

露珠草属 lu zhu cao shu

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Herbs, perennial, rhizomatous, often forming large colonies. Leaves petiolate, opposite, becoming alternate and bractlike in inflorescence. Inflorescences simple or branched racemose, terminal on main stem and at apices of short axillary branches. Flowers 2-merous, with a floral tube. Sepals and petals alternate. Petals obcordate or obtrullate, notched at apex, white or pink. Stamens opposite sepals; nectary wholly within floral tube or elongated and projecting above opening of floral tube as a fleshy cylindrical or ringlike disk. Ovary locules 1 or 2; ovules 1 per locule; style equaling or longer than stamens, stigma 2-lobed. Fruit an indehiscent capsule, with stiff uncinate hairs, with or without conspicuous rows of corky tissue. Seeds smooth, fusiform or broadly clavoid to narrowly ovoid, adhering ± firmly to inner ovary. 2n = 22.

Eight species: temperate and boreal forests of the N hemisphere, from near sea level to 5000 m and from 10°–70° N; seven species (one endemic) and five natural hybrids (two endemic) in China.

Hybrids are common and often abundant in naturally disturbed habitats in Europe, Japan, and North America, but few gatherings of hybrids are known from China.

Ascherson and Magnus (Bot. Zeitung (Berlin) 28: 47–49, 745–747, 1870) divided Circaea into two groups, which they called “divisions,” based on the number of locules in the ovary. Included in their “Uniloculares” are C. alpina and C. repens, with all of the other species placed in “Biloculares.” These groups were later given sectional status by Steinberg (in Schischkin & Bobrov, Fl. URSS 15: 634. 1949). The single line of specialization, leading from the 2-loculed, outcrossing species to the 1-loculed, self-pollinating C. alpina, through the intermediate C. repens, represents a continuum that makes formal recognition of two infrageneric groups unwarranted.

Flowers, mature fruits, and carefully collected rhizomes are highly desirable to facilitate identification. The nature of the nectary is most easily determined in living plants.

1a. Locule of ovary and fruit 1; rhizomes terminated by a tuber.
   2a. Petals notched to more than 1/2 their length, V-shaped; pedicels glandular pubescent; leaves with 9–15 secondary veins; combined length of mature fruit and pedicel 7.5–15 mm .................................................... 6. C. repens
   2b. Petals notched to 1/2 or less their length, obovate to obtriangular, ± cordate; pedicels glabrous; leaves with 4–10 secondary veins; combined length of mature fruit and pedicel 3.5–7.8 mm .............................................................. 7. C. alpina
1b. Locules of ovary and fruit 2; rhizomes without tubers.
   3a. Nectary wholly included within floral tube, not projecting as a cylindrical or ringlike disk beyond opening of floral tube.
      4a. Axis of inflorescence with glandular and nonglandular hairs; fruit obliquely thickly lenticular to flattened-pyriform, obliquely rounded to pedicel ................................................................. 1. C. cordata
      4b. Axis of inflorescence glabrous or with only glandular hairs; fruit obovoid to pyriform, not at all or only slightly flattened, tapering smoothly to pedicel ............................................................. 2. C. glabrescens
   3b. Nectary exserted beyond opening of floral tube, projecting as a ringlike or cylindrical fleshy disk above opening of floral tube.
      5a. Petals obtrullate, notched to 1/5 or less their length; axis of inflorescence and pedicels glabrous ............. 5. C. erubescens
      5b. Petals obovate to depressed broadly obovate, notched to 1/4 or more their length; axis of inflorescence and pedicels commonly pubescent; fruit with prominently thickened ribs, ribs separated by deep grooves (sulci).
         6a. Stem pubescent, often densely so; leaves basally cuneate, rarely rounded; inflorescence with both glandular and falcate hairs ................................................................. 3. C. mollis
         6b. Stem glabrous or with sparse falcate hairs; leaves basally rounded to subcordate; inflorescence densely glandular pubescent, without falcate hairs ......................................................... 4. C. canadensis


露珠草 lu zhu cao

Circaea cardiophylla Makino; C. ×hybrida Handel-Mazzetti; C. kitagawae H. Hara.

