

Begonia ravenii (Begoniaceae), a new species from Taiwan¹

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Abstract. A new species of *Begonia*, *B. ravenii* Peng & Chen from Taiwan is described and illustrated. This species is usually found on steep rocky slopes at elevations between 350 and 1000 m. Diagnostic features of this new species include both tubers and stolons terminated by tubers produced from the erect stem base, 2 tepals in both male and female flowers, a deciduous habit, and a gametic chromosome number of $n=18$.

Key words: *Begonia ravenii* C.-I Peng & Y.-K. Chen, sp. nov.; Flora of Taiwan; Gametic chromosome number.

Seven species of *Begonia* were previously recognized in the Flora of Taiwan (Liu and Lai, 1977; Lai, 1979). Thereafter, a new species was added by Liu and Ou (1982). In our recent systematic revision of *Begonia* of Taiwan, a sharply distinct species was discovered. Consultation of the recent monograph on Begoniaceae (Smith *et al.*, 1986) and relevant literature from nearby regions (Backer and Bakhuizen, 1963; Chen, 1934; Hara, 1966, 1971; Hatusima, 1971; Hou, 1956; Institute of Botany, Academia Sinica, 1972; Irmscher, 1951; Jayasuriya, 1983; King, 1902; Merrill, 1911; Steward, 1958; Walker, 1976; Yu, 1948; Zhai, 1983) supports its recognition as a new species.

Begonia ravenii C.-I Peng & Y.-K. Chen, sp. nov.

—TYPE: Taiwan. Chiayi County (嘉義縣). Chuchi District (竹崎鄉): en route from Huwei (湖尾) to Chiehtung (茄冬), 23°39'N-120°37'E, elev. ca. 500 m, on somewhat moist, rocky slope. Living collection made on 1 November 1985; type specimens pressed from cultivated plants in October 1987. *Ching-I Peng 8894* (holotype, HAST; isotypes, GH, K, MO, NY, TAI, TAIF, US). Figs. 1 & 2.

Herba perennis cum stolonibus ad 4 mm in diam. et 35 mm longis caulibus erectis ad 50 cm altis glabris, tuberibus ad 20 mm in diam. Folia oblique ovata, ad 27 cm×13 cm; petioli ad 16 cm×5.5 mm; bractee binatae subvirides tenui-chartaceae anguste ovatae vel ellipticae, 8.5-12 mm×5-7 mm, apice acutae, margine serrato, glabro. Flores masculi tepalis duobus subroseis cordatis, 12-22×14-20 mm, patulis margine saepe vix

