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142. BALSAMINACEAE

Family description by M.J.M. Christenhusz.

Annual or perennial herbs, rarely suffruticose; stems thick and fleshy, usually translucent, rarely becoming woody. Leaves membranaceous, fleshy, opposite, alternate or whorled. Flowers zygomorphic, essentially 5-merous, strongly modified; sepals and petals 3 (*Impatiens*) or 5 (*Hydrocera*), the lower sepal elaborated into a spurred nectar-producing structure; stamens fused into a zygomorphic androecium. Fruit a many-seeded berry (*Hydrocera*) or a dehiscent succulent capsule (*Impatiens*). 2 gen. Worldwide, but most diverse in tropical Asia and Africa; 2 native species in the Neotropics.

Bibliography: Barringer, K. *Fl. Veracruz* 64: 1-8 (1991). Elias, T.S. *Ann. Missouri Bot. Gard.* 54: 21-24 (1967). Grey-Wilson, C. *Impatiens Africa* (1980). Lentz, D.L. *Fl. Pl. Neotrop.* 43 (2004). Rydberg, P.A. *N. Amer. Fl.* 25: 93-96 (1910).

1. *Impatiens* L.

Balsamina Mill., *Impatientella* H. Perrier, *Trimorphopetalum* Baker

By M.J.M. Christenhusz.

Herbs, usually with thick and fleshy, translucent stems, rarely suffruticose (*I. sodenii*). Leaves opposite, alternate or whorled. Inflorescences axillary, the flowers solitary or in few-flowered racemes. Flowers resupinate; sepals 3, the lateral 2 usually smaller than the petals, the lower

sepal enlarged and usually saccate with an elongate spur; petals essentially 5, the lower and upper lateral 2 united, sometimes only basally, the upper petal usually enlarged and 'flag'-like; stamens 5, united into a zygomorphic androecium, closely held around the ovary, the stamens projected outwards and downwards so as to brush against a pollinators body, falling away as a unit when the stigma ripens, the anthers opening by longitudinal slits; ovary hypogynous. Fruit a many-seeded, fleshy, explosively dehiscent capsule. Approx. 1000 spp., North America, Mesoamerica, Europe, Asia, Malesia, Polynesia, Africa, Madagascar.

Two native species are found in Mexico and Mesoamerica: *I. mexicana* Rydb., which is restricted to Veracruz, and *I. turrialbana* which occurs on the slopes of the Turrialba and Irazú volcanoes through the Cordillera de Talamanca (Costa Rica) and to western Chiriquí (Panama). Old World species of *Impatiens* are commonly cultivated in gardens, especially *I. bakeri* Warb., *I. balsamina*, *I. hawkeri* W. Bull., *L. repens* Moon., *I. sodenii*, and *I. walleriana* and many easily naturalize due to their explosive seed pods. Three of these are treated in full.

Some of the introduced species, especially *I. walleriana*, may form large stands in the undergrowth of secondary forests and plantations, where they sometimes prevent natural regeneration. The flowers are usually pollinated by bees, butterflies and hummingbirds.

1. All leaves opposite or whorled.

2. Leaves sessile or nearly so, all in dense whorls; flowers white or pale pink; older plants suffruticose.

2. *I. sodenii*

2. Leaves petiolate, opposite, but the uppermost crowded and appearing whorled; flowers scarlet with a yellow blotch; plants herbaceous.

3. *I. turrialbana*

1. Leaves usually alternate, sometimes a few leaves pseudo-opposite.

3. Flowers usually solitary in leaf axils; lateral petals completely united, only shallowly incised, unevenly bilobed; fruits hairy.

1. I. balsamina

3. Flowers usually in pairs or with 3-5 flowers, rarely solitary; lateral petals almost free, equal in size, deeply incised and united only at the very base; fruits glabrous.

4. I. walleriana

1. *Impatiens balsamina* L., *Sp. Pl.* 938 (1753). Lectotype (designated by Christenhusz, **in review**): India, *Anon.* (LINN-1053.3!). Illustr.: Grey-Wilson, *Impatiens Africa* 223, t. 170 (1980). N.v.: Balsam, B; china, G; rosa china, N.

Balsamina hortensis Desp.