Plants 20–150 cm tall, pubescent, usually densely so, with long, soft, spreading hairs, soft, falcately recurved hairs, and capitulate and clavately tipped glandular hairs. Rhizomes not tuberous. Leaves narrowly to broadly ovate, 4–13 × 2.3–11 cm, base broadly cuneate to broadly rounded or truncate or more commonly cordate, margin denticulate to subentire, apex shortly acuminate. Racemes simple or branched near base, 2–20 cm; flowering pedicels ± clustered and perpendicular to axis of raceme, pubescent, with a minute setaceous bracteole at base. Buds with few to many, long, straight or slightly curved, rarely hooked, hairs. Floral tube 0.6–1 mm. Sepals reflexed in flower, white or pale green, ovate to broadly so, 2–3.7 × 1.4–2 mm, apex broadly to narrowly rounded to obtuse. Petals reflexed, white, ovate to broadly so, or depressed-ovate to broadly obovate, 1–2.4 × 1.2–3.1 mm, apex obcordate, apical notch 1/2–2/3 length of petal, petal lobes broadly rounded. Stamens spread-
ing, shorter than to ca. as long as style; nectary wholly within floral tube and inconspicuous. Fruiting pedicel and mature fruit 4.4–7 mm. Fruit 3–3.9 × 1.8–3.3 mm, locules 2, obliquely obovoid to lenticular, abaxially flattened, base obliquely rounded or truncate to pedicel, with low, corky thickenings along margins and between locules, without prominent sulci. Seed 1 per locule. Fl. Jun–Aug, fr. Jul–Sep. 2n = 22.

Well-drained soils in mixed deciduous, rarely boreal, forests; near sea level to 3500 m. Anhui, Gansu, Guizhou, Hebei, Henan, Heilongjiang, Hubei, Hunan, Jiangxi, Jinlin, Liaoning, Shaanxi, Jiangxi, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [N India, Japan, Kashmir, Korea, Nepal, Pakistan, Russia (Far East)].

“Circaea bodinieri” (H. Léveillé, Bull. Acad. Int. Geogr. Bot. 22: 224. 1912) belongs here but was a provisional name and was therefore not validly published (Vienna Code, Art. 34.1(b)).


秃桝露珠草 tu geng lu zhu cao


Plants 12–80 cm tall, pubescent with short, soft, falcately recurved hairs, rarely glabrous. Rhizomes not tuberous. Leaves narrowly to broadly ovate, rarely glabrous. Racemes simple or branched at base, 2–18 cm; flowering pedicel perpendicularly to axis of raceme, glabrous, subtended by a setaceous bracteolate. Buds commonly pubescent with a few, long, straight to slightly bent hairs, occasionally also with short uncinate hairs. Floral tube 0.9–1.3 mm. Sepals reflexed in flower, pink or greenish white, oblong to nearly ovate, 1.8–3.3 × 1.2–1.7 mm, apex acute or obtuse. Petals pink, oblate to broadly obovate in outline, 1.1–1.9 × 1.3–2.6 mm, apex obtuse, apical notch ca. 1/2 length of petal; petal lobes broadly rounded. Stamens spreading, shorter than style; nectary wholly within floral tube and inconspicuous. Fruiting pedicel and mature fruit 5.3–8.5 mm. Fruit pyriform to subglobose, 2.2–3.8 × 1.8–3 mm, rounded, usually obliquely to apiculate, with prominent ribs and deep sulci, tapering concavely and obliquely to pedicel; fruiting pedicel reflexed, often sharply so. Ovary locules 2. Seeds 2. Fl. Jul–Sep, fr. Aug–Oct. 2n = 22*.

Deciduous forests; near sea level to ca. 2000 m. Anhui, Fujian, S Gansu, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Jinlin, Liaoning, Shandong, Sichuan, Yunnan, Zhejiang [Cambodia, India (Assam), Japan, Korea, N Laos, N Myanmar, SE Russia, N Vietnam].