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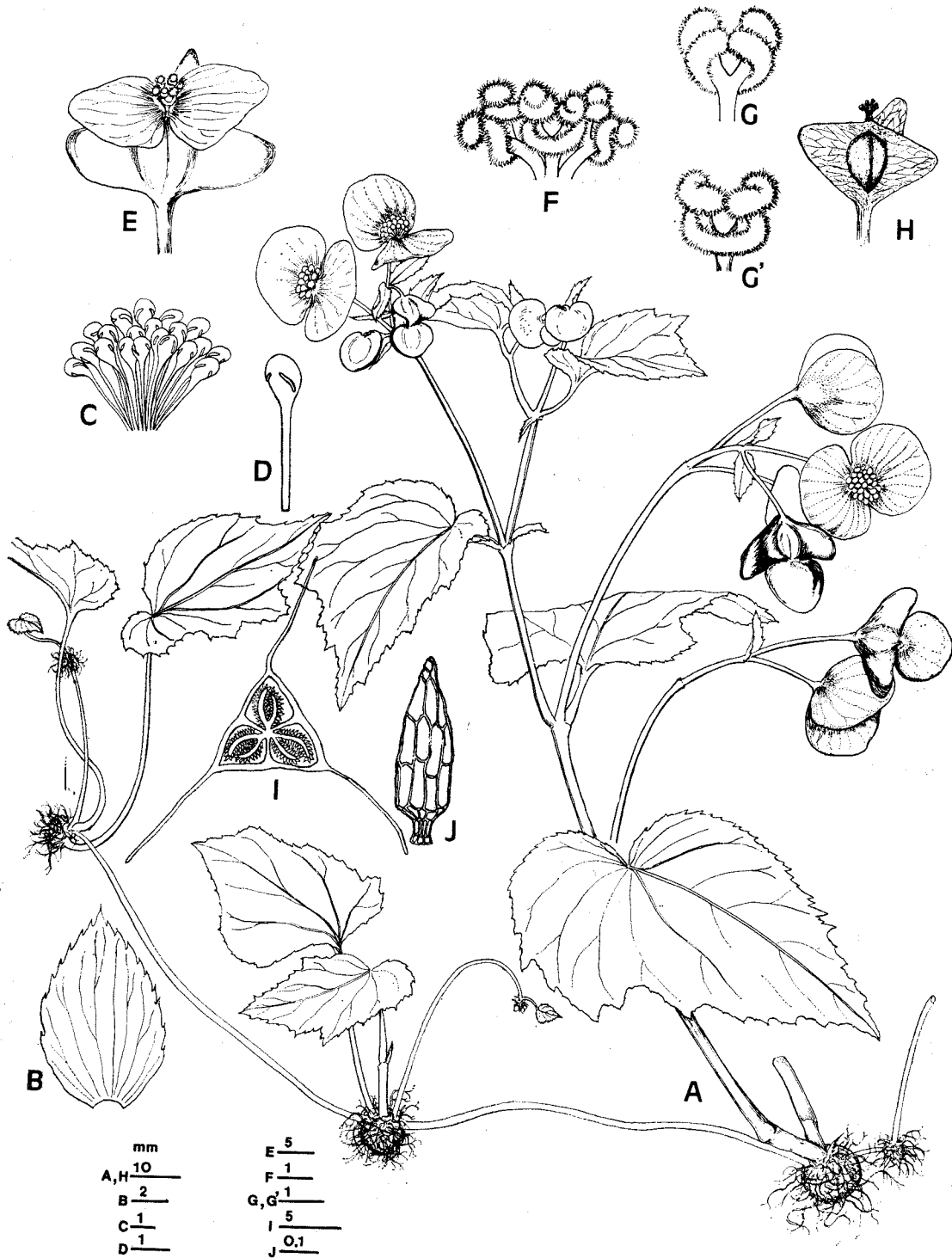


Fig. 1. *Begonia ravenii* C.-I Peng & Y.-K. Chen. A. Habit. B. Stipule. C. Androecium. D. Stamen. E. Female flower. F. Styles. G, G'. Style, ventral and dorsal views. H. Fruit. I. Fruit transection. J. Seed. (Based on living collection of Peng 8894.)

