

Cypripedium japonicum Thunb. Erect plant to 30 cm, often clump-forming, leaves yellowish, fan-shaped or fish-tail-shaped. Flower large with yellow-green sepals and petals and a white, deeply pouched lip flushed pink and marked with purple around the mouth which is puckered, not smoothed, at apex. Gansu, neGuizhou, Hubei, eSichuan, sShaanxi (eChina, Japan); woodland, bamboo thickets, in dappled shade, often near water, 1,000–2,000 m. IV–VI.

Cypripedium guttatum Sw. Plant 10–25 cm tall with downy stems, leaves elliptic, ascending, 5–12 cm long. Inflorescence erect with a hairy axis. Flower solitary, 14–18 mm across, white with rose-purple spotting on inside of dorsal sepal, petals and on outside of lip, occasionally pure white; lip urn-shaped, 14–22 mm long, with wide mouth. sGansu, wSichuan, Tibet, nwYunnan (c & nChina); montane grassland, open grassy places in coniferous woodland, locally abundant, 2,800–4,100 m. V–VI.

Cypripedium debile Rchb. f. Dwarf plant not more than 15 cm tall with paired, heart-shaped, glabrous leaves, 2.5–7 cm long. Inflorescence axis glabrous, stalk arching, with an erect linear bract. Flower often hidden below leaves, with pale green sepals and petals and an off-white lip, 10–15 mm long, marked with purple around mouth. Hubei, w, n & nwSichuan [Taiwan, Japan and across northern hemisphere]; deep shade on banks in deciduous and mixed woodland, 2,200–3,000 m. V–VI.

Cypripedium palangshanense T. Tang & F. T. Wang* Similar to *C. debile* but leaves elliptic-ovate, 4–6 cm long, basal, almost appressed to the ground; inflorescence erect, minutely downy; flower plum-coloured, 1.4–1.8 cm long, lip sometimes slightly yellow-tinged, 9–11 mm long. n & wSichuan; shady places in humus and moss on banks over limestone rocks in deciduous or mixed woodland, 2,200–2,800 m. VI.

Cypripedium elegans Rchb. f. Plant small, to 10 cm tall, the paired leaves ovate or somewhat heart-shaped, hairy all over. Inflorescence-axis erect, very hairy, bearing an elliptic, hairy, green bract. Flower small, 15 mm across, green with purple markings on lip and petals; lip c. 12 mm long. seTibet, nwYunnan [swTibet, c & eHimalaya]; humus pockets on edge of thickets and in deciduous and mixed woodland, 3,300–3,700 m. VI–VII.

Group Three

- Leaves usually lacking spots *C. bardolphianum*, *C. micranthum*
- Leaves dark-spotted (occasionally unspotted in *C. forrestii* but then petals purple-spotted) 2
- Flowers small, lip not more than 10 mm long *C. forrestii*
- Flowers larger, lip at least 25 mm long 3
- Petals yellow spotted maroon; dorsal sepal 2–4.5 cm long ... *C. margaritaceum*, *C. fargesii*, *C. sichuanense*
- Petals white or cream, spotted purple; dorsal sepal 4–7 cm long *C. lichangense*, *C. lentiginosum*

Cypripedium bardolphianum W. W. Sm. & Farrer* Dwarf plant 8–12 cm tall, leaf and bract almost erect, usually unspotted, 6–8 cm long, often with purple margin. Flowers small, 20 mm across, glossy, yellow or brown-maroon with rounded yellow lip, 11–14 mm long, covered on rim with purplish brown warts, apex particularly warty; ovary slightly purple-hairy on ridges, otherwise green. swGansu, w & nwSichuan, nwYunnan; tufa islands in streambeds, shallow humus on limestone rocks in deciduous woodland, 2,400–3,600 m. VI–VII.

Cypripedium micranthum Franch.* Like the previous species, but with smaller, dull pale yellow flowers with brown-maroon spots on sepals, petals and lip, while the ovary is characteristically very purple-hairy; sepals densely hairy outside; lip 8–10 mm long, with smooth apex. nwSichuan; shallow humus in deciduous woods, over limestone rocks, 2,000–2,500 m. V–VI.