Annual herbs to 60 cm; stems erect, succulent, not or sparsely branched, glabrous, often pubescent when young. Leaves alternate, the lowermost occasionally pseudo-opposite, sessile or shortly petiolate; petioles (0-)2-13 mm; blades 2.7-9 × 1.1-2.6 cm, lanceolate to narrowly-elliptic or oblanceolate, glabrous or finely pubescent above and below, the base cuneate-acuminate, the margins serrate-dentate, with several dark sessile glands towards the base of the blade, the apex acute. Inflorescences of solitary flowers or groups of 2-3 flowers; peduncles absent; bracts c. 2 × 1 mm, axillary at the base of the pedicel, linear-lanceolate; pedicels 7-16 mm. Flowers white or pink; lateral sepals 2-3 mm, narrowly ovate-lanceolate, the apex acute; lower sepal 13-19 mm, 0.4-0.8 cm deep, deeply navicular, abruptly constricted into a spur, the spur 1.3-2.4 cm, filiform, incurved in the distal half, glabrous or finely pubescent; upper petal 10-14 × 7-11 mm, cucullate, apically pointed with an appendage 2-4 mm; lateral petals 23-35 mm, fully united, unevenly bilobed, the upper petal of each lateral pair smaller than the lower; ovary densely pubescent. Capsules 12-20 × 6-8 mm, pendent, broadly fusiform, densely pubescent, the hairs white.

Commonly cultivated in gardens and patios, sometimes naturalized along roads, in garbage

dumps, fields, streambeds and other disturbed open places. T (Cowan 1983: 28); Ch (Ventura & López 2367, BM); C (Lundell 1207, MO); G (Standley 60872, F); H (Bustillo 10, BM); N (Neill 7433b, BM); CR (Khan et al. 928, BM); P (de Nevers et al. 7393, BM) 0-2000 m. (Native to India and Southeast Asia; naturalized elsewhere.)

The flowers are used to produce a dye for fingernails. This is a species that has been frequently cultivated since ancient times and is widely naturalized in most tropical and subtropical countries.

2. *Impatiens sodenii* Engl. & Warb., *Pflanzenw. Ost-Afrikas* C: 253 (1895). Holotype: Tanzania, *Holst 302* (B). Illustr.: Grey-Wilson, *Impatiens Africa* 90, t. 31 (1980).

Impatiens magnifica G.M. Schulze, *I. oliveri* W. Watson.

Suffruticose, perennial herbs to 3 m; stems thick, succulent, few or moderately branched, glabrous, becoming slightly woody at the base. Leaves in whorls of 6-10, sessile or shortly petiolate; blades (3-)5-18 × 1.8-4.8(-5.5) cm, oblanceolate or oblong, glabrous, the base acute, the margins finely serrulate, the teeth elongated and hair-like, the apex acute. Inflorescences axillary, with 1-2 flowers; peduncles 25-70 mm; bracts 1-3, 2.5-5 × c. 2 mm, narrowly-ovate to linear-lanceolate; pedicels 21-45 mm. Flowers pale pink or white; lateral sepals 6-8 mm, ovate to elliptic-lanceolate, acute; lower sepal 14-18 mm, narrowly navicular, oblique, constricted into a filiform spur (5.5-)6-9.8 cm, slightly thickened at the tip; upper petal 18-23 × 25-30 mm, broadly ovate with a narrow crest in the middle, the apex emarginate; lateral united petals deeply incised, the upper ones 21-28 × 17-27 mm, emarginate, the lower ones 20-33 × 14-21 mm; ovary glabrous. Capsules c. 24 × 8 mm, fusiform, glabrous. *Sometimes cultivated in gardens and rarely*

naturalized along roads. Ch (Breedlove 1986: 59); CR (*Döbbeler 2037*, BM); P (*Araúz et al. B3041*, MO). 1500-2500 m. (Native of Tanzania and Kenya; cultivated but rarely naturalizing.)

3. *Impatiens turrialbana* Donn. Sm., *Bot. Gaz.* 23: 241 (1897). Lectotype (designated by Christenhusz, **in review**): Costa Rica, *Cox 4758* (US-01380418!). Illustr.: Elias, *Ann. Missouri Bot. Gard.* 54: 23, t. 1 (1967). N.v.: China de monte, CR.

