



Reynoutria alokorang (Polygonaceae): A new species from India

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Key words

Fallopia
India
New species
Polygonaceae
Reynoutria

Abstract *Reynoutria alokorang* sp.nov is a climber with a paniculate inflorescence, petiole retrorsely hirsute, pedicel articulate at middle, flowers bisexual, tepals indistinctly keeled or not, 3 style, stigma fimbriate and achenes exserted in persistent perianth. This newly described and illustrated species is from Arunachal Pradesh, India. A key to the species of the genus is provided for easy recognition of species in the field. This genus is reported to extend further east of its previously known range of distribution, previously it was known from East and Southeast Asia and Czechoslovakia in Europe, here is also reported for the first time in India. Habitat, ecology, distribution map and conservation status are discussed.

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INTRODUCTION

Maarten (Martin in English) Houltuyn erected the genus *Reynoutria* in 1777. Subsequent authors treated it as a synonym of *Fallopia* Adans. (Ronse Decrane & Akeroyd 1988, Bailey & Stace 1992) or as the independent genus *Reynoutria* (Nakai 1926, Holub 1970, Haraldson 1978). Recently the genus has been studied using modern DNA based methods (Sanchez et al. 2011, Schuster et al. 2011a, 2011b) and flavonoid chemistry (Park et al. 2011, Kim et al. 2000a, 2000b, 2000c), besides the traditional study of floral morphology and chromosomal studies (Kim & Park 2000, Ronse Decrane & Akeroyd 1988, Bailey & Stace 1992, Moon et al. 2011).

Reynoutria species are twining or erect subshrubs or herbs, with stems or leaves covered in distinct unicellular and multicellular hairs with acute apices, panicle inflorescences, fruiting perianth (which may or may not be winged or keeled), distinct styles, and usually fimbriate stigmas (Schuster et al. 2011b). The basic chromosome number is $x = 11$, polyploidy and hybridization were also observed in the genus (Bailey & Stace 1992).

Schuster et al. (2011b) concluded that *Fallopia* and *Reynoutria* should be recognized as separate genera, because *Fallopia* possesses racemose inflorescences, style short to sessile, stigmas partially fused, capitate, smooth or papillate. Desjardins et al. (2023), using molecular techniques, reached a similar conclusion, they showed that *Reynoutria* is a clade separate from *Fallopia*.

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During survey and exploration work in Dihang Dibang Biosphere Reserve, Arunachal Pradesh, India, in 2011, a collection was made along with other specimens by M.K. Pathak & G. Krishna. Due to the sudden demise of the senior collector (MKP), all specimens remained unattended for a long time. This research aims to determine if the collection constitutes a new species and to establish its correct generic placement.

MATERIAL AND METHODS

While preparing the Flora of Dihang Dibang Biosphere Reserve, the first author (MB), studied all the specimens collected, while consulting regional floras (Hooker 1886, Tutin et al. 1964, Ohwi 1965, Li et al. 2003, Oh & Kim 1996) and physically from the herbaria ARUN, ASSAM, BSHC, CAL, and online from E, G, K, KUN, PE.

RESULTS AND DISCUSSION

Figures 1 and 2 (illustrated and photographed from type material) show that the collected specimen has a paniculate inflorescence (Fig. 1a, 2a), bisexual flowers (Fig. 2b) and styles divided into three stigmas, which are angular and fimbriate (Fig. 1d, e; 2c, e). Based on these characters and in accordance with Schuster et al (2011b), this species can undoubtedly be placed in *Reynoutria* and, because of its unique set of characters (Table 1) it represents a new species.

