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TWO NEW SPECIES OF *BREDIA* (*MELASTOMATACEAE*) FROM TAIWAN

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An examination of living material of *Bredia* (*Melastomataceae*) in Taiwan and a comparison with herbarium material of the genus from eastern Asia (China, Japan and Taiwan) has led to the recognition of two new species, *B. dulanica* C.L.Yeh, S.W.Chung & T.C.Hsu and *B. laisherana* C.L.Yeh & C.R.Yeh. The morphology and diagnostic characters of these two species are described and illustrated and a key to the species of *Bredia* in Taiwan is given.

Keywords. *Bredia*, *Melastomataceae*, Taiwan.

INTRODUCTION

The genus *Bredia* Blume was established by Blume in 1849 for *B. hirsuta* Blume. There are approximately 10–30 species (Chang, 1989; Tuyama, 1989; Huang & Huang, 1991; Xiang & Chen, 2001; Chen & Renner, 2007) distributed from the Himalayas and southern China to Japan and Taiwan. *Bredia* includes species with eight stamens that are either subequal or distinctly unequal. The anthers are attenuate at their apices and the connectives are either slightly elongated at the base of the anthers or not, usually gibbose ventrally and short-calcarate dorsally. The inflorescences are usually umbellate or cymose-paniculate (Diels, 1932; Li, 1944).

During ecological and botanical inventories undertaken in recent years two unknown *Bredia* species were discovered in southern and eastern Taiwan. We were unable to match them with any existing herbarium material and describe them here as new.

Chen & Renner (2007) synonymised *Bredia hirsuta* Blume var. *rotundifolia* (Y.C.Liu & C.H.Ou) S.F.Huang & T.C.Huang into *B. hirsuta* Blume var. *scandens* Ito & Matsum., and *B. gibba* Ohwi into *B. oldhamii* Hook.f. After our extensive

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TABLE 1. Differences between *Bredia oldhamii* and *B. gibba*

Character	*B. oldhamii*	*B. gibba*
Leaf	Both surfaces glabrous	Upper surface glabrous, sometimes sparsely setose; lower surface glabrous (Fig. 1D)
Peduncle	Erect, robust, 1–3 cm long	Pendent, slender, 5–13 cm long
Calyx lobes	Obtuse, sometimes succulent (Fig. 1B)	Acicular (Fig. 1D)
Distribution	All over Taiwan island, 200–1000 m altitude	Only in Pingtung County, in southern part of Taiwan, 1400–1700 m altitude

study of the Taiwanese *Bredia* species we are convinced that *Bredia oldhamii* and *B. gibba* are distinct species (Table 1, Fig. 1) and that the two varieties of *Bredia hirsuta* mentioned above both deserve specific status (Table 2, Fig. 2). *Bredia oldhamii* has been extensively studied by Japanese and Taiwanese botanical taxonomists but *B. gibba* is rare and has been studied much less. *Bredia gibba* can be easily distinguished from *B. oldhamii* by the acicular calyx lobe and the long, pendent, slender inflorescence. In addition these species are glabrous on the leaf abaxially and not puberulent as stated in Chen & Renner (2007).

Yeh *et al.* (2008) have confirmed that *Bredia hirsuta* also occurs in Taiwan. Due to the long history of misidentification and confusion between *Bredia hirsuta*, *B. scandens* and *B. rotundifolia* they examined living material of these three taxa and concluded that they are different species: *B. hirsuta* has unequal stamens and has appendages on the longer stamens; *B. scandens* also has unequal stamens but does not have appendages on the longer stamens; and *B. rotundifolia* has almost equal stamens (Fig. 1). In addition to these major floral differences there are also a number of differences in leaf structure and in the inflorescence. Although there are several superficial similarities these are three distinct species.

Key to the species of Bredia *in Taiwan*

1a. Venation basal _____ *B. laisherana*
1b. Venation suprabasal _____ 2

2a. Leaf blades glabrous beneath _____ 3
2b. Leaf blades hairy or tomentose along the veins beneath _____ 4

3a. Calyx lobes acicular _____ *B. gibba*
3b. Calyx lobes obtuse _____ *B. oldhamii*

4a. Corolla whitish; longer anthers not tubercular at the base; inflorescences densely glandular _____ *B. scandens*

4b. Corolla pinkish; longer anthers tubercular at the base; inflorescences with dense trichomes _____ 5

5a. Lower leaf surface with hairs only along the veins; calyx lobes broadly and shortly triangular, apex obtuse _____ *B. rotundifolia*

5b. Lower leaf surface with hairs all over; calyx lobes narrowly triangular, apex acute _____ 6

6a. Longer anthers with 2 ball-shaped or short hook-like appendages ventrally; calyx lobes without a strigose hair on the abaxial apex; styles 0.5 cm long _____ *B. hirsuta*

