

IMPATIENS JOHNSIANA (BALSAMINACEAE),
A NEW SCAPIGEROUS BALSAM FROM WESTERN GHATS, INDIA

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ABSTRACT

Impatiens johnsiana (Balsaminaceae) from the Wayanad District, Kerala, India, a new endemic epiphytic scapigerous balsam related to *I. dendricola* and *I. scapiflora*, is described and illustrated.

KEY WORDS: Balsaminaceae, endemic species, *Impatiens johnsiana*, India, Kerala, new species, Wayanad, Western Ghats

RESUMEN

Se describe e ilustra *Impatiens johnsiana* (Balsaminaceae) de Wayanad District, Kerala, India, un nuevo endemismo epifito escaposo relacionado con *I. dendricola* e *I. scapiflora*.

INTRODUCTION

The genus *Impatiens* L. (Balsaminaceae) is a genus of over 1,000 species widely distributed throughout the Northern Hemisphere and tropics (Mabberley 2008). In India, the concentration of *Impatiens* species is remarkably local and occurs in two well-defined regions, viz., the Himalayas in the North and the Western Ghats in the South (Hooker 1908; Gamble 1915; Vivekananthan et al. 1997). There is no doubt that the Western Ghats is the second richest area in the Indian subcontinent and perhaps in the world (Bhaskar 1981; Viswanathan & Manikandan 2003). Out of the 203 species known to occur in India, about 86 species are found in the Western Ghats (Nair 1991). In India, scapigerous *Impatiens* form a peculiar Section 'Scapigerae' and are restricted to the Western Ghats-Sri Lanka Hotspot of Biodiversity (Grey-Wilson 1980; Vivekananthan et al. 1997). Except for *I. acaulis* Arn., which is distributed throughout the wet tropical forests of the Western Ghats and Sri Lanka, all the other species have a very narrow distribution and are endemic to small microcenters in the Western Ghats, especially in the southern part (Kumar & Sequiera 1996; Bhaskar 2006; Jyosna et al. 2009; Anil Kumar et al. 2011).

The Wayanad district of Kerala forms a biodiversity rich area in the Nilgiri phytogeographical region of the Western Ghats. During an exploration of the flowering plants there, 21 species of *Impatiens* were collected in various habitats (Ratheesh Narayanan 2009). One, collected in a high altitude evergreen forest, was quite distinct from the hitherto known scapigerous species and it is described and illustrated here as new.

Impatiens johnsiana Ratheesh, Sunil, & Anil, sp. nov. (Figs. 1–2). TYPE: INDIA. KERALA. Wayanad District: Kattimattom Hills, ca. 1600 m, evergreen forest, 17 Aug 2010, M.K. Ratheesh Narayanan MSSH 3671 (HOLOTYPE: CALI; ISOTYPES: MH, MSSH).

Impatiens dendricolae similis habitu pendulo, sed petalis lateraliter connatis sine auriculis (contra auriculatis), lobis basalibus curvatis lobis distalibus longioribus papillarum caespite (contra rectis ligulatis lobis distalibus brevioribus papillis), calcare plus 1.5 cm longo spirato apice lato rotundato (contra 1–1.5 cm longo erecto clavato), seminibus tuberculatis pilorum utroque caespite denso (contra muriculatis) differt. Ab *I. scapiflora* foliis pendulis elliptice oblanceolatis, pedicellis ad 2 cm longis, calcare minus 2 cm longo spirato apice lato rotundato, seminibus tuberculatis pilorum utroque caespite denso differt.