水珠草 shui zhu cao


Plants 15–80 cm tall. Rhizomes not tuberous. Stem glabrous or rarely with sparse falcate hairs. Leaves narrowly to broadly ovate to oblong lanceolate, 4.5–12 × 2–5 cm, base rounded to subcordate, rarely broadly cuneate, margin denticulate, apex shortly to long acuminate. Racemes 2.5–30 cm, simple or branched at base. Flowering pedicels perpendicularly to axis of raceme, with stipitate glandular hairs, without a bracteole at base. Floral tube 0.6–1 mm. Sepals reflexed, most commonly purple, 1.3–3.2 × 1–1.7 mm. Petals commonly pink, 1–2 × 1.4–2.5 mm, apical notch 1/3 to slightly more than 1/2 length of petal; nectary conspicuous, exserted beyond floral tube. Fruiting pedicel and mature fruit 5.5–8.5 mm. Fruit pyriform to subglobose, 2.2–3.8 × 1.8–3 mm, rounded, usually obliquely, to pedicel, with prominent ribs and deep sulci. Ovary locules 2. Seeds 2. Fl. Jun–Aug (–Sep), fr. Jul–Sep. 2n = 22.

Deciduous forests; mixed deciduous-boreal forests; near sea level to ca. 1500 m. Hebei, Heilongjiang, Jinlin, Liaoning, Nei Nongol, Shandong [N Japan, Korea, Russia; E Europe from vicinity of Moscow across Siberia between 50°–60°N].

Molecular and morphological analyses indicate that Circaea lutetiana Linnaeus is a distinct species from C. canadensis. Circaea canadensis subsp. canadensis occurs in E North America.

谷蓼 gu liao

Circaea delavayi H. Léveillé; C. kawakamii Hayata; C. lutetiana Linnaeus race rubescens (Franchet & Savatier) H. Léveillé.

Plants 10–120 cm tall, glabrous. Rhizomes not tuberous. Leaves lanceolate to ovate or occasionally broadly ovate, 2.5–10 × 1–6 cm, base broadly cuneate to rounded or truncate, rarely subcordate, margin denticulate, apex shortly acuminate. Terminal raceme simple or more commonly branched at base, 2–20 cm, flowering pedicel perpendicular to axis of raceme, without, less commonly with, a minute, setaceous bracteole at base, bracteole usually deciduous before maturation of fruit. Buds glabrous; floral tube 0.5–0.8 mm. Sepals reflexed in flower, reddish purple, oblong to lanceolate, 0.6–2.5 × 0.8–1.2 mm, abruptly acuminate. Petals pink, narrowly to broadly obovate or obovate, 0.8–1.7 × 0.7–1 mm, apical notch 1/10–1/5 length of petal; petal lobes minutely crenulate or with minute secondary lobes. Stamens shorter than style; nectary exserted beyond opening of floral tube. Fruiting pedicel and mature fruit 6–12 mm. Fruit obovoid to broadly so, 1.7–3.2 × 1.2–2.1 mm, slightly flattened abaxially, tapering smoothly to pedicel, without prominent ribs or sulci, but with a narrow groove representing extension of pedicel. Ovary locules 2. Seeds 2. Fl. Jun–Sep, fr. Jul–Oct. 2n = 22.


匍匐露珠草 pu fu lu zhu cao

Circaea alpina Linnaeus var. himalaica C. B. Clarke.

Plants 15–100 cm tall, pubescent with falcate hairs, inflorescence with capitate and clavately tigednared hairs. Rhizomes with tuberous thickening at apex. Leaves narrowly to broadly ovate, rarely nearly orbicular, 1.8–9 × 1.5–5 cm, base rounded, broadly cuneate, or cordate, margin denticulate, apex acute to shortly acuminate. Inflorescence simple or branched, sometimes also with terminal racemes on upper axillary branches. Flowering pedicels perpendicular to axis of raceme or slightly ascending, with stipitate glandular hairs, with or without a minute bracteole at base. Buds sparsely pubescent, rarely glabrous; floral tube 0.4–0.8 mm. Sepals spreading to reflexed, white, green or reddish tinged, oblong to ovate, 1.8–2.5 × 1.1–1.5 mm, apex gradually rounded to obtuse or acute. Petals white or pink, narrowly to broadly obovate in outline, V-shaped, 1.4–2.3 × 1.3–2(–2.9) mm, apical notch 3/4 length of petal. Stamens ca. equal to or shorter than style; nectary inconspicuous, within floral tube. Fruiting pedicel and mature fruit 7.5–15 mm. Fruit narrowly to broadly clavate, 3.5–4.2 × 0.9–1.6 mm, tapering smoothly to pedicel, without prominent ribs and deep sulci, but with a shallow groove representing an extension of pedicel; locale 1, but with trace of a second locale in cross-section. Seed 1. Fl. Jul–Oct, fr. Jul–Nov. 2n = 22.