Cypripedium forrestii P. J. Cribb* Dwarf plant with leaves and bracts spotted with black, rarely unspotted, to 8 cm long. Flowers small, yellow or brown-maroon with a yellow pouched lip, c. 10 mm long, with smooth apex; ovary somewhat hairy. nwYunnan; steep streamsides, limestone rocks in shallow humus in deciduous or mixed woodland, 2,800–3,500 m. VI.

Cypripedium margaritaceum Franch.* (syn. *C. daliense* S. C. Chen & J. L. Wu) Plant to 10 cm, leaf and bract glossy, yellowish green spotted with blackish maroon, elliptic to rounded, to 15 cm long, spreading widely apart. Flower large, dorsal sepal yellow, streaked with purple, petals and lip off-white streaked and spotted with purple; dorsal sepal somewhat hooded; petals almost glabrous except on veins, enfolding the lip which is pouched, 28–30 mm long. swSichuan, nwYunnan; tufa banks, limestone rocks in shallow humus and moss in mixed or deciduous woodland, especially beneath rhododendrons, grassy banks, 2,500–3,600 m. V–VI.

- Cypripedium japonicum*; cult. (PC)
- Cypripedium guttatum*; Xiaoxueshan, nwYunnan (HI)
- Cypripedium guttatum*; Tianchi, nwYunnan (PC)
- Cypripedium debile*; cult. (PHD)
- Cypripedium palangshanense*; Jiuzhaigou, nwSichuan (PC)
- Cypripedium palangshanense*; Jiuzhaigou, nwSichuan (PC)
- Cypripedium elegans*; above Wengshui, nwYunnan (CGW)
- Cypripedium bardolphianum*; Huanglong, nwSichuan (CGW)
- Cypripedium bardolphianum*; Huanglong, nwSichuan (PC)
- Cypripedium micranthum*; Huanglong, nwSichuan (PC)
- Cypripedium micranthum*; Huanglong, nwSichuan (PC)
- Cypripedium forrestii*; Gangheba, Yulongxueshan, nwYunnan (HI)
- Cypripedium forrestii*; Gangheba, Yulongxueshan, nwYunnan (HI)
- Cypripedium margaritaceum*; Gangheba, Yulongxueshan, nwYunnan (HI)
- Cypripedium margaritaceum*; Gangheba, nwYunnan; once common, it has been the target of unscrupulous collectors in recent years (HI)





An exposed ridge top on Baimashan in north-western Yunnan, where low cushion-forming plants like *Chionocharis hookeri* fill an important niche (HJ)



Arenaria polytrichoides forms neat cushions on exposed mountain moorland on Baimashan, north-western Yunnan (HJ)



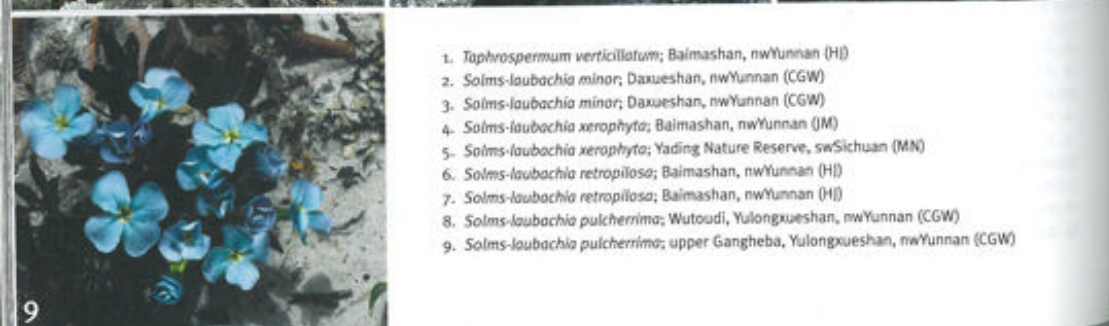
Abies and *Rhododendron* form the upper limit of forest on the Daxueshan, north-western Yunnan at c. 4,000 m (CGW)

Guizhou Plateau

The Guizhou Plateau (1,000–1,400 m) is a scenic region of limestone karst, riddled with caves and sinkholes, and intermontane basins that lies to the east of the higher Yunnan Plateau, south of the Changjiang. Its steep hills and isolated pinnacles are deeply dissected by river valleys. In the karst areas, many of the rivers and streams are partly subterranean. The porous rock and mild weather (more than 200 days are overcast during the year) account for the distinctive ecology of the region. Despite the high rainfall, water quickly drains through the porous rocks leaving plants easily stressed during dry periods. This attractive area, dominated by its typical limestone pinnacles, is easily reached via Guilin in Guangxi, and has become a major tourist attraction; however, the characteristic formations are found throughout Guangxi, south Guizhou and south-east Yunnan, stretching southwards into Vietnam.

