXONOMIC TREATMENT

Begonia hosensis C. W. Lin & C.-I Peng，***sp. nov.***
Sect. ***Reichenheimia***

Type: MALAYSIA. Borneo, Sarawak, Kapit, Hose Mountains, *c*a. 530 m alt., 8 Apr. 2013, *C. W. Lin 561*. Type collection made from plants brought from field into cultivation (holotype: SAR; isotypes: HAST, TAIF)

赫斯山秋海棠 Figs. 1, 2, 3; Tab. 1

Plant monoecious, epipetric, perennial, rhizomatous. Rhizomes stout, 5–15 cm long, 0.4–1.2 cm thick, internodes 0.3–0.6 cm long, brown or reddish brown, glabrous. **Stipules** persistent, ovate–triangular, 9–14 mm long, 6–10 mm wide, greenish or reddish, herbaceous, glabrous, abaxially strongly aristate-keeled near tip of the midrib, arista 4–6 mm long. **Leaves** 2–8, alternate, simple, asymmetric, widely ovate to suborbicular, margin undulate to entire, apex shortly acuminate, 11–17 cm long (basal lobes included), 8–13 cm wide, broad side 4.5–7.5 cm wide, basal lobes cordate, 3.2–5.6 cm, adaxially green to brownish green (abaxially pale green), texture thickly chartaceous or thinly leathery, glabrous, ciliolate on margin, apex shortly caudate, all veins on adaxial surface prominent, venation basally 7–9 palmate, veins pinnate along midrib, with 2–3 major lateral veins on each side, other primary veins branching dichotomously or nearly so, tertiary veins weakly percurrent or reticulate, divergence angle 60–75°, minor veins reticulate. **Petiole** terete, 8–15 cm long, 3–6 mm thick, brownish green to red, glabrous, sometimes with white, appressed hairs on young petioles. **Bracts** ovate to triangular, margin entire, apex acute with a short cusp, at first node of inflorescence 8–12 mm long, 4.5–8 mm wide, pale green or pale reddish brown, herbaceous. **Inflorescence** a bisexual, cymose panicle, 1–3 arising directly from rhizome, 12–23 cm long, peduncles 2–4 mm thick,