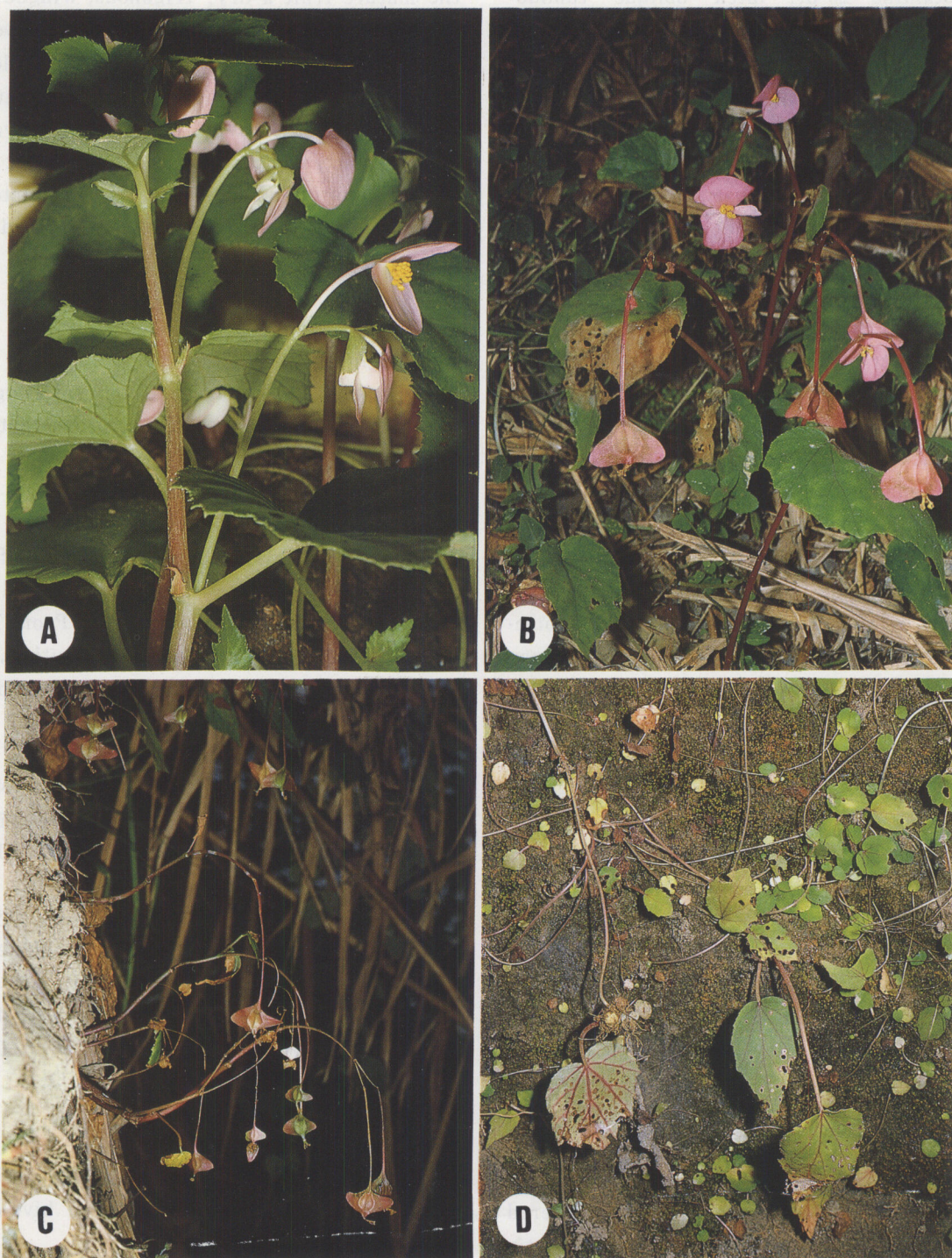


Fig. 2. *Begonia ravenii* C.-I. Peng & Y.-K. Chen, showing A) male stage, B) female stage, C) fruiting stage, leaves shed, and D) tubers and entangled stolons.

reflexo; stamina 20-37, lutea oblique tumido-capitata, antheris obovoideis, 1.2-1.6×1-1.1 mm, filamentis 2-3 mm longis. Flores foeminei tepalis duobus roseis ad subpurpureo-griseis suborbicularibus, 12-15 mm diam., basi vix cordatis; styli 3. Fructus capsulares, ad 19 mm longi, pericarpio sicco trigono alis tribus subaequalibus, 11-21 mm longis, ornato, parte latissima alae ad 12-20 mm. Numerus chromosomatum gameticus, $n=18$.

Perennial, stoloniferous herb with subglobose tubers to 20 mm in diam. Stems succulent, often reddish, to 50 cm in height and 7.3 mm in diam., glabrous. Stolons to 4 mm in diam. and 35 mm in length, glabrous. Leaves alternate, green, papery to nearly succulent, obliquely ovate, to 27 cm long, 18 cm wide, sparsely minutely scaberulous above, glabrous below, the apex subacute to acuminate, the margin irregularly serrate, the base unequally cordate, often lobed in adult leaves; venation palmate, the veins 6-9. Petioles greenish or sometimes reddish, to 16 cm long, 55 mm in diam. Bracts in pairs, pale green, thinly papery, narrowly ovate or elliptic, 8.5-12 mm long, 5-7 mm wide, the apex acute, the margin serrate, glabrous, caducous. Inflorescence axillary, comprising androgynous, dichasial cymes; at complete development to 30 cm long, strictly protandrous; peduncles to 17 cm long, erect to pendulous. Male flower: tepals 2, pinkish, cordate, 12-22 mm long, 14-20 mm wide, spreading, the margin often slightly reflexed; stamens 20-37; yellow, golf-club shaped, 3.7-4 mm long, the anthers obovoid, 1.2-1.6 mm long, 1-1.1 mm across, the filaments 2-3 mm long. Female flower: tepals 2 (rarely 3), pink to pale purple, suborbicular, 12-15 mm in diam., slightly cordate at base; styles 3, yellow, at their base fused ca. 1.5 mm, the free parts horseshoe shaped forked, 2-3 mm long below the arm, each arm covered with a continuous, ca. 2 times papillose stigmatic band; ovary white, obovoid, glabrous, longitudinally shallowly 3-grooved, 3-locular, 3-winged; placentae axile, bilamellate. Infructescence to 27 cm long; the fruit-bearing stipes 38-90 mm long;