The vegetation of the Guizhou Plateau consists of subtropical calcicolous evergreen broadleaved forests, originally dominated by Fagaceae (*Castanopsis*, *Cyclobalanopsis* and *Quercus*), Lauraceae (*Eugenia* and *Phoebe*) and Theaceae (*Camellia* and *Schima*). Lower down, seasonal tropical forests abound, dominated in the main by species of *Erythrina*, *Eugenia*, *Ficus*, *Helicia* and *Sterculia*. Secondary forests shelter many plants including species of *Albizia*, *Cornus*, *Liquidambar* and *Rhus*. Conifers are commonly found on the summit areas of the limestone peaks and ridges.

Coniferous forests are found in the east and north of the Guizhou Plateau, dominated especially by *Pinus massoniana* in the north and east, with *Abies* and *Picea* at higher elevations, and *Pinus yunnanensis* in the



1. *Taphrospermum verticillatum*; Baimashan, nwYunnan (HJ)
2. *Solms-laubachia minor*; Daxueshan, nwYunnan (CGW)
3. *Solms-laubachia minor*; Daxueshan, nwYunnan (CGW)
4. *Solms-laubachia xerophyta*; Baimashan, nwYunnan (JM)
5. *Solms-laubachia xerophyta*; Yading Nature Reserve, swSichuan (MN)
6. *Solms-laubachia retropilosa*; Baimashan, nwYunnan (HJ)
7. *Solms-laubachia retropilosa*; Baimashan, nwYunnan (HJ)
8. *Solms-laubachia pulcherrima*; Wutoudi, Yulongxueshan, nwYunnan (CGW)
9. *Solms-laubachia pulcherrima*; upper Gangheba, Yulongxueshan, nwYunnan (CGW)

condensed racemes at first, later elongating; petals white with pink or purple claw, 8–11 mm overall, blade rounded, apex notched. **Fruit** straight, 10–16 mm long, constricted between seeds, warty. Gansu, Qinghai, neTibet; screes, rocky slopes, stony disturbed meadows, gravelly and sandy places, 3,200–5,200 m. VI–VII.

Dontastemon pinnatifidus (Willd.) Al-Shehbaz & H. Ohba Differs from the previous species in the pinnately lobed to toothed basal leaves, and middle and upper stem-leaves toothed (linear and untoothed in subsp. *linearifolius* (Maxim.) Al-Shehbaz & H. Ohba), leaves ciliate, and petals plain white, unnotched. **Fruit** 15–40 mm long, glandular. Gansu, Qinghai, n, mw & swSichuan, Tibet, nwYunnan [India, Nepal, Mongolia, Russia]; similar habitats, 2,500–4,500 m. VI–VIII.

TAPHROSPERMUM

A genus with 7 species (6 in China, 3 endemic) distributed in Central Asia, the Himalaya and China. **Perennial** or **biennial** herbs with prostrate to ascending stems. **Leaves** not in rosettes, lowermost whorled or alternate, simple. **Flowers** white, in racemes, with bracts present; petals rounded to notched at apex. **Fruit** cylindrical to oblong or heart-shaped.

Taphrospermum verticillatum (Jeffrey & W. W. Sm.) Al-Shehbaz* (syn. *Braya verticillata* (Jeffrey & W. W. Sm.) W. W. Sm.) Small **biennial** or short-lived **perennial** rarely more than 15 cm tall, with 1–several stems. Lowermost leaves in a whorl, the others opposite or alternate, oblong, to 15 × 9 mm, rounded at apex, glabrous. **Racemes** many-flowered, congested at first but elongating in fruit; sepals oblong, 2.5–3.5 mm long, falling, with a few apical hairs; petals white, occasionally pale lavender, obovate, 7–9 mm long, clawed, apex notched. **Fruit** ovate to oblong, 7–13 mm long, smooth, glabrous. seTibet, w & nwYunnan; stony moorland, screes, stabilised moraines, cliff-ledges, 3,800–5,200 m. VI–VII.