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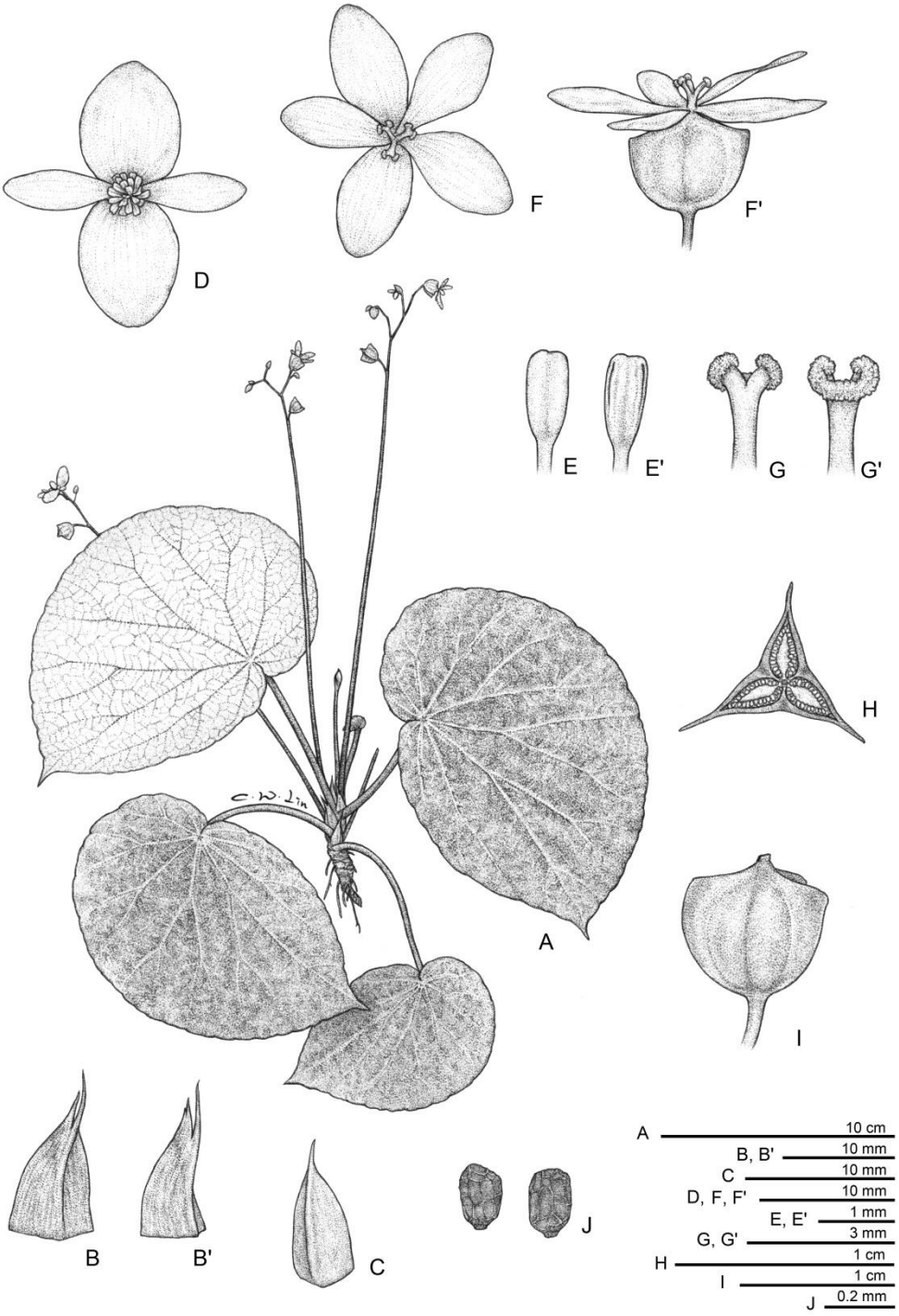


Fig. 1. ***Begonia hosensis*** **A. Habit; B&B'. Stipule; C. Bract; D. Male flower, face view; E. Stamen, dorsal view; E'. Stamen, ventral view; F. Female flower, face view; F'. Female flower, side view; G. Style, dorsal view, G'. Style, ventral view; H. Middle cross section of an immature fruit.; I. Fruit. All from** ***C.W. Lin 561*****.**