6b. Longer anthers elongate and forming 2 long, rod-shaped ventral appendages, c.1 mm long, and with a distinct, dorsal spur-like appendage; calyx lobes with a very short, red strigose hair on the abaxial apex; styles 0.6–0.7 cm long ___ *B. dulanica*

Bredia dulanica C.L.Yeh, S.W.Chung & T.C.Hsu, **sp. nov. Figs 2, 4A & B.**

Haec species *Brediae hirsutae* Blume similis est, a qua antheris longioribus basi appendicibus longioribus circa 0.1 cm longis differt. Calycis segmenta apice cum una striga rubra cornuata provisa. – Type: Taiwan, Taitung, Mt Dulan, on the ridge of a mountain, 1000–1200 m, 14 x 2007 (fl), *S.W. Chung, T.C. Hsu & C.R. Yeh* 16 (holo TAIF; iso TAIF).

Shrub 40–60 cm tall. *Stem* and branch red, terete, densely puberulous and with trichomes c.0.1 cm long. *Leaves* petiolate; petioles red, 0.7–3 cm long, hirsute; blade ovate, 2.8–9 cm long, 2–5 cm wide, base rounded or cordate, margin almost entire, with trichomes, both surfaces hirsute, upper surface veins glabrous, lower surface veins hirsute, 7–9-nerved. *Inflorescences* terminal, cymose, 5–10 cm long. *Pedicels* red, densely puberulous and with glandular trichomes, c.3 cm long. *Flowers* pink, petals ovate, oblique, c.1.7 cm long, c.0.7 cm wide. *Stamens* 8, of which 4 longer and 4 shorter; longer stamens 0.9–1 cm long, anthers geniculate, 0.4–0.6 cm long, connective decurrent, forming a short stipe, base with 2 elongated, rod-shaped appendages ventrally, c.0.1 cm long, with a very short, downward-pointing, spur-like appendage on the back; shorter stamens c.0.6 cm long, anthers c.0.2–0.3 cm long, base forming 2 upward hook-like ventral appendages and a long, up to 0.1 cm long, distinct spur-like dorsal appendage on the back. *Calyx* and hypanthium whitish, obconical, 0.3–0.4 cm long, pubescent and glandular; calyx lobes whitish, narrowly triangular, up to 0.2 cm long, whitish puberulous and with red glandular trichomes, apex with a short, red strigose hair. *Ovary* sub-inferior, apex with a whitish crown, cylindrical. *Capsules* glandular hairy, obconical, initially whitish, then turning to whitish-green, 0.3–0.4 cm long; persistent lobes green; crown green, glabrous, nearly entire.

Distribution. Taiwan. Known only from one locality on Mt Dulan, Taitung County, southeastern Taiwan.

Habitat. Distributed along a rocky mountain ridge and in semi-shade in cloud forest, 1000–1100 m altitude. Dominant species in this forest include *Gordonia axillaris*