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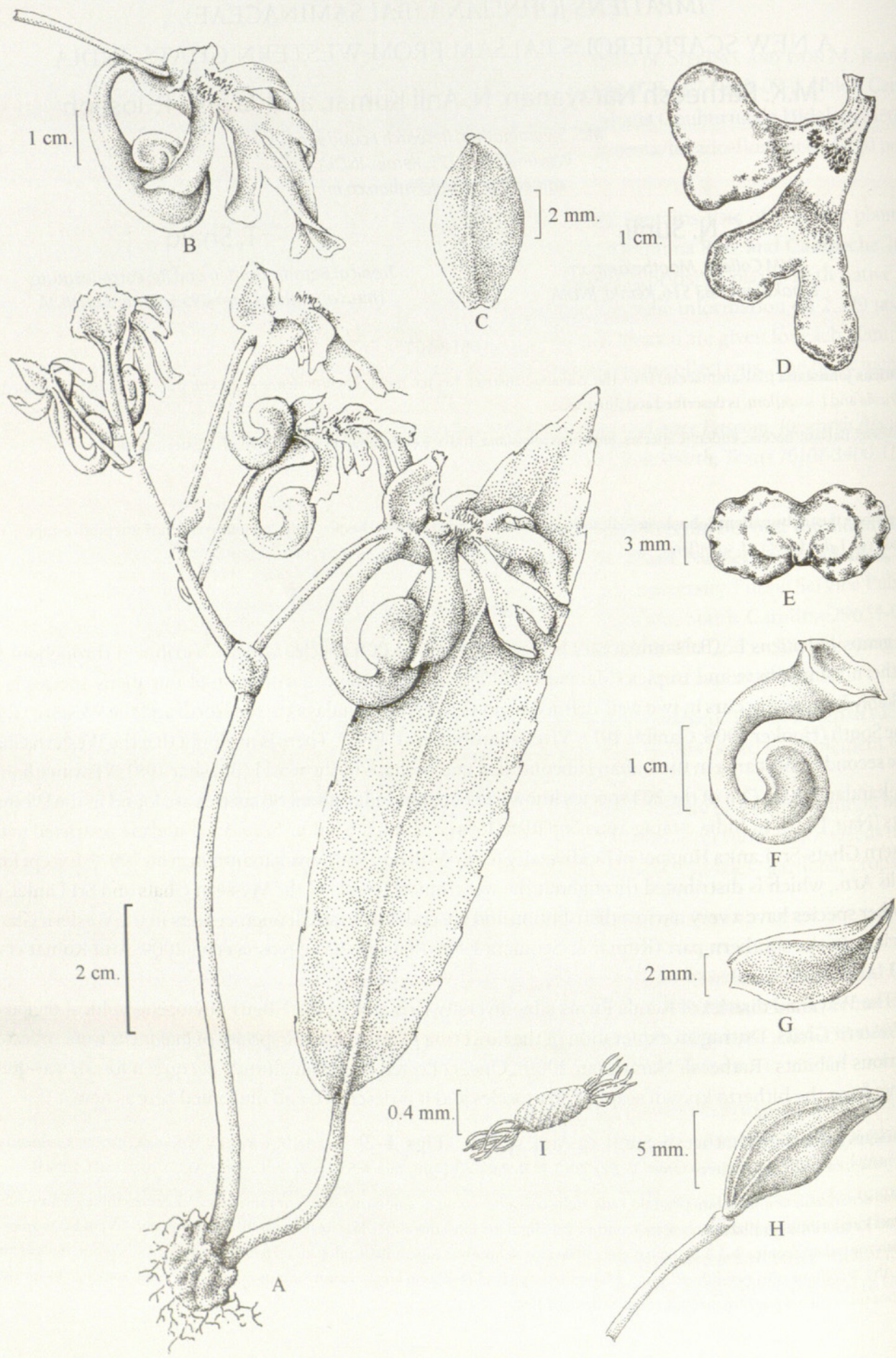


FIG. 1. *Impatiens johnsiana* Ratheesh, Sunil, & Anil. A. Habit, B. Single flower, C. Bract, D. Lateral united petal, E. Dorsal petal, F. Lower sepal, G. Lateral sepal, H. Fruit, I. Seed. Drawing by Jayesh P. Joseph and T. Shaju from living specimen.