Moist to wet forests, thickets, and open places; 1500–3300 m. W Hubei, Sichuan, Xizang, Yunnan [Bhutan, N India, Myanmar (one gathering), Nepal, Pakistan (one gathering)].

The fruit of Circaea repens often shows a trace of a second locale in cross-section, but bears only a single seed. In many ways this species is intermediate between species with one and two locules.


高山露珠草 gao shan lu zhu cao

Plants 3–50 cm tall, glabrous or pubescent with short falcate hairs on stem and short glandular hairs in inflorescence. Rhizomes with tuberous thickening at apex. Leaves highly variably shaped from narrowly trullate or elliptic to nearly circular, 1–11 × 0.7–5.5(–8) cm, base narrowly cuneate to cordate, margin subentire to sharply serrate, apex acute to shortly acuminate. Terminal raceme 0.7–2 to 12(–17) cm. Flowering pedicels perpendicular to axis of raceme (in C. alpina subsp. caulescens and some plants of subsp. angustifolia) to ascending or erect, with or without a minute setaceous bracteole at base. Buds glabrous, rarely glabrescent; floral tube ranging from nearly absent to 0.6 mm. Sepals, spreading or slightly reflexed, white or pink, occasionally purple tinged at apex, rarely purple throughout, oblong to broadly so, or triangular-ovate, 0.8–2 × 0.6–1.3 mm, glabrous, apex rounded to obtuse or mucotly morminiform. Petals white, narrowly obtriangular, obdeltoid, ovate to broadly so to depressed-ovovate, 0.5–2 × 0.6–1.9 mm, apical notch essentially lacking or to 1/2 length of petal; petal lobes rounded to truncate, rarely somewhat crenulate (in C. alpina subsp. angustifolia). Stamens erect or ascending, less commonly spreading, equaling or slightly longer than style; nectary wholly within floral tube and inconspicuous. Fruiting pedicel and mature fruit 3.5–7.8 mm. Fruit clavate or obovate, 1.6–2.7 × 0.5–1.2 mm, tapering smoothly to pedicel, locale 1, seed 1, without ribs or sulci, but pedicel extending as a shallow groove along upper surface. 2n = 22 (unknown in C. alpina subsp. micrantha).

Forests, thickets, grassy alpine areas, cool, moist, and wet places, on moss-covered rocks and logs; near sea level to 5000 m. Anhui, Gansu, Guizhou, Hebei, Heilongjiang, Henan, Hubei, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [NE Afghanistan, Bhutan, India, Nepal, Pakistan, Russia, Thailand, NW Vietnam; circumboreal in forests between 30°–65° N, but restricted to high elevations at lower latitudes].

Circaea alpina is a facultatively inbreeding complex of six subspecies, each exhibiting different geographic or ecological preferences but with areas of overlap between two or more subspecies in parts of their range. The subspecies form a reticulate pattern of morphologically intergrading populations, some of which are separated only by seemingly minute differences. Other subspecies, were it not for the numerous intermediate plants, appear so dissimilar that some might recognize them as separate species, as has often been done in the past. Five subspecies are in China.

1a. Inflorescences elongating as or before flowers open; flowers ± loosely spaced; lower flower-
bearing pedicels perpendicular to raceme axis at anthesis.
2a. Pedicels without a minute bracteole at base, or bracteole represented by a darkened gland; leaves ovate to broadly so, base rounded, truncate, or subcordate; hairs on fruit translucent .......... 7a. *C. caulescens* subsp. *caulescens*
2b. Pedicels with a minute bracteole at base; leaves elliptic to trullate or ovate, base narrowly to broadly cuneate; hairs on fruit containing purple pigment .......... 7b. *C. angustifolia*