the mature fruit a dry, trigonous, winged capsule, to 19 mm long, still crowned by the persistent styles; the wings subequal, 11-21 mm long, 12-20 mm wide in the broadest part. Seeds numerous, yellow-brown, narrowly ovoid to obclavate, 0.4-0.52 mm long, 0.1-0.16 mm across, the apex acuminate, the micropylar end abruptly constricted; seed surface cells elongate parallel to the seed length. Self-compatible. Gametic chromosome number, $n=18$.

Vernacular name

岩生秋海棠 (Yen-Sheng Chiou-Hai-Tang; literally, rock-dwelling *Begonia*), here designated.

Distribution

Begonia ravenii is presently known only in Taichung and Chiayi Counties ("Hsien") of Taiwan (Fig. 3) at elevations between 350 and 1000 m. The specific epithet commemorates Prof. Peter H. Raven, the mentor of the senior author, for his contributions to plant systematics and evolution.

Additional Specimens Examined

Taiwan. Taichung City (臺中市): en route from Chungshing Ling (中興嶺) to Takeng (大坑) of the Toukeshan (頭科山) mountain range, 24°11'N-120°45'E, elev. ca. 370 m, *Peng 9990* (HAST); elev. ca. 350 m, *Peng 9992* (HAST). Chiayi County. Fanlu District (番路鄉): en route from Longmei (龍美) to Tsaoshan (草山), 23°23'N-120°38'E, elev. ca. 900-1000 m, *Peng 10079* (HAST); Meishan District (梅山鄉): Taiping (太平), 23°34'N-120°36'E, *Chen 395* (HAST).

Chromosome Cytology

Meiosis in plants from Taichung City (*Peng 9992*) has been examined. Eighteen bivalents are formed at diakinesis (Fig. 4).

Associated Plants

Plants of *Begonia ravenii* are often found in moist shallow soil on steep rocky slopes and in

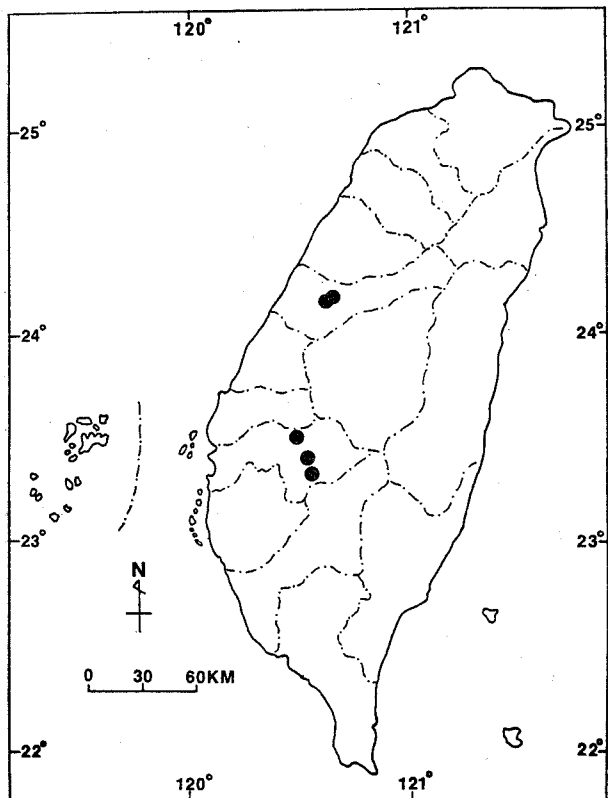


Fig. 3. Distribution of *Begonia ravenii* C.-I Peng & Y.-K. Chen in Taiwan.