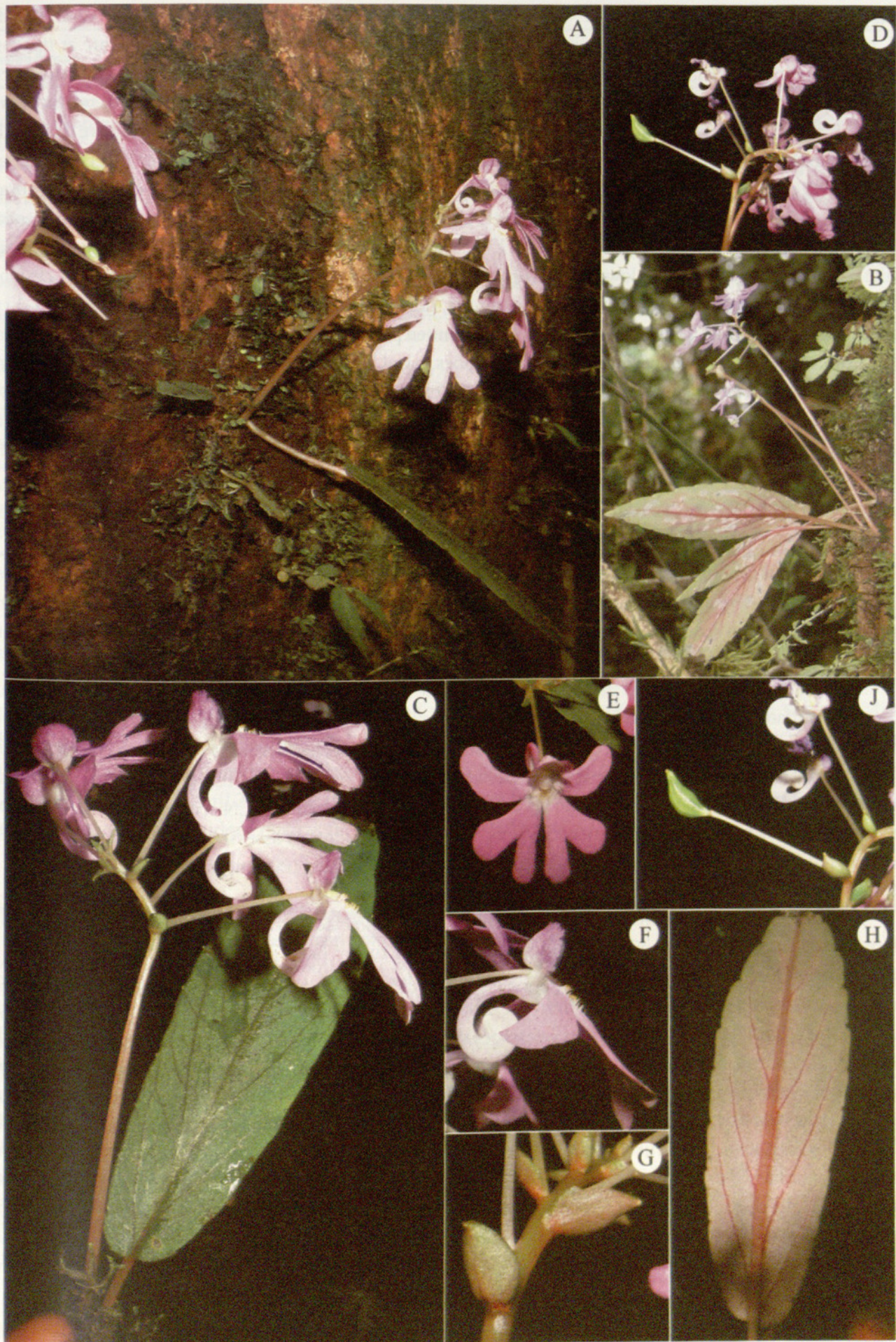


FIG. 2. *Impatiens johnsiana* Ratheesh, Sunil, & Anil. A & B. A population, C. Habit, D. Inflorescence, E & F. Flower, G. Bract, H. Leaf, J. Fruit.