Currently *Reynoutria* holds six species and two natural hybrids viz. *Reynoutria × bohémica* Chrtek & Chrtková and *Reynoutria × moravica* (Hodálová & Mered'a) Olshanskyi & Antonenko. The genus is distribution goes from Russian Far

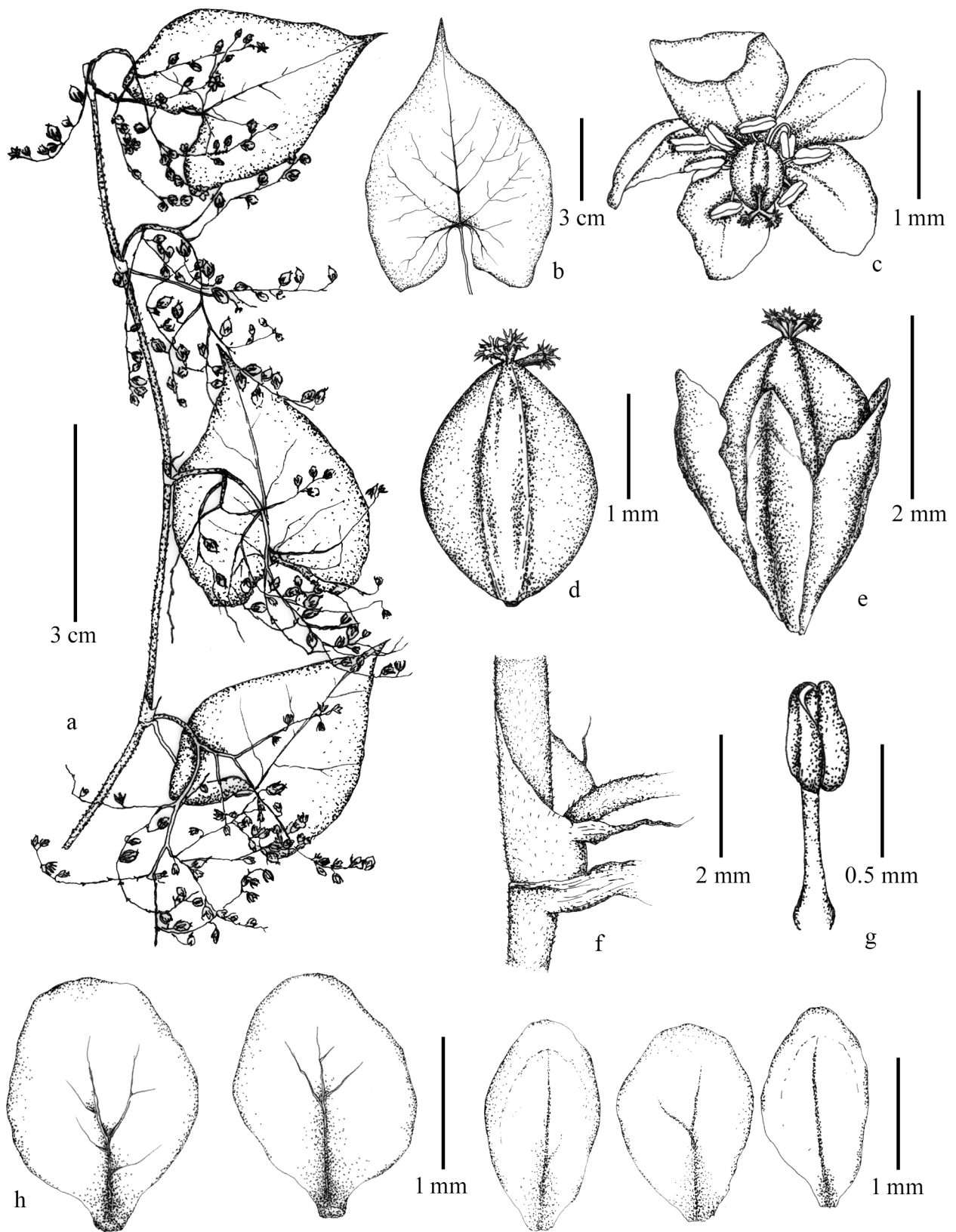


Fig. 1 *Reynoutria alokorang* sp. nov. Bhaumik & S.Roy. a. Flowering twig. b. Leaf. c. Flower. d. Achene. e. Achene with accrescent tepals. f. Ocrea. g. Stamen. h. Tepals (*Pathak & Krishna 54386*, CAL). Illustrated by Sauvik Roy.