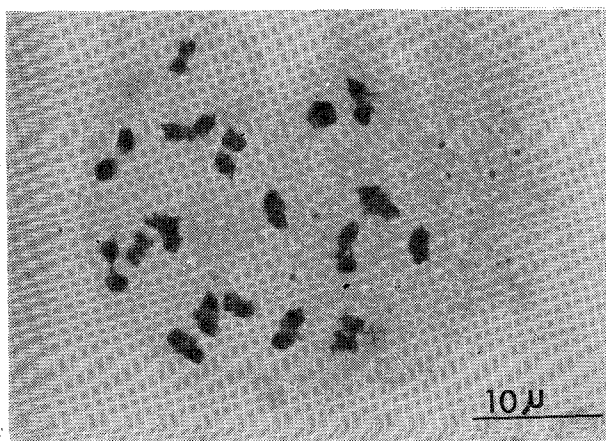


Fig. 4. Chromosomes of *Begonia ravenii* C.-I Peng & Y.-K. Chen. Diakinesis, $n=18$, from Peng 9992.

somewhat shady habitats. The following species are commonly seen associated with plants of *B. ravenii*: *Selaginella delicatula* (Desv.) Alston,

Lygodium japonicum (Thunb.) Sw., *Onychium japonicum* (Thunb.) Kuntze, *Adiantum philippinense* L., *Phegopteris decursive-pinnata* (van Hall) Fee, *Athyriopsis japonica* (Thunb.) Ching, *Morus alba* L., *Cardiandra formosana* Hayata, *Rubus ptiopetalus* Hayata ex Koidz., *Tetrastigma formosanum* (Hemsl.) Gagnep., *Maesa tenera* Mez, *Paederia scandens* (Lour.) Merr., *Lepidagathis formosensis* Clarke ex Hayata, *Rhynchochloa discolor* (Maxim.) Burtt, *Ageratum conyzoides* L., *Blumea membranacea* DC., *Conyza sumatrensis* (Retz.) Walker, *Crassocephalum crepidioides* (Benth.) S. Moore, *Youngia japonica* (L.) DC., *Alocasia macrorrhiza* (L.) Schott & Endl., *Tricyrtis formosana* Baker, *Carex baccans* Nees, *Arundo formosana* Hack., *Miscanthus floridulus* Warb. ex Schum. & Laut., *Oplismenus undulatifolius* (Arduino) Reem. & Schult., *Paspalum conjugatum* Berg., *Pogonatherum crinitum* (Thunb.) Kunth, and *Colocasia formosana* Hayata.

Notes

Begonia ravenii is an unusual species that does not appear to be closely related to any other congeners. It is an erect herb from a tuberous stem base, from which several stolons are produced. Each of these stolons is terminated by a tuber that gives rise to a plantlet, and these in turn produce stolons and tubers. The entanglement of the thread-like stolons on rock faces is a prominent feature of this species (Fig. 2C). The plants are deciduous, shedding leaves during the dry spell in late autumn (Fig. 2D). The tubers break dormancy in spring when cultivated in the experimental greenhouse and given enough moisture. Field data for this aspect of the life cycle, however, is not available. In cultivation the plants flower from late spring or early summer through autumn. The plants and flowers are usually flushed with red in exposed field sites. The showy pendent inflorescence and the long flowering period associated with its distinctive mode of vegetative reproduction make it an ideal ornamental hanging basket plant.

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臺灣秋海棠屬一新種——岩生秋海棠

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本文記載在臺灣發現的秋海棠屬新種植物——岩生秋海棠 *Begonia ravenii* C.-I Peng & Y.-K. Chen。其主要特徵在於直立之植株基部具有球莖，並由此產生數走莖，走莖末端復生成新植株；莖葉於秋冬結果實後凋落，春季復生；雌花及雄花通常均具二枚花被片；果實之三翼近於等寬；種子狹卵形，珠孔端具明顯之隘縮；染色體數為 $n=18$ 。分佈於臺灣省臺中市郊及嘉義縣海拔 350 至 1,000 公尺處，多生長於山徑之岩壁上。