Scapigerous perennial herbs, epiphytic, 15–22 cm tall; rootstock tuberous, yellowish. Leaves 1, rarely 2, radical, petiolate, pendulous, distantly serrate, broadly elliptic to oblanceolate, acute, mucronate at tip, base broadly cordate, unequal, 14–22 × 4–5 cm, fleshy, hairy above, glabrous below, 5–7-nerved, adaxially green, abaxially pale pink, deep pink along midrib and lateral nerves; petiole 5–8 cm long, glabrous, green above, light pink below. Inflorescence scapose, unbranched, semi-pendulous, peduncle with a bend above the middle, shorter than the leaves, 12–20 cm long, fleshy, glabrous, pink, terete, less than 10-flowered; flowers in racemes, distal, ca. 1.5 cm across, deep pink with white center; bract fleshy, light green with pink streaks, broadly ovate to oblong, 4–5 mm long, acute, glabrous; pedicels shorter than the flower, 1.6–1.8 cm long, terete, slender, white, elongating in fruit, glabrous; lateral sepal 1.7–2 × 2–2.5 mm, broadly ovate to oblong, obtuse-acute at tip, white with pink tinge, glabrous; lower sepal (lip) ca. 8 × 5 mm, white, glabrous, spurred; spur 1.5–1.7 cm long, funnel-shaped, coiled with broad tip, white, glabrous; dorsal petal (standard) broader than long, 0.5–1 cm across, hooded, glabrous, pink, margins wavy; lateral united petals 3-lobed, 1.9–2 × 1.2–1.3 cm, lobes unequal, with a tuft of yellow papillae little below the basal lobes; basal lobes larger than distal lobes, ca. 1.3 × 0.6 cm, broadly obovate, bent upwards, midlobes ca. 0.5 × 0.5 cm, straight, distal lobes ca. 0.5 × 0.5 cm, oblong, tip obtuse, straight; stamens 5, connate, ca. 2 × 1 mm, filaments pink, connate above middle, anthers pale white; ovary pale yellow, broadly elliptic, acute at apex, glabrous. Capsules broadly ellipsoid, acute, ca. 1 cm long, glabrous; seeds many, ca. 2 mm long, tubercled, with a dense tuft of hairs at each end.

PARATYPE: **INDIA. KERALA. Wayanad District:** Kattimattom hills, N11°30.716' E76°06.239' ca. 1700 m, 20 Sep, 2011, M.K. Ratheesh Narayanan, C.N. Sunil & T. Shaju MSSH 4455 (Herb. MSSRF, Kalpetta, Wayanad).

Flowering and fruiting.—Flowering is from July with a peak in August. Fruit matured during September–October.

Etymology.—The specific epithet is in dedication to the late Prof. John C. Jacob (who was popularly known as 'Johnci'), an ardent naturalist who devoted his life to conserve the biodiversity of the Western Ghats, India.

Distribution and conservation status.—Endemic to the Kattimattom Hills of the Chembra-Vellarimala hill ranges, Wayanad District, Kerala, India. Small population of this species is distributed on densely clothed tree trunk in evergreen forests at an altitude of 1500–1700 MSL. The species is usually seen as an epiphyte on the moss-covered trunk of evergreen tree species. Our observations showed that there were less than five hundred mature individuals restricted to a 10 km² Vested Forest area. By following IUCN criteria (IUCN 2001) for assessing the status of Rare and Threatened plants, *Impatiens johnsiana* is assessed as belonging to Critically Endangered (CR) category. Its range (extent of occurrence) is less than 100 km², and the quality of habitat is declining continuously.