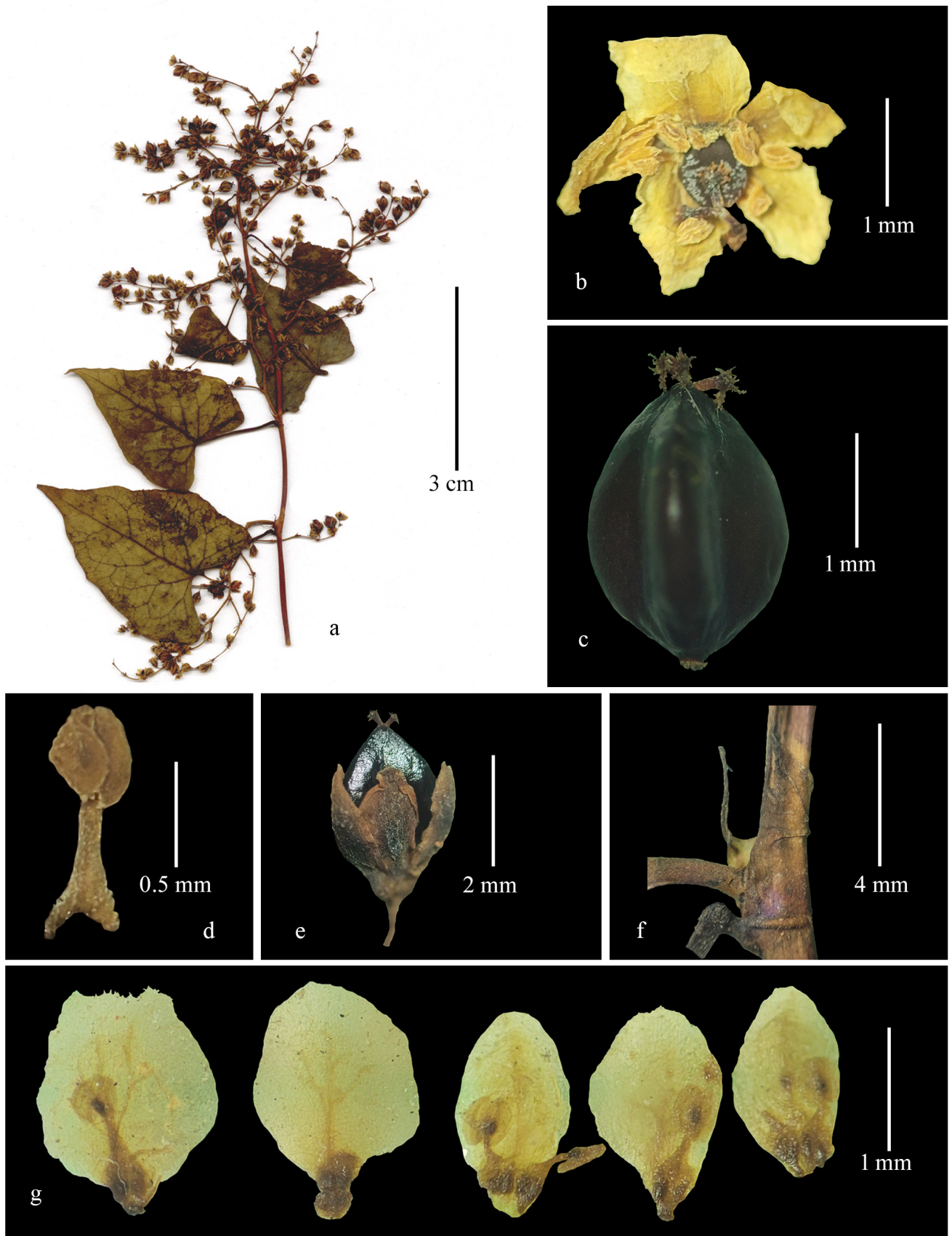


Fig. 2 *Reynoutria alokorang* sp. nov. Bhaumik & S.Roy. **a.** Habit. **b.** Flower. **c.** Achene. **d.** Stamen. **e.** Achene with accrescent tepals. **f.** Ocrea. **g.** Tepals and stamens (*Pathak & Krishna 54386*, CAL). Photos by Sauvik Roy.