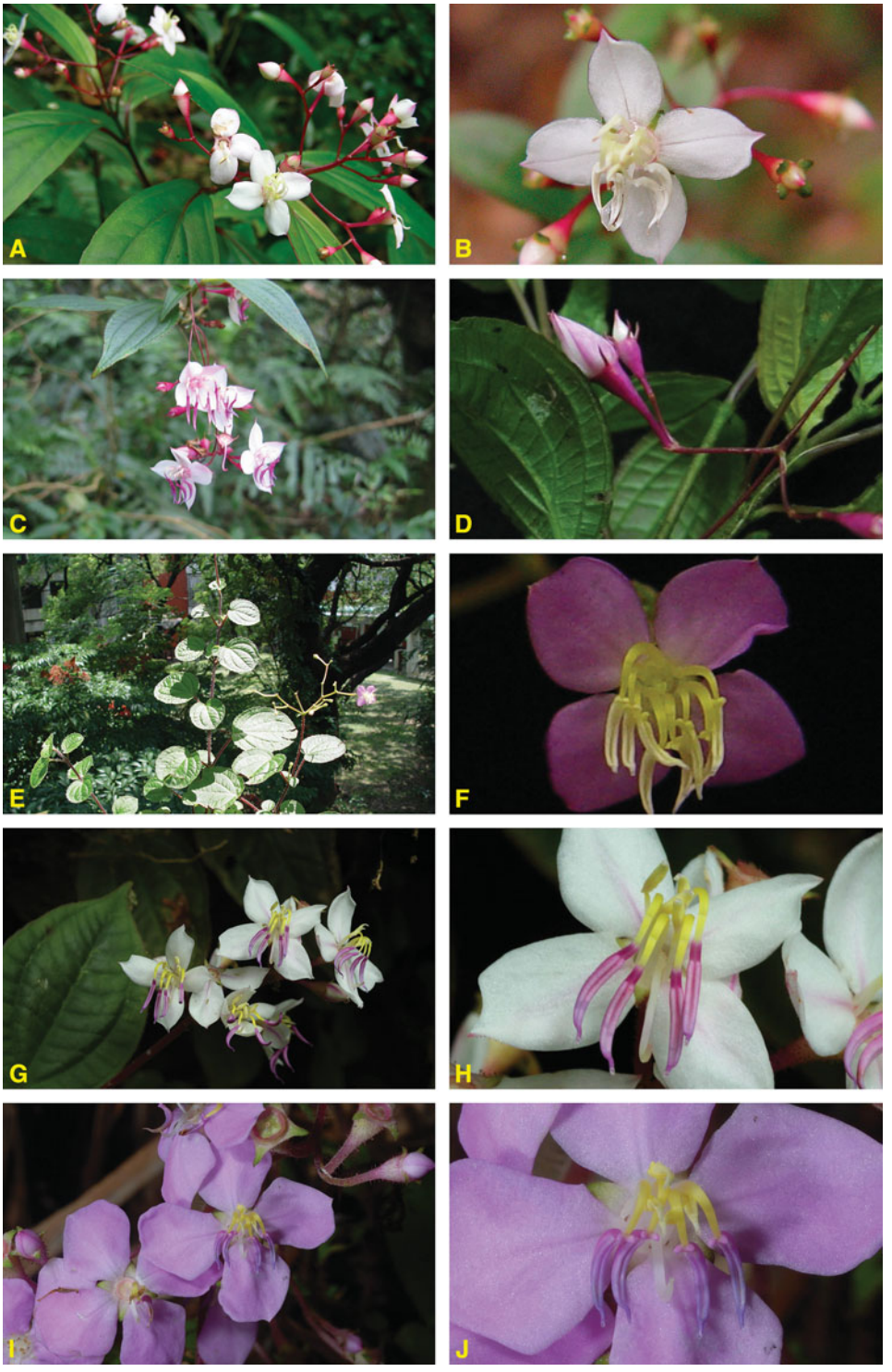

FIG. 1. Taiwanese *Bredia* species (except *B. dulanica* and *B. laisherana*): A–B, *B. oldhamii*; C–D, *B. gibba*; E–F, *B. rotundifolia*; G–H, *B. scandens*; I–J, *B. hirsuta*.

TABLE 2. Differences between *Bredia hirsuta*, *B. scandens* and *B. rotundifolia*

Character	*B. hirsuta*	*B. scandens*	*B. rotundifolia*
Corolla	Pinkish	Whitish	Pinkish
Peduncles and pedicels	Peduncles puberulous; pedicels with glandular hairs	Both peduncles and pedicels with dense glandular hairs	Peduncles puberulous; pedicels with glandular hairs
Upper leaf surface	Puberulous with long hairs	Not puberulous, glabrous, sometimes sparsely setose	Not puberulous, glabrous, sometimes sparsely setose
Lower leaf surface	Puberulous with long hairs all over	Puberulous on the veins, otherwise glabrous	Puberulous on the veins, otherwise glabrous
Stamens	Unequal, 4 long and 4 short (Fig. 1J)	Unequal, 4 long and 4 short (Fig. 1H)	Almost equal in shape and length (Fig. 1F)
Long anthers	Stipe with appendages	Without appendages	Stipe with appendages
Petals	Both surfaces glabrous, margin eciliate	Outside with many short glandular hairs, margin ciliate	Both surfaces glabrous, margin eciliate
Distribution	Central and eastern Taiwan (not including southwestern part of Taiwan), c.1000 m altitude	Central and southern Taiwan (not including southeastern part of Taiwan), c.1000–1500 m altitude	Southwestern Taiwan, below 800 m altitude