Taphrospermum fontanum (Maxim.) Al-Shehbaz & G. Yang* (syn. *Dilophia fontanum* Maxim.) Similar in general proportions to the previous species, but all leaves alternate, rarely more than 10 × 4 mm; flowers smaller, white or pale lavender, petals 2–6 mm long, apex slightly notched. **Fruit** reverse heart-shaped, 3–5 mm long. Gansu, Qinghai, Sichuan, Tibet [Xinjiang]; similar habitats, as well as disturbed alpine meadows, damp shingles, alpine permafrost swamps, 3,600–5,300 m. VI–VIII.

SOLMS-LAUBACHIA

A genus of 9 species (all in China) found in the Himalaya and west China. **Perennial**, rosette-forming plants with a thick caudex bearing the previous year's leaf-remains. **Flowers** solitary, borne on scapes, blue, pink, purple or white, with 2 nectar-glands at base of ovary. **Fruit** linear to oblong or lanceolate in outline with papery, net-veined valves.

1. Leaf-blade fleshy, not more than 1 mm wide, usually grooved above *S. minor*, *S. xerophyta*
1. Leaf-blade not fleshy, 2–16 mm wide, not grooved above 2
2. Leaves grey-green, covered in reflexed hairs *S. retropilosa*
2. Leaves green, purplish or reddish, glabrous to sparsely hairy (then hairs not reflexed) *S. pulcherrima*, *S. linearifolia*, *S. zhongdianensis*, *S. eurycarpa*

Solms-laubachia minor Hand.-Mazz.* Low tufted herb not more than 3 cm with a thick, closely branched caudex. **Leaves** deep green, reddish or purplish, erect to ascending, linear, to 10 × 1 mm, ciliate, apex pointed. **Flowers** often numerous, borne singly on erect, long, slender scapes directly from leaf-rosettes; sepals 4–6 mm long; petals mauve-pink, often paler lilac or purple in centre, 10–12 mm long, with a spreading obovate limb. **Fruit** lanceolate, 15–20 mm long, downy. w & swSichuan, nwYunnan; rocky alpine meadows, stabilised screes, crevices, cliffs, 2,500–4,600 m. V–VII.

Solms-laubachia xerophyta (W. W. Sm.) Comber* Very similar to the previous species, but leaves longer (20–45 mm) and with a thickened stalk, and fruiting stalks 15–35 mm long (not 2–7 mm); sepals 6–8 mm long; petals pink or pale blue, 17–22 mm long. w & swSichuan, nwYunnan; similar habitats, 3,700–5,200 m. VI–VIII.

Solms-laubachia retropilosa Botsch.* Tufted herb to 10 cm with a tough, branching caudex covered in old leaf-remains. **Leaves** linear-lanceolate to linear-oblancheolate, to 45 × 6 mm, narrowed below into a thin stalk, covered in grey reflexed hairs. **Flowers** often numerous, borne singly on erect, long, slender scapes directly from leaf-rosettes; sepals 5–8 mm long; petals purple or pinkish purple, 12–18 mm long, limb obovate, equalling the claw. **Fruit** lanceolate-oblong, 20–60 mm long, glabrous or downy. w & swSichuan, seTibet, nwYunnan; screes, rocky meadows, low open shrubberies, 4,200–5,100 m. V–VII.

Solms-laubachia pulcherrima Muschl.* (syn. *Parrya ciliaris* Bur. & Franch.) Tough, tufted herb to 10 cm with a broad caudex covered in old leaf-remains. **Leaves** rather thick, lanceolate to oblanceolate, sometimes linear-lanceolate, to 55 × 7 mm, narrowed below into a thickened stalk, ciliate, otherwise surface glabrous or with a few crispy hairs. **Flowers** often numerous, borne singly on erect, long, slender scapes directly from leaf-rosettes relatively large; sepals 5–10 mm long, downy; petals turquoise-blue to pink, 17–25 mm long, with a broad-obovate limb. **Fruit** lanceolate, 25–35 mm long, glabrous or hairy along margin. w & swSichuan, seTibet, nwYunnan; rocky places, stabilised screes, moraines, cliffs, gravels, generally on limestone, 3,300–5,200 m. V–VII.