East to North Indo-China and temperate East Asia (POWO continuously updated). This study extends its distribution to India. A distribution map is provided.

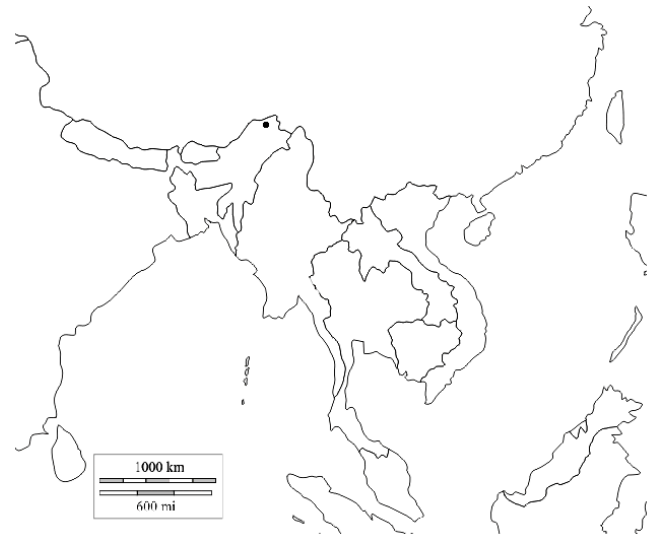
TAXONOMY

Reynoutria alokorang Bhaumik & S.Roy sp. nov. — Fig. 1, 2; Map 1

This species resembles *Reynoutria multiflora* (Thunb.) Moldenke and *R. ciliinervis* (Nakai) Moldenke in climbing habit, ovate leaf blades and cordate at base, but differs in longer petioles, 1.5–5.5 cm long (vs 1.5–3.5 cm long); blade glabrous all along (vs glabrous or minutely papillate along veins), shorter panicle, 5–12 cm long (vs 10–20 cm long); each bract with 1–3 flowers (vs 2–4 per bract); tepals minutely keeled or not, and not decurrent along pedicel (vs winged in abaxial surface in fruit, wings decurrent along pedicel); pedicel articulated at middle (vs petiole articulated at base); stigma funnel-shaped and fimbriate at apex (vs capitate and not fimbriate at apex); achene exerted from persistent perianth (vs included in persistent perianth); see also Table 1. — Type: *Pathak & Krishna 54386* (holo CAL; iso CAL), India, Arunachal Pradesh, Upper Siang, Alokorang-Sitoma (28°50'00.5" N 95°10'59.4" E), 09 september 2011, 1500–2350m.

Etymology. The specific epithet is derived from the type locality Alokorang, Arunachal Pradesh, India.

Perennial herbs, 1–2 m high. *Stems* hollow, twining to the left, branched, pubescent. *Leaves* blade ovate, 2–7 by 2.5–7 cm, apex acuminate, base cordate, margin entire, glabrous on both surfaces, deep green above, paler below, reticulately veined; petioles 1.5–5.5 cm long, ridged, furrowed, glabrous to retrorsely hirsute below inflorescence; ocrea 3–5 mm long, membranous, oblique, glabrous. *Inflorescence* terminal or axillary, paniculate, spreading, 5–12 cm long; peduncle minutely hirsute; bracts triangular-ovate, papillate, apex acute with 1–3 flowers. *Flowers* bisexual; pedicel 2–3 mm long, slender, glabrous, articulated at middle; perianth greenish; tepals 5, heteromorphic, imbricate or quincuncial, elliptic, 1.5–1.7 by 0.8–1.1 mm, apex rounded or acute-rounded, margin entire, outer 3 larger, accrescent, narrowly keeled or not; keels not decurrent into pedicels on abaxial surface in fruit; tepals persistent, in fruit nearly orbicular; stamens 8, 0.8–1 mm