1b. Inflorescences elongating after flowers open; flowers clustered and corymbose at summit of raceme; pedicels erect or ascending at anthesis.
3a. Stem glabrous.
4a. Ovary minutely pubescent at anthesis; petals conspicuously notched, notch 1/4–1/2 length of petal ......................... 7d. *C. alpina* var. *alpina*
4b. Ovary glabrous at anthesis; petals emarginate or barely notched, notch less than 1/5 length of petal .......... 7e. *C. micrantha*
3b. Stem pubescent, with at least a few, soft, falcate hairs.
5a. Leaves thin, pale green, translucent; ovary glabrous at anthesis; petals emarginate or barely notched ................ 7f. *C. micrantha*
5b. Leaves thick, deep green or reddish, opaque; ovary pubescent with hooked hairs at anthesis; petals clearly notched to ca. 1/2 their length.
6a. Leaves elliptic to trullate, base narrowly to broadly cuneate ......... 7b. *C. angustifolia*
6b. Leaves ovate, base rounded to subcordate, rarely broadly cuneate ................. 7c. *C. imaicola*

7a. *Circaea alpina* subsp. *caulescens* (Komarov) Tatewaki, Veget. Shikotan Is. 44. 1940.

Circaea alpina var. caulescens Komarov, Fl. Manshur. 3: 99. 1905; *C. alpina* var. piliosa (H. Hara) H. Hara; *C. caucasica* A. K. Skvortsov; *C. caulescens* (Komarov) Nakai ex H. Hara; *C. caulescens* var. piliosa H. Hara; *C. caulescens* var. robusta Nakai ex H. Hara; *C. × dubia* H. Hara; *C. micrantha* var. makinoi H. Hara.

Plants 5–35 cm tall. Stem pubescent. Leaves opaque, elliptic, trullate, broadly trullate, or ovate, rarely broadly ovate, 1.4–4.5 × 0.6–3.5 cm, base narrowly to broadly cuneate, margin shallowly denticulate, apex acute. Inflorescence simple or with lateral racemes at base, glabrous or pubescent, with short glandular hairs; pedicels ascending or diverging perpendicular to axis of raceme at anthesis, glabrous or, rarely, sparsely pubescent with short glandular hairs; flowers opening during or after elongation of raceme and ± widely spaced, with a setaceous bracteole at base. Buds glabrous; ovary with uncinate hairs at anthesis; floral tube 0.2–0.3 mm. Sepals broadly to broadly ovate or oblong-ovate, apex rounded to obtuse or rarely minutely mammiform. Petals white or pink, obovate to depressed-obovate or obdeltoid, apical notch 1/3–1/2 length of petal; petal lobes rounded. Uncinate hairs of fruit unpigmented. Fl. Jun–Sep, fr. Jul–Sep. 2n = 22.

Moist places, on moss-covered rocks and logs and in drier soils in cool-temperate deciduous and mixed forests and lower part of boreal forests; near sea level to 1500 m. Anhui, Hebei, Heilongjiang, Jilin, Liaoning, Shandong, Shanxi [Japan, Korea, Mongolia, Russia (Far East, also disjunct on S shore of Lake Baikal and in Altai mountains); SW Asia (Caucasus)].


狭叶露珠草 Xia Ye Lu Zhu Cao


Plants 7–35 cm tall. Stem pubescent. Leaves opaque, elliptic, trullate, broadly trullate, or ovate, rarely broadly ovate, 1.4–4.5 × 0.6–3 cm, base narrowly to broadly cuneate, margin shallowly denticulate, apex acute. Inflorescence simple or with lateral racemes at base, glabrous or pubescent, with short glandular hairs; pedicels ascending or diverging perpendicular to axis of raceme at anthesis, glabrous or, rarely, sparsely pubescent with short glandular hairs; flowers opening during or after elongation of raceme and ± widely spaced, with a setaceous bracteole at base. Buds glabrous; ovary with uncinate hairs at anthesis; floral tube 0.2–0.3 mm. Sepals broadly to broadly ovate or oblong-ovate, apex rounded to obtuse. Petals white or pink, narrowly to broadly obovate, apical notch 1/5–1/3 length of petal; petal lobes rounded, truncate, or minutely crenulate. Uncinate hairs of fruit containing purple pigment. Fl. Jul–Sep (–Oct), fr. Aug–Nov. 2n = 22*.

- Moist open areas, thickets and forests in mountains; 2000–3600 m. Sichuan, Xizang, Yunnan.