Erect herbs to 80 cm; stems thick, succulent, often branched, occasionally rooting at the lower nodes, glabrous. Leaves opposite, the upper ones crowded to appear whorled, petiolate; petioles 0.5-4 cm; blades 2-9 × 0.9-3.2 cm, elliptic to oblong-elliptic, glabrous, the base cuneate, the margins coarsely serrate, the apex obtuse to acute. Inflorescences axillary, usually with 2 flowers; peduncles 20-55 mm; bract 1, 3-4 × 1-1.5 mm, deltoid; pedicels 5-17 mm. Flowers scarlet, often with a yellow blotch inside, minutely setulose-punctate; lateral sepals 7-8 mm, circular to ovate, apiculate; lower sepal 20-30 mm, corniculate, inflated at the apex, gradually spurred, the spur incurved, thickened at the tip; upper petal 9-10 × 10-13 mm, broadly ovate-oblong, the apex usually apiculate; lateral petals almost fully united, oblong-elliptic with 2 ovate lobes c. 4 × 4 mm; ovary glabrous. Capsules 11-25 × 2-3 mm, glabrous. *Moist valleys on slopes and on sandy river banks*. CR (*Döbbeler & Vogel 1276*, BM); P (*Antonio 1658*, MO). 1300-2500(-3000) m. (Endemic.)

4. *Impatiens walleriana* Hook. f. in Oliv., *Fl. Trop. Afr.* 1: 302 (1868). **Lectotype** (designated by Christenhusz, ined.): Mozambique, *Waller s.n.* (K!). Illustr.: Grey-Wilson, *Impatiens Africa* 80, t. 31 (1980). N.v.: Chino, Ch; busy lizzie, B; quinceañera, flor de china, G; china simarrona, ES.

Impatiens holstii Engl. & Warb., *I. lujai* De Wild., *I. sultanii* Hook. f.

Succulent perennial herbs 30-50(-80) cm; stems not or much branched, occasionally rooting at the lower nodes, often tinged reddish, usually glabrous, but rarely slightly pubescent in young shoots. Leaves alternate, petiolate; petioles 1-6(-8) cm, with 1-3 stalked glands scattered along the length of the petiole; blades (2.5-)4-13(-14) × 2-5.5(-7.5) cm, broadly ovate, elliptical to oblong-elliptical or oblong-ovate, glabrous, membranaceous, often tinged reddish, the base usually abruptly cuneate or acuminate, the margins crenate or crenate-dentate, usually with fimbriae between the teeth, the apex rounded, acute, acuminate or somewhat cuspidate. Inflorescences axillary racemes, usually 2-flowered, rarely with solitary flowers or 3-5 flowers; peduncles 2-5(-6.5) cm, glabrous or somewhat pubescent; bracts 2 or more, 3-6 × 0.1-0.3 mm, linear-lanceolate or subulate, the apex acute; pedicels 1-3 cm. Flowers variable in color, usually pink, purplish, mauve violet, orange, red or white; lateral sepals 3-7 mm, linear or ovate-lanceolate, whitish or greenish white, sometimes pink, the apex acute; lower sepal (8-)10-16 mm, shallowly navicular, abruptly constricted into a spur, the spur 28-45 mm, filiform, curved, with a slightly swollen tip; upper petal 11-19 × 13-25 mm, broadly obovate with a narrow crest in the middle terminating in an acute point, the apex emarginate; lateral united petals deeply incised, the upper and lower almost equal in size, the upper lateral petal 12-23 × 9-18 mm, obovate-spathulate, usually entire, the lower lateral petal 14-20 × 7-14 mm, obovate-spathulate, sometimes asymmetrical, usually entire; ovary glabrous. Capsules 15-20 × 4-6 mm, fusiform, glabrous. *Commonly cultivated in gardens, often naturalized in clearings, roadsides, coffee plantations, secondary or disturbed forests.* T (Cowan, 1983: 28); Ch (*Ventura & López 521*, BM); C (Martínez et al., 2001: 21); B (Balick et al., 2000: 119); G (*Kufer 341*, BM); H (*Standley 29541*, F); ES (*Rosales 1001*, BM); N (*Moreno 25416*, MO); CR (*Khan et al. 91*, BM); P

(*Hampshire & Whitefoord 947*, BM). (90-)500-1500(-2000) m. (Native to Kenya, Tanzania and Mozambique; widely cultivated and commonly naturalized.)

This species is used medicinally in Guatemala against cough and fever.