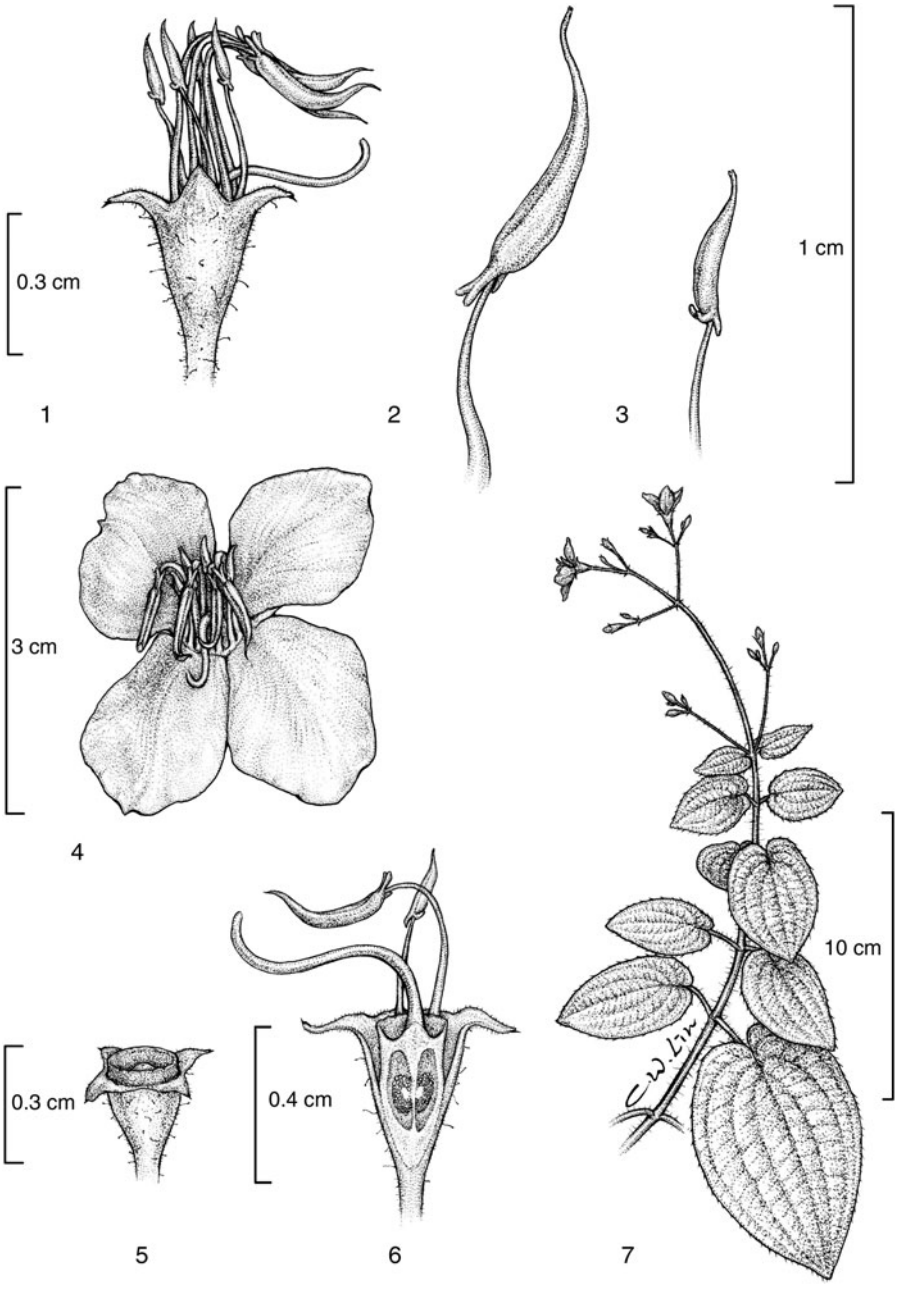

FIG. 2. *Bredia dulanica* C.L.Yeh, S.W.Chung & T.C.Hsu. 1, flower, tepals removed; 2, longer stamen; 3, shorter stamen; 4, flower; 5, capsule; 6, ovary; 7, flowering branch (drawn from *S.W. Chung, T.C. Hsu & C.R. Yeh* 16, holo TAIF).

(Roxb. ex Ker Gawl.) D.Dietr., *Elaeocarpus sylvestris* (Lour.) Poir., *Elatostema lineolatum* Wight var. *majus* Wedd., *Begonia formosana* (Hayata) Masam. and *Machilus thunbergii* Siebold & Zucc.

Proposed IUCN conservation status. Bredia dulanica is only found along a narrow, 800 m long, c.3 m wide mountain ridge on Mt Dulan. The distribution area of this species is less than 1 km^2. Mt Dulan is a popular recreation area and is also disturbed by illegal logging. Additionally *Bredia dulanica* is often regarded as a weed to be removed in order to keep the mountain trail safe for climbers. Therefore, we assess the status of this species as CR B2ab(iii) according to the IUCN Red List criteria (IUCN, 2001).

Phenology. Flowering season is from October to November.

Etymology. The specific epithet refers to Mt Dulan, where it is found.

Additional specimens studied. TAIWAN. Taitung County, Mt Dulan, 18 xi 2005 (fl), *S.W. Chung* 8254 (TAIF), 8249 (TAIF); ibid., 7 x 2007 (fl), *T.C. Hsu* s.n. (TAIF); ibid., 9 x 2007 (fl), *C.R. Yeh* s.n. (TAIF).