高原露珠草 Gao Yuan Lu Zhu Cao

*Circaea alpina* var. *imaicola* Ascherson & Magnus, Bot. Zeitung (Berlin) 28: 749. 1870; *C. hohuanensis* S. S. Ying; *C. imaicola* (Ascherson & Magnus) Handel-Mazzetti; *C. minutula* Ohwi; *C. pricei* Hayata; *C. taiwaniana* S. S. Ying.

Plants 3.5–45 cm tall. Stem densely to sparsely pubescent. Leaves ovate to broadly ovate, less commonly orbicular-ovate, 2–7 × 1.4–4.5 cm, base truncate or rounded, less often broadly cuneate to subcordate, margin subentire to occasionally prominently dentate, apex acute to shortly acuminate. Inflorescence simple or branched, pubescent with short glandular hairs, less

commonly glabrous; flowering pedicel erect or ascending, glabrous; flowers clustered at apex of raceme and opening before elongation of raceme axis, with a minute setaceous bracteole at base. Buds glabrous, rarely glabrescent; ovary with uncinate hairs at anthesis; floral tube nearly absent to 0.3 mm. Sepals oblong to ovate, apex rounded to obtuse. Petals white or pink, narrowly to broadly obovate in outline, apical notch 1/4–1/2 length of petal; petal lobes rounded. Uncinate hairs of fruit unpigmented. Fl. Jul–Sep(–Oct), fr. Aug–Nov. 2n = 22*.

Cool moist places along streams, thickets, deciduous and coniferous forests in mountains; (1500–)2000–4000 m. Anhui, Gansu, Guizhou, Henan, Hubei, Jiangxi, Qinghai, Shaanxi, Shanxi, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang [NE Afghanistan, Bhutan, India, N Myanmar, Nepal, Thailand, NW Vietnam].

7d. Circaea alpina subsp. alpina
露五草 (原亚种) lu zhu cao (yuan ya zhong)

Circaea caulescens (Komarov) Nakai ex H. Hara var. glabra H. Hara; C. caulescens f. ramosissima H. Hara; C. caulescens var. rosalata H. Hara; C. lutetiana f. alpina (Linnaeus) H. Léveillé; C. lutetiana subsp. alpina (Linnaeus) H. Léveillé.

Plants 3–30 cm tall. Stem glabrous, sometimes with glan-

dular hairs in inflorescence. Leaves translucent, ovate to broadly so, rarely nearly circular in outline, base cordate to subcordate, less commonly truncate or rounded, margin conspicuously dentate, apex shortly acuminate to acute. Inflorescence simple or with lateral racemes from base, glabrous to densely pubescent with short glandular hairs; flowering pedicel ascending or erect, glabrous, with a setaceous bracteole at base; flowers opening before elongation of raceme and clustered at its apex. Buds glabrous; floral tube nearly absent to 0.5 mm. Sepals oblong to ovate, sometimes broadly so, apex rounded to obtuse or minute-


Moist to wet places, on moss-covered rocks and logs; near sea level to 2500 m. Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shanxi [Japan, Kazakhstan, Korea, Mongolia, Russia; circumboreal in forests between 30°–65° N, but restricted to high elevations at lower latitudes].

高寒露五草 gao han lu zhu cao


Plants 4–25 cm tall. Stem glabrous or minutely pubescent, rarely densely pubescent. Leaves translucent, narrowly ovate to broadly triangular, (1–)2–6.5 × 0.8–4 cm, base cordate, less often truncate, margin sharply dentate to serrate, apex acute or shortly acuminate. Inflorescence a simple raceme or with 1 or 2, rarely more, lateral racemes arising from base, densely to sparsely pubescent with glandular hairs; flowering pedicel ascending or erect, glabrous or glandular pubescent, basally with a setaceous bracteole; flowers opening before elongation of raceme and clustered at its tip. Buds glabrous; ovary glabrous or rarely with minute uncinate hairs at anthesis; floral tube nearly absent to 0.4 mm. Sepals ovate to broadly ovate to oblong ovate, apex rounded or minutely mammiform. Petals white or pink, obtriangular to obovate, apical notch absent or to 1/5 length of petal; petal lobes, when present, truncate to rounded. Uncinate hairs of fruit unpigmented or occasionally with purple pigment. Fl. Jun–Sep(–Oct), fr. Jul–Nov. Chromosome number unknown.