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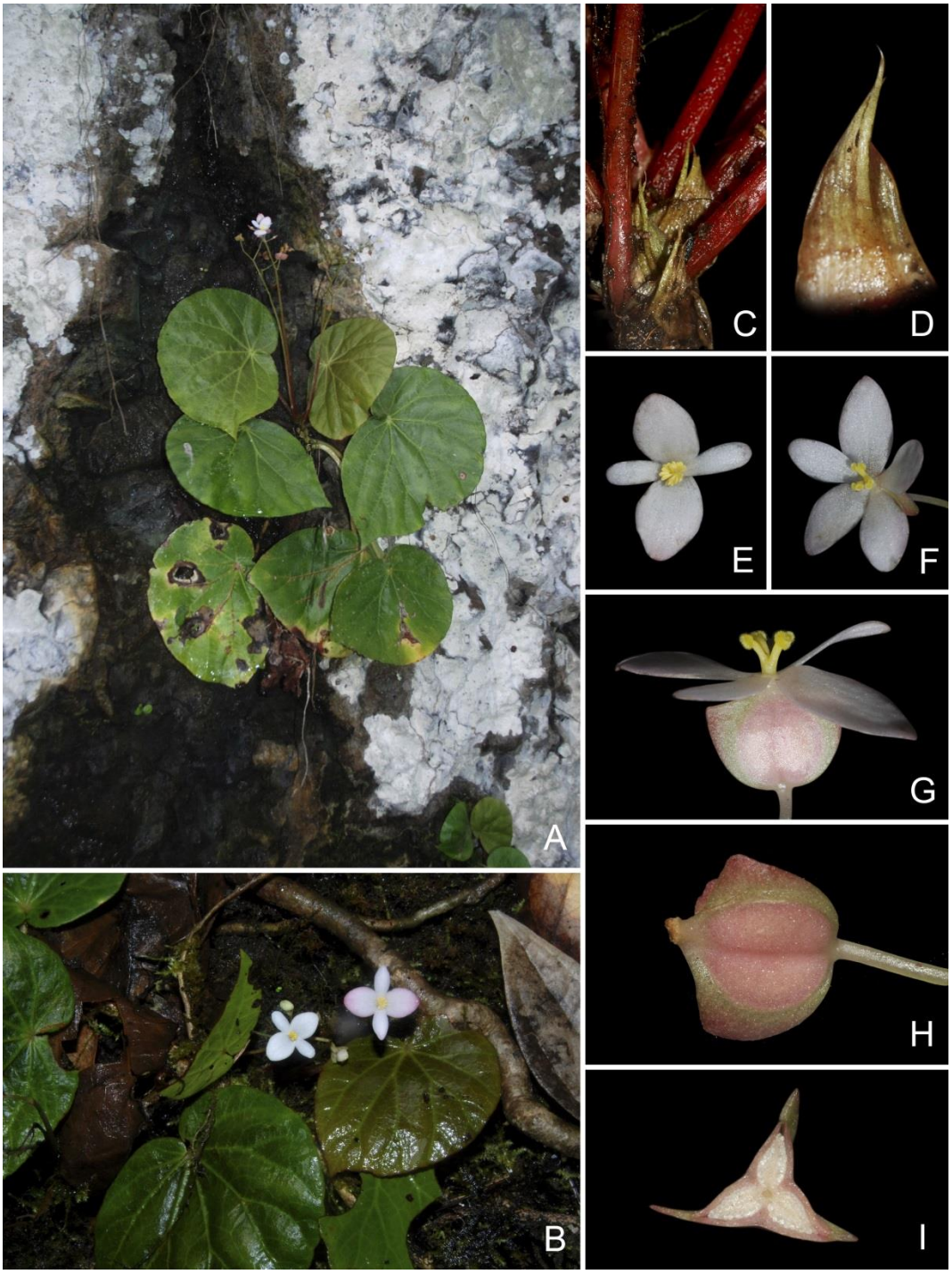


Fig. 2. ***Begonia hosensis*** **A. Habitat, showing the plant on granite cliff; B. Different color forms exhibited by two individuals: white flower and green leaf (left), pinkish flower and olive green leaf (right) ; C. Rhizome; D. Stipule; E. Male flower, face view; F. Female flower, face view; G. Female flower, side view; H. Fruit; I. Middle cross section of an immature fruit. All from** ***C.W. Lin 561*****.**

greenish or reddish brown, glabrous, erect, with up to 4 orders of branching, exceeding leaves, flowers 2–13 per cyme. **Male flower:** tepals 4, margin entire, outer 2 oblong, base rounded or slightly cordate, apex rounded, 10–13 mm long, 7–10 mm wide, abaxially pink or white, glabrous, adaxially pinkish white or white; inner 2