1. *Primula bracteata*; near Geza, nwYunnan (HJ)
2. *Primula bracteata*; cult. (CGW)
3. *Primula forrestii*; Gangheba, Yulongxueshan, nwYunnan (CGW)
4. *Primula forrestii*; Gangheba, Yulongxueshan, nwYunnan (CGW)
5. *Primula forrestii* (pale form); Gangheba, Yulongxueshan, nwYunnan (CGW)
6. *Primula dryadifolia*; above Wutoudi, Yulongxueshan, nwYunnan (JM)
7. *Primula dryadifolia*; Baimashan, nwYunnan (HJ)
8. *Primula dryadifolia* subsp. *congestifolia*; Galung La, near Bomi, seTibet (HJ)
9. *Primula gracilipes*; below Rupina La, Nepal (CGW)
10. *Primula sonchifolia*; Tianchi, nwYunnan (CGW)
11. *Primula sonchifolia*; Napahal, nwYunnan (CGW)
12. *Primula moupinensis*; cult. (JR)

Primula latisecta W. W. Sm.* Similar to the previous species, but leaves divided for only two-thirds into broader, less pointed lobes, the leaf-stalks with dense pale hairs. seTibet; dense forests, in moist leafy soils, 3,500–4,000 m. V–VI.

SECTION *Bullatae*

1. Flowers solitary or several, clustered on a very short scape amongst the leaves *P. bracteata*, *P. rockii*
1. Flowers 5 or more, clustered on a distinct scape at or above leaf height . . . *P. forrestii*, *P. bullata*, *P. redolens*

Primula bracteata Franch.* Low cushion-forming plant without meal but sticky with glands, leaves elliptic, pointed, with back-rolled margins. Flowers solitary on short stalks amongst the leaves; corolla 15–20 mm across, pink, rose-pink or white with a darker centre surrounding a yellow eye, lobes deeply notched. swSichuan, nwYunnan; limestone and sandstone cliff-crevices and -ledges, 2,600–3,700 m. IV–VI.

Primula rockii W. W. Sm.* Similar to the previous species, but with leaves more spatulate in shape and yellow or orange flowers, sometimes up to 5 on a very short scape. swSichuan (Kulu and Mull regions); similar habitats, 3,000–4,425 m. V–VI.

Primula forrestii Balf. f.* Rather robust subshrubby plant forming long woody stems over time, to 25 cm tall in flower. Leaves deep olive-green, hairy (especially when young), often yellow-mealy when young, especially beneath, oval with heart-shaped base and finely toothed margin. Flowers up to 25 in a simple, somewhat 1-sided umbel, sweetly scented, on long-hairy, sticky scapes; corolla golden yellow with an orange eye, more rarely cream, lobes deeply notched. nwYunnan (particularly Yulongxueshan); dry places amongst limestone rocks and ledges, 2,899–3,200 m. IV–early VI. Smaller plants referable to *P. bullata* Franch.* are found north of Dall (Heechanmen) and have leaves that are glabrous or short-hairy above, the blade with an attenuated base.

Primula redolens Balf. f. & Kingdon-Ward* (syn. *P. forrestii* Balf. f. var. *redolens* (Balf. f. & Kingdon-Ward) A. J. Richards) Similar to *P. forrestii*, but with pink or lilac flowers with a yellow eye. nwYunnan (near Weixi, Lancangjiang Gorge); 3,000–3,200 m. IV–V.

SECTION *Dryadifolia*

Primula dryadifolia Franch. Low evergreen, patch- or mat-forming, variable plant with prostrate, somewhat woody stems. Leaves leathery, deep shiny green above, margin inrolled, with white or yellow meal beneath. Flowers up to 5 on scapes to 10 cm, semi-nodding; corolla 18–25 m across, deep pink to rose-crimson with a darker, occasionally yellowish, eye. w & swSichuan, extreme seTibet, n & nwYunnan (nBhutan); stony

meadows, screes, moraines, cliff-ledges, amongst boulders, sometimes carpeting the ground, 3,000–5,500 m. V–VII. Subsp. *congestifolia* (Forrest) W. W. Sm. & Forrest* differs from the typical plant in its more carpeting habit, smaller leaves and solitary, up-facing flowers. seTibet, nwYunnan.

Primula jonardunii W. W. Sm.* Differs from the previous species in being altogether dwarfier with solitary flowers held low amongst the leaves on very short stems; corolla hairy within. seTibet; wet stony meadows, fringes of low shrubberies, 3,900–4,700 m. V–VII.