Moist thickets and coniferous forests, grassy alpine areas; 3100–5000 m. Gansu, Sichuan, Xizang, Yunnan [Bhutan, N India, N Myanmar, Nepal].

Hybrids

Hybrids in Circaea are common and abundant in Europe, North America, and Japan, but remarkably uncommon on the Asian mainland, even though the greatest number of taxa in the genus occurs in China, and many of them have sympatric ranges. The hybrids are usually intermediate between their parents. They occur most frequently in naturally disturbed places, such as the floodplains of rivers and streams. The ease with which they form colonies from rhizomes no doubt explains their abundance outside of China, despite their almost total sexual sterility. Hybrids that do occur in China are the following.

可疑露五草 ke yi lu zhu cao

This is the hybrid Circaea cordata × C. erubescens and is intermediate between the parents. The flowers have the exserted nectary of C. erubescens and usually at least a few of the long, spreading hairs of C. cordata. They also resemble C. cordata in being more robust, in leaf shape and in having more closely
spaced flowers at anthesis. Although the petals are more like those of *C. cordata* in shape, they are often pink as in *C. erubescens*.

Disturbed areas, commonly along streams, in broad-leaved deciduous forests. Near sea level to 1500 m. NE China (“Manchuria, 1941” without further data) [Japan].


**北方露珠草** bei fang lu zhu cao

This is the hybrid *Circaea canadensis* subsp. *quadrisulcata* × *C. cordata* and is most obviously intermediate between the parents in degree and the nature of pubescence and in the morphology of the flower parts. It is similar to *C. cordata* in having sporadic, long, sharply pointed, straight or slightly curved spreading hairs on various parts of the plant and in having a pubescent stem. It is similar to *C. canadensis* subsp. *quadrisulcata* in the color of the buds, sepals, and petals and in the presence of a low, exserted nectary projecting beyond the opening of the floral tube. It also has the densely glandular inflorescence of *C. canadensis* subsp. *quadrisulcata*, but the closely spaced flowers and petal shape of *C. cordata*.

Disturbed habitats; near sea level (upper elevation unknown). Hebei, also “Manchuria, Korii-mon” [Japan].


**卵叶露珠草** luan ye lu zhu cao


This is the hybrid *Circaea cordata* × *C. mollis* and is morphologically intermediate between the parents. It resembles *C. cordata* in the long, recurved and straight, sharply pointed hairs on some parts of the plant, but is similar to *C. mollis* in having an exserted, ringlike nectary and darkened stem nodes.

Disturbed areas in broad-leaved deciduous forests; below 100–1500 m. Sichuan, Yunnan [Japan, S Korea].


**贡山露珠草** gong shan lu zhu cao

Known only from the type, this is the hybrid *Circaea alpina* subsp. *imaicola* × *C. cordata* and is intermediate between the two parents in overall appearance. Some leaves with the base rounded to cordate are like those in *C. alpina* subsp. *imaicola*, but some leaves on the upper portion of the stem have the base cordate as in *C. cordata*. The pubescence is more dense than in *C. alpina* subsp. *imaicola* but with fewer of the long, straight trichomes of *C. cordata*.

- Moist forests; ca. 1800 m. NW Yunnan (Gongshan).

*Circaea alpina* Linnaeus subsp. *imaicola* (Ascherson & Magnus) Kitamura × *C. repens* Wallich ex Ascherson & Magnus

**西南露珠草** xi nan lu zhu cao

Plants that appear to be hybrids between *Circaea alpina* subsp. *imaicola* and *C. repens* are like *C. repens* in stature. The flowers are smaller and more closely spaced than in *C. repens* and are borne on ascending, minutely glandular pubescent pedicels. In *C. repens*, the petioles are glandular pubescent and most commonly spread at right angles to the raceme axis at anthesis. The hybrids have deeply notched petals, as in *C. repens*, but which are often broader, as in some plants of *C. alpina* subsp. *imaicola*.

- Habitat unknown, but presumably in disturbed shaded places; 1800–3200 m. Sichuan, Yunnan.