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obovate to oblong, base cuneate, apex obtuse or rounded, 7–10 mm long, 2.5–4 mm wide, pinkish to white, glabrous; androecium zygomorphic, subspherical, stamens 20–30, golf club shaped; filaments short, *ca.* 0.5 mm long, shortly fused at base; anthers 2-locular, slightly compressed, oblong-obovoid, apex slightly emarginate, 0.9–1.3 mm long, 0.4–0.6 mm wide, yellow. **Female flower:** tepals 5, margin entire, usually caducous; outer 2 oblong to widely ovate, 9–11 mm long, 5–6 mm wide, abaxially pinkish white to white; inner 3 obovate, base cuneate, apex obtuse or rounded, 6–8 mm long, 3–5 mm wide, white, glabrous; ovary trigonous-subspherical, body 5–6 mm long, 4–5 mm across, pinkish, 3–winged; wings subequal, oblong to triangular, 2–3.5 mm tall, 6–8 mm wide; locules 3, placenta one per locule; styles 3, fused at base, yellow, *ca.* 2.5 mm long, apically split and C-shaped; stigmas in one spiral band, papillose all around. **Fruit** a capsule, nodding, greenish when fresh, 7–9 mm long, 7–10 mm across (wings excluded), wings oblong to triangular, rounded, subequal, 3–4 mm tall. **Seeds** numerous, brown, widely ellipsoid or ellipsoid, *ca.* 0.2 mm long, 0.15 mm thick, chalazal end rounded, micropylar end obtuse, outer periclinal walls concave; collar cells elongated, straight or slightly undulate, nearly rectangular, 10–12 cells in a ring, anticlinal walls between collar cells raised, straight or slightly undulated; testa cell nearly isodiametric-polygonal.

Distribution and ecology: *Begonia hosensis* is endemic to southwestern Hose Mountains, Sarawak, Borneo (Figure 3). It is a lithophyte on wet granite cliffs in evergreen *Dipterocarp* forest, associated with mosses in rock crevices, at 480－590 m altitude.

Vernacular name: Hose Mountain *Begonia*

Etymology: The specific epithet is derived from the type locality, Hose Mountains, in central Sarawak, Borneo.

Notes: The new species here reported is one of the few begonias occurring on granitic mountains. Although the leaf blade is not variegated, its thinly leathery texture and prominent adaxial veins provide an attractive appearance. We believe that with more intensive inventories many more species of *Begonia* sect. *Reichenheimia* will be discovered in Sarawak. *Begonia hosensis* bears some resemblance to *B. andersonii* Kiew & S. Julia in the orbicular leaves and 4-tepaled male flowers, but are sharply distinct in many other morphological characters. A detailed comparison of this new species with all three other congeners in sect. *Reichenheimia* in Sarawak is shown in Table 1.



Fig. 3. Distribution of *Begonia hosensis* (dot) in Sarawak, Borneo.

Table 1. Comparison of *Begonia hosensis* with *B. andersonii* Kiew & S. Julia, *B. burttii* Kiew & S. Julia and *B. speluncae* Ridl.

	B. hosensis	*B. andersonii*	*B. burttii*	*B. speluncae*
Stipule	Ovate-triangular, lacerated, glabrous. ca. 9–14 × 6–10 mm	Narrowly lanceolate, densely hairy. *ca.* 5 × 2 mm	Narrowly lanceolate, hairy, 3–4 × 1–1.5 mm	Lanceolate, entire, glabrous.
Leaf				
shape	Non-peltate; widely ovate to suborbicular	Non-peltate; suborbicular	Peltate; ovate-angular	Peltate; suborbicular
size (cm)	11–15 × 8–13	6.2–11.5 × 8.3–15.75	4.5– 6.8 × 5.6–6.4	1.2–4.5 (–10) × 1.4–5.7 (–12)
Female tepals (number)	5	4	5	4
Capsule size (cm)	7–9 × 7–10	4–5 × 11–13	6–8 (–10) × 7–10 (–13)	6.5 × 12.5
Habitat	Granite	Limestone	Limestone	Limestone

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馬來西亞沙勞越秋海棠科新種：赫斯山秋海棠

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摘要：本文報導馬來西亞婆羅洲沙勞越中部地區, 赫斯山山脈花崗岩壁上發現之一種秋海棠科新種：赫斯山秋海棠(*Begonia hosensis*)。赫斯山秋海棠略似另一亦產於沙勞越的安德森秋海棠(*B. andersonii*)，但前者托葉卵狀三角形，背面中肋處具有延伸的肉質芒尖，且葉柄近於無毛，雌花之花被片為五枚；另外，相對於僅產於沙勞越西部石灰岩地區的安德森秋海棠，赫斯山秋海棠的生育地之地質特性明顯不同。

關鍵詞：秋海棠科、赫斯山秋海棠、婆羅洲、馬來西亞、新種、單座組、沙勞越。

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