Bredia dulanica is closely related to *B. hirsuta* Blume and *B. scandens* (Ito & Matsum.) Hayata. Our new species is readily distinguished by the stamen morphology (Table 3) and the calyx lobes with a short, red strigose hair abaxially. *Bredia dulanica* is unique in the genus in having elongated, up to 0.1 cm long, rod-shaped ventral anther appendages. In China and Taiwan this character is found in *Melastoma* L., *Oxyspora* DC. and *Fordiophyton* Stapf. *Bredia dulanica* is also characterised by the long, downward-pointing dorsal spur-like appendage on the longer anthers. Some *Bredia s*pecies, such as *B. sinensis* (Diels) H.L.Li, *B. yaeyamensis* (Matsum.) H.L.Li and *B. okinawensis* (Matsum.) H.L.Li, have an

TABLE 3. Differences among the anthers of *Bredia scandens*, *B. hirsuta* and *B. dulanica*

	B. scandens	*B. hirsuta*	*B. dulanica*
Longer anthers	Dorsal connective not gibbous; stipe c.0.1 cm long, base without appendages	Connective gibbous; stipe shorter than 0.1 cm, base with 2 ball-shaped appendages ventrally	Dorsal connective not gibbous; stipe longer than 0.1 cm, base with 2 elongated, rod-shaped appendages ventrally, and a distinct appendage dorsally
Shorter anthers	Anther as long as filament or shorter; spur-like appendage obscure, far shorter than the ventral appendages	Anther as long as filament or shorter; spur-like appendage distinct, as long as the ventral appendages or shorter	Filament twice as long as anther; spur-like appendage long, longer than the ventral appendages

upward-pointing appendage on the longer anthers while most *Bredia* species have no such appendage or one that can hardly be observed in living material. Due to the similarities in floral structure, especially in the shape of the stamens and hypanthium, the three species mentioned above are now treated as varieties of *B. yaeyamensis*: *B. yaeyamensis* (Matsum.) H.L.Li var. *sinensis* (Diels) C.L.Yeh & C.R.Yeh, *B. yaeyamensis* (Matsum.) H.L.Li var. *yaeyamensis* and *B. yaeyamensis* (Matsum.) H.L.Li var. *okinawensis* (Matsum.) C.L.Yeh & C.R.Yeh (Yeh *et al.*, 2008).

Bredia laisherana C.L.Yeh & C.R.Yeh, **sp. nov. Figs 3, 4C & D.**

Bredia quadrangularis auct. non Cogn.: C.L. Yeh & C.R. Yeh, Taiwan J. For. Sci. 21(1): 119–123 (2006).

Haec species *Brediae quadrangulari* Cogn. similis est, a qua cauli tereti differt. Pedunculi et pedicelli erecti validi pilis glanduliferis et tomentosis instructi. Calycis segmenta margine serrulata. – Type: Taiwan, Pingtung, Mt Laisher, on the ridge of a mountain and steep valley and in a dense cloudy forest, 1600–1800 m, 15 ix 2005 (fl), *C.L. Yeh & C.R. Yeh* 33 (PPI no. 065514) (holo PPI).

Shrubs or shrublets, 70–100 cm tall. *Stems* terete, glabrous, with adventitious roots; young stems purplish-red, glandular trichomes brownish-ferrugineous. *Leaves* papery, lower surface reddish-green; young leaves elliptic, often oblique; mature leaves ovate or elliptic, 4.5–9.5 cm long, 2.3–5.1 cm wide, apex acuminate or caudate, base rounded to cordate, margin serrulate, both surfaces glabrous, 2 secondary veins on each side of midvein, originating from base. *Inflorescences* terminal, cymose, 10–15 cm long, 2.7–3.3 cm wide or wider. *Peduncles* and pedicels red, densely puberulous, with glandular trichomes; pedicel 7 mm long. *Flower* rosy-red to light purple; petals narrowly ovate, slightly oblique, c.1.2 cm long, c.0.5 cm wide, apex acute. *Stamens* 8, of which 4 longer and 4 shorter; longer stamens 1.4 cm long, anthers lanceolate, C-shaped, c.0.7 cm long, connective decurrent, forming a short stipe, no appendages; shorter stamens c.0.7 cm long, anthers c.0.3 cm long, base ventrally tuberculate, connective decurrent, forming a short, downward-pointing, dorsal spur-like appendage. *Calyx* and hypanthium with 2 or 3 glandular hairs, mostly glabrous; hypanthium rounded or campanulate, c.0.2 cm wide, c.0.3 cm long; calyx lobes obscure, more or less broadly triangular, margins serrulate. *Ovary* sub-inferior, glabrous, ball-shaped. *Capsule* cup-shaped, 0.6 cm long, 0.2–0.4 cm wide, 4-sided, apex truncate; persistent hypanthium almost glabrous, with 1 or 2 glandular short hairs. *Seeds* brown, surface densely verrucose, waxy at one end, reniform, 1.5 mm long, 0.8 mm wide.