Taxonomic note.—*Impatiens johnsiana* resembles *I. dendricola* Fisch. in its pendulous habit, 3-lobed lateral united petals with a tuft of papillae, and seeds with a dense tuft of hairs at each end. The shape and size of leaves, color of flowers, shape and size of the lateral sepal, dorsal petal, spur and lateral united petals, and texture of seeds differentiates this species from the other. *Impatiens johnsiana* has 14–22 cm long, elliptic-oblanceolate leaves, pink flowers, broadly ovate lateral sepals, and a dorsal petal with wavy margins in contrast to the less than 10 cm long, ovate to oblong-lanceolate leaves, white flowers, falcate-ovate lateral sepals deeply lobed at base and entire dorsal petal of *I. dendricola*. The new species has 1.5–1.7 cm long, coiled spur with broad rounded apex in contrast to 1–1.5 cm long, straight, clavate spur of *I. dendricola*. The lateral united petals of the new species are not auricled, curved basal lobes larger than the distal lobes, and it has tubercled seeds. But in *I. dendricola*, the lateral united petals have an auricle, straight strap-shaped basal lobes of the lateral united petals smaller than the distal lobes, and seeds muriculate. The new species also resembles *I. scapiflora* in some of its characters, e.g., large pink flowers, lateral united petals without an auricle, and recurved basal lobes larger than the distal lobes, but differs by the pendulous elliptic-oblanceolate leaves, up to 2 cm long pedicels, less than 2 cm long, coiled spur with broad rounded apex, tubercled seeds, with a dense tuft of hairs at ends in contrast to an ovate to obovate leaf, up to 5 cm long pedicels, up to 7 cm long, tubular spur with narrow apex, and seeds hairy all over. Diagnostic morphological characters of *Impatiens johnsiana* and related species are provided in Table 1.

TABLE 1. Diagnostic morphological characters of *Impatiens johnsiana* and related species.

<i>Impatiens johnsiana</i>	<i>Impatiens dendricola</i>	<i>Impatiens scapiflora</i>
Leaves 1–2, pendulous, lamina elliptic-oblongate, oblique, broadly cordate at base, 14–22 cm long, petiole 5–8 cm long	Leaves 4 or 5, pendulous, lamina ovate, to oblong-lanceolate, cuneate or oblique to obtuse at base, 1.2–6 cm long, petioles 1.5–7 cm long	Leaves 2–5, erect, lamina ovate to obovate, acute, cordate to rounded at base, 7–20 cm long, petiole 4–12 cm long
Scape semipendulous, 12–20 cm long, 5–9-flowered, flowers pink	Scape erect, 5–18 cm long, 4–10-flowered, flowers white	Scape erect, 12–45 cm long, 4–16 flowered, flowers pink
Pedicels 1.6–1.8 cm long	Pedicels 1–2 cm long	Pedicels 2–5 cm long
Lower sepals broadly elliptic, white	Lower sepals broadly ovate, white	Lower sepals saccate, pink
Spur coiled, with broad rounded apex, 1.5–1.7 cm long, white	Spur clavate, straight, rounded at apex, 1.3–1.5 cm long, white	Spur tubular, curved, very narrow at apex, 5–7 cm long, pink
Lateral united petals 1.9–2 cm long, not auricled, pink with a tuft of yellow papillae little below the basal lobes	Lateral united petals 1.6–2 cm long, auricled, white with yellowish brown to orange papillae	Lateral united petals 2.3–3.5 cm long, not auricled, pink, without papillae
Basal lobes of lateral united petals larger than the distal lobes.	Basal lobes of lateral united petals smaller than the distal lobes.	Basal lobes of lateral united petals larger than the distal lobes.
Capsules broadly ellipsoid, seeds tubercled, with a dense tuft of hairs at ends	Capsules ellipsoid or oblanceoloid, seeds muriculate with tuft of hairs at ends	Capsules lanceoloid, seeds hairy all over

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