Map 1 Distribution of *Reynoutria alokorang* sp. nov. Bhaumik & S.Roy in India.

long; filaments dilated at base, 0.6–7 mm long; anthers ovoid, 0.2–0.4 by 0.2–0.3, basifixed; ovary ellipsoid, 0.8–1 by 0.5–0.6 mm; styles 3, 0.2–0.3 mm; stigmas 3, funnel-shaped, apex fimbriate; achenes slightly exerted from perianth, ovoid, trigonous, 2.5–3 by 1.3–1.5 mm, brown becoming shining black at maturity.

Distribution — Endemic to India (Arunachal Pradesh: Upper Siang district).

Habitat & Ecology — Grow in subtropical to temperate forest margins beside river banks. *Flowering & Fruiting*: July–September.

Conservation status — About 10–15 mature individuals were reported from conserved sites in Dihang Dibang Biosphere Reserve, far away from human habitation. As the species was collected from one locality, it is not possible to presently assess the vulnerability status. According to IUCN Standards and Petitions Committee (2024) it is provisionally kept under Data deficient (DD) category.

Table 1 Comparative analysis of characters among closely related species

Character	<i>Reynoutria alokorang</i> sp. nov. Bhaumik & S.Roy	<i>Reynoutria ciliinervis</i> (Nakai) Moldenke	<i>Reynoutria multiflora</i> (Thunb.) Moldenke
Petioles	1.5–5.5 cm long, retrorsely hirsute	1.5–3 cm, glabrous	1.5–3 cm, glabrous
Leaf blade	ovate-cordate, glabrous on both surfaces	ovate or narrowly ovate, abaxially papillate along veins	ovate or narrowly ovate, both surfaces glabrous
Panicle	5–12 cm long	10–20 cm long	10–20 cm long
Bracts	1–3-flowered	2–4-flowered	2–4-flowered
Pedicel	articulated at middle	articulates at base	articulates at base
Perianth and tepals	greenish; tepals accrescent, narrowly keeled or not; keels not decurrent to pedicels on abaxial surface in fruit	white or greenish; tepals accrescent and winged on abaxial surface in fruit; wings decurrent to pedicels on abaxial surface in fruit	white or greenish; tepals accrescent and winged on abaxial surface in fruit; wings decurrent to pedicels on abaxial surface in fruit
Stigma	funnel-shaped, fimbriate at apex	capitate, not fimbriate	capitate, not fimbriate
Achenes	exserted in persistent perianth	included in persistent perianth	included in persistent perianth

KEY TO THE SPECIES OF *Reynoutria*

1. Erect herbs or sub-shrubs. 2
1. Straggling or climbing herbs. 5
2. Leaf blades less than 15 cm long, stigma not peltate. 3
2. Leaf blades more than 15 cm long, if less, than stigma peltate. *R. sachalinensis*
3. Bark and leaf surface not mixed with glandular hairs; inflorescence more than 8 cm long; bracts 2–4-flowered. 4
3. Bark and leaf surface mixed with glandular hairs; inflorescence less than 7 cm long; bracts 2–6-flowered. *R. forbesii*
4. Up to 1 m tall; stem greenish with reddish flakes. *R. compacta*
4. Up to 2 m tall; stem greenish without reddish flakes. *R. japonica*
5. Mature tepals distinctly keeled outside and decurrent along petiole; achene included in persistent perianth. 6
5. Mature tepals minutely keeled outside, not decurrent; achene exerted in persistent perianth. *R. alokorang*
6. Leaf blade minutely hirsute along veins in lower surface. *R. ciliinervis*
6. Leaf blade glabrous all along. *R. multiflora*

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