Distribution. Taiwan. Known only from one locality on Mt Laisher, Pingtung County, southern Taiwan.

Habitat. In dense cloud forest, 1400–1800 m altitude. Dominant species of this forest include *Litsea acutivena* Hayata, *L. acuminata* (Blume) Kurata, *Rhododendron formosanum* Hemsl., *Polygala arcuata* Hayata, *Bredia gibba*, *Barthea barthei*

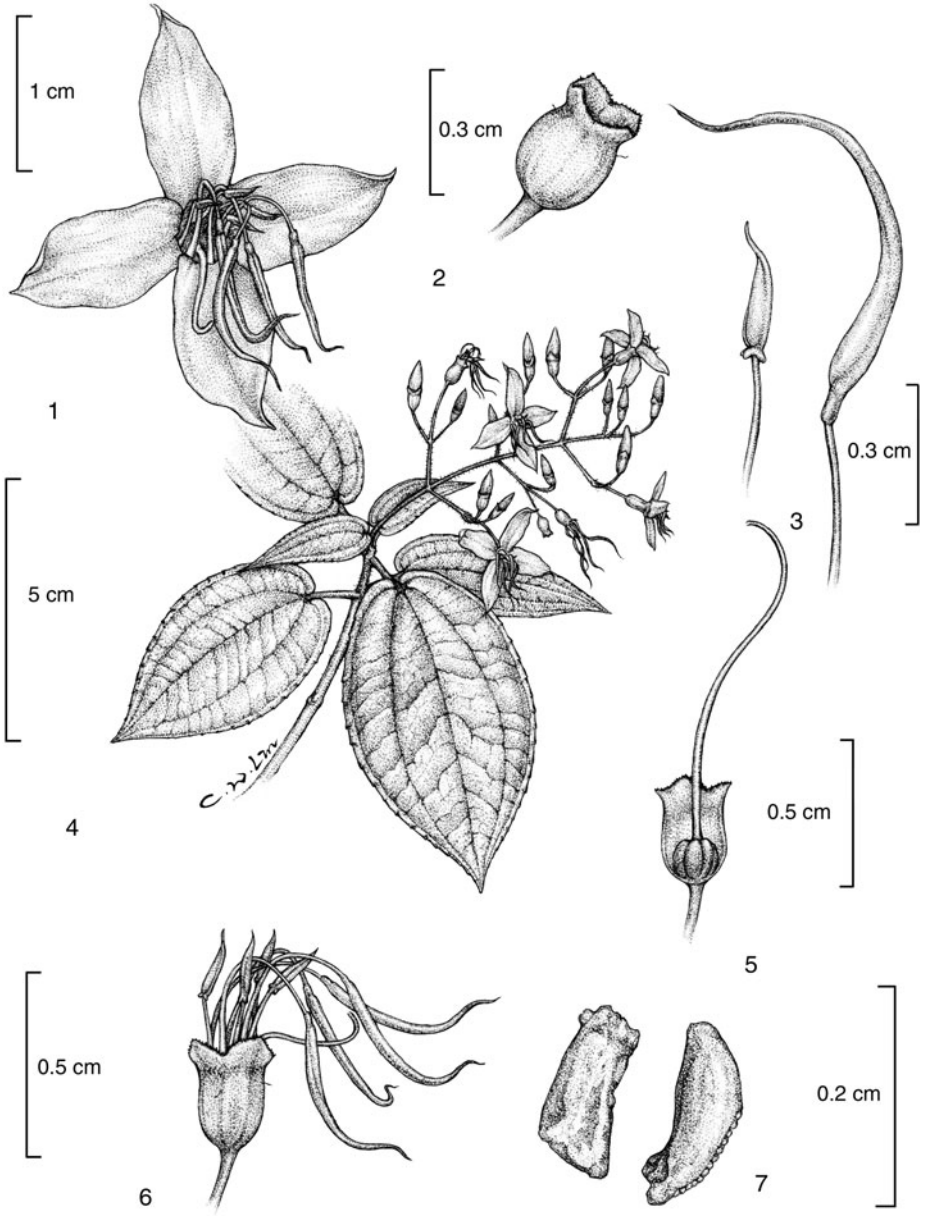

FIG. 3. *Bredia laisherana* C.L.Yeh & C.R.Yeh. 1, flower; 2, capsule; 3, anthers (left, shorter stamen; right, longer stamen); 4, flowering branch; 5, ovary; 6, flower, tepals removed; 7, seeds (drawn from *C.L. Yeh & C.R. Yeh* 33, holo PPI).

(Hance ex Benth.) Krasser, *Begonia laciniata* Roxb., *Begonia formosana* (Hayata) Masam., *Elatostema lineolatum* var. *majus*, *Goodyera velutina* Maxim. ex Regel and *Sarcopyramis napalensis* Wall. var. *delicata* (C.B.Rob.) S.F.Huang & T.C.Huang.

FIG. 4. *Bredia dulanica* C.L.Yeh, S.W.Chung & T.C.Hsu: A, habitat; B, flower, side view. *Bredia laisherana* C.L.Yeh & C.R.Yeh: C, flower; D, habitat.

Proposed IUCN conservation status. Mt Laisher is an isolated mountain surrounded by plantations. As with *Bredia dulanica*, *B. laisherana* is found in only one locality along a narrow mountain ridge. Plantation forestry and illegal logging are also a threat to the habitat of *B. laisherana*. We therefore assess the status of this species as CR B2ab(iii) according to the IUCN Red List criteria (IUCN, 2001).

Phenology. Flowering season is from July to September.

Etymology. The specific epithet refers to Mt Laisher, where it is found.

Additional specimens studied. TAIWAN. Pingtung County, Mt Laisher, 22 iii 2005 (fr), *C.F. Chen* 1316 (PPI); ibid., 22 iii 2005 (fr), *K.P. Lo* 740 (PPI) (238652); 18 xii 2006 (fl), *C.R. Yeh* s.n. (TAI).

TABLE 4. Differences between *Bredia quadrangularis* and *B. laisherana*

Character	*B. quadrangularis*	*B. laisherana*
Branch	4-sided, winged on ribs; young branches glabrous	Terete, not winged on ribs; young branches pilose with glandular hairs
Leaf blade	Stiffly papery, 3–4 cm long, 1.5–2 cm wide	Papery, 4.5–9.5 cm long, 2.3–5.1 cm wide
Veins	3	5
Colour of lower leaf surface	Green (brownish-yellow when dried)	Red (red when dried)
Inflorescence	Glabrous, pendent, slender, c.7 cm long	Densely puberulous and with glandular hairs, erect, robust, up to 10–15 cm long
Longer stamens	c.0.9 cm long	c.1.4 cm long
Hypanthium	Green, shortly campanulate or rounded cup-shaped, 4-sided, glabrous and leathery	Pink, narrowly elliptic to long cup-shaped, obscure 4-sided, almost glabrous with 2 or 3 short glandular hairs and papery
Calyx lobes	Distinct, repand or nearly semicircular in shape, margins entire	Obscure, more or less broadly triangular, margins serrulate
Capsule	Short cup-shaped, fruit exserted from persistent hypanthium c.0.1–0.2 cm high	Long cup-shaped, fruit not exserted from persistent hypanthium
Colour of capsule	Persistent hypanthium green, fruit red	Persistent hypanthium red

Bredia laisherana was found recently on Mt Laisher, Pingtung County, Taiwan, and initially identified as *B. quadrangularis* Cogn. using the treatment by Chen & Renner (2005) (Yeh & Yeh, 2006). After examining and comparing the living material and specimens from China and Taiwan, we now believe this *Bredia* from Taiwan is different to the Chinese *B. quadrangularis* and should thus be recognised as a new species.

The differences between *Bredia quadrangularis* and *B. laisherana* are given in Table 4.

Additional material examined for *Bredia oldhamii*, *B. gibba*, *B. hirsuta*, *B. scandens*, *B. rotundifolia* and *B. quadrangularis*:

Bredia oldhamii: TAIWAN. Taipei, Tsankuangliaoshan, 24 v 1996, *C.C. Hsu et al.* s.n. (TAIF); Palaka, 23 iii 2001, *H.L. Chiang* 1903 (TAIF); Wulai, 26 xi 1985, *C.E. Chang* 17355 (PPI). Nantou, Chenyolan stream, 5 x 1909, *Sasaki* s.n. (TAIF). Pingtung, Chufengpi, 26 i 1983, *S.Y. Lu* 12474 (TAIF); Nanrenshan, 4 iii 1996, *C.K. Liou et al.* 53 (TAIF); Xiewushan, 2 viii 2005, *Y.J. Lin* 11 (PPI); Chenlishan, 4 iii 2001, *S.M. Ku* 1240 (PPI); Itingshan, 21 iii 2003, *G.P. Hsieh* 953 (PPI). Taitung, Hsinkangshan, 25 vi 1994, *T.T. Chen* 4845 (TAIF); Lidou to Tienlong Suspension Bridge, 8 iv 1994, *H.W. Lin* L557 (TAIF); Hungshi Logging Trail, 19 ii 2004, *H.L. Chiang* 3539 (TAIF); Wanshan lake, 23 i 2002, *C.L. Yeh* 19 (PPI); Taipaliochoushan, 20 viii

2000, *S.K. Chuang* 566 (PPI); Yenpin forest road 32 km, 22 i 2006, *C.F. Chen* 1885 (PPI); Hsinhua, 4 iv 1980, *C.E. Chang* 10109 (PPI). Ilan, Juentou, 6 v 2000, *S.W. Chung* 2352 (TAIF); Shenmihu, 1 vii 2001, *S.C. Liu* 694 (TAIF); Tulishan, 31 iii 1985, *S.Y. Lu* 15608 (PPI). Hualien, Chilai, 23 v 1993, *C.C. Liao* 1436 (PPI); Yuli, 4 iv 1962, *C.E. Chang* 2997 (PPI).

Bredia gibba: Taiwan. Pingtung, Wuweishan, 3 x 1995, *K.C. Yang* 4525, 4528 (TAIF – 4 duplicates); Mt Linpalapala, 8 x 1986, *S.Y. Lu* 20360 (TAIF); Shashi Forest Road, 27 xi 1976, *Y.P. Yang* s.n. (TAIF – 2 duplicates); Itingshan, 18 viii 2002, *K.P. Lo* 208 (PPI); Rtangihen, 15 viii 2002, *K.P. Lo* 181 (PPI); Payuchih, 20 ii 2003, *S.Z. Yang* 30020 (PPI); Mt Ginjie, 26 x 1991, *S.Z. Yang* 24706 (PPI); Mt Wutou, 3 xii 1988, *H.P. Tsen* 217 (PPI); Peitawushan, 21 x 2007, *C.L. Yeh* s.n. (PPI); Mt Laisher, 16 ix 2007, *C.R. Yeh* s.n. (PPI).

Bredia hirsuta: Japan. Iriomote Island, 20 viii 2002, *J.C. Wang et al.* 11840, 11872 (TAIF); 18 v 2002, *S.W. Chung* 5311 (TAIF); 2 vii 2001, *Y.P. Cheng* 4133 (TAIF); Kyushu, 11 viii 1964, *M. Tagawa & F. Konta* 255 (TAI). Taiwan. Taichung, Lugu, 9 xii 1930, *Sasaki* s.n. (TAI); Nantou, Chitou to Neihu, 8 i 1972, *C.S. Kuoh* 3578 (TAI); Suisherdashan, 19 xii 1982, *S.Y. Lu* 12304 (TAIF); Huisun Experimental Forest, 22 xi 1995, *S.Y. Lu* 24860 (TAIF); Hualian, Yuli, 28 vi 2001, *T.T. Chen* 11355 (TAIF); Taitung, Hsinkangshan, 20 v 1986, *S.Y. Lu* 19376 (TAIF).

Bredia scandens: Taiwan. Miaoli, Dahu, 17 x 1984, *T.C. Huang* 10301 (TAI); Erbensong to Hsiuejian, 12 xi 1991, *T.C. Huang & S.F. Huang* 15386 (TAI). Nantou, Sun-moon lake, 25 xii 1972, *C.L. Yeh* 77 (PPI); Renlun Logging Trail, 15 viii 1980, *C.E. Chang* 19082 (PPI); Da-an Logging Trail, 26 xi 2004, *S.W. Chung* 231388 (TAIF); Yunlin, Shiby, 22 x 2005, *B.F. Lu* 10607 (TAIF); Chiayi, Jiaolipin, 30 i 1970, *C.E. Chang* 6088 (PPI); Karappin to Funkiko, 1 i 1912, *Hayata & Sasaki* s.n. (TAIF) (isosyntype); Chuchi, 16 xii 1996, *Y.H. Lai* 16 (TAIF); Chiaoliping to Juili, 8 xii 1988, *K.C. Yang* 3523 (TAI). Tainan, Guantzlin, 24 iv 1993, *T.C. Huang & S.F. Huang* 16009 (TAI).

Bredia rotundifolia: Taiwan. Yunlin, Doliou, 15 ix 2007, *C.L. Yeh* s.n. (living material); Gukeng, 22 iii 2005, *C.F. Chen* 1316 (PPI – 2 duplicates); Chiayi, Alishan, x 1928, *Sasaki* s.n. (TAI); Kaohsiung, Chishan, 13 ix 1955, *S.C. Lee, T. Ho & M.T. Kao* 71 (TAI); Meishan, 9 viii 1985, *S.Y. Lu* 16808 (PPI, TAIF).

Bredia quadrangularis: China. Fujian Province: Mt Yandown, 1 x 1993, *K.S. Ho* 3754 (TAIF); Wuyee City, 13 viii 2000, *K.S. Ho* 9762 (TAIF). Jiangxi Province: Mt Jingang, 1 v 2003, *C. Long* L0323 (TAIF – 2 duplicates); 30 vi 2004, *C. Long* L04191 (TAIF – 2 duplicates).

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