SUBGENUS ALEURITIA

SECTION *Petiolares*

1. Plants evergreen *P. gracilipes*
1. Plants deciduous, with resting buds 2
2. Corolla relatively large, limb 22 mm or more across, with star-shaped orange eye *P. sonchifolia*, *P. moupinensis*, *P. hoffmanniana*, *P. tanneri*, *P. tanneri* var. *porrecta*
2. Corolla relatively small, limb not more than 12 mm across *P. hookeri*

Primula gracilipes Craib Low tufted plants with rather dense, deep green rosettes; leaves obovate, mealy when young and with reddish stalks, margin with irregular sharp teeth. Scape absent; flowers up to 30, crowded; corolla with flat limb 22–30 mm across, pink with a yellow or greenish eye surrounded by a white zone. seTibet (c & eHimalaya); wet forests, mossy banks, 2,500–4,200 m. IV–VI.

Primula sonchifolia Franch. Plants with large egg-shaped resting buds, often several together. Leaves ovate-lanceolate, to 7 cm long, in a spreading rosette, mealy at first, greatly enlarging after flowering. Flowers up to 30, sometimes borne on a short scape amongst the leaves; corolla with a slightly cupped limb 22–30 mm across, pale to deep blue, lilac, pinkish or white, with a star-shaped orange eye that is often bordered in white, lobes with or without tiny fringing teeth. w & swSichuan, seTibet, w & nwYunnan (nMyanmar); forests, often on sloping ground or banks, damp meadows, grassy slopes in damp shady places, wet flushes, streamsides, gullies, 3,300–4,600 m. III–VI.

Primula moupinensis Franch. Differs from the previous species by the small resting buds and often stoloniferous habit. Flowers flesh-pink, rarely pale lilac-blue, lobes clearly notched at apex. sw, c & wSichuan, seTibet, nwYunnan (nMyanmar); similar habitats but rarely inside forests, 1,300–4,700 m. IV–VI. Plants from nwYunnan with greener leaves and more strictly rotate flowers with more deeply notched lobes, are sometimes separated as *P. hoffmanniana* W. W. Sm.

stalk; stem-leaves in 4–5 pairs, upper larger than lower. **Flowers** 1–3, terminal, stalkless; calyx green or purplish; corolla pale blue with deeper spots in throat, funnel-shaped, 32–45 mm long. nw & cYunnan; rocky and grassy places, pathsides, forest margins, 2,200–3,000 m. VII–X.

Gentiana duclouxii* Franch. Very similar to the previous species, but **rosette-leaves** narrower, spatulate to oblanceolate, not more than 12 mm wide, and **flowers** rose-pink with blue spots in throat. cYunnan; habitats similar to those of *G. melandriifolia*, 1,800–1,900 m. V–IX.

Gentiana arethusae* Burkil. Tufted perennial to 15 cm, with many ascending slender stems; basal rosettes poorly developed. **Stem-leaves** congested, usually in whorls of 6, linear-lanceolate, to 17 × 1.5 mm, long-pointed, lowermost withered by flowering time, uppermost forming a ruff around the base of the flowers. **Flowers** solitary, stalkless; calyx with linear, leaf-like lobes; corolla pale to mid-blue with deeper blue pencil stripes on outside, tubular-campanulate to broadly funnel-shaped (*var. delicatula* C. Marq.), 35–60 mm long, with tiny plicae between the 5–8 main lobes which are often speckled and bear a long tail-like tip 2–2.5 mm long. e, w & swSichuan, seTibet, nwYunnan; alpine meadows, low alpine shrubberies, stony slopes, forest margins, 2,700–4,800 m. VIII–X.

Gentiana hexaphylla* Maxim. ex Kusn. Very similar to the previous species, but **stem-leaves** and **calyx-lobes** spatulate at tip, pointed to blunt, to 3 mm wide; **corolla** blue with a yellowish or whitish base and dark blue streaks, tubular-campanulate, 35–50 mm long, usually 6–8-lobed. sGansu, seQinghai, n, nw & wSichuan, Shaanxi (Talbasihan); similar habitats, 2,700–4,400 m. VII–IX.

Gentiana tetraphylla* Maxim. ex Kusn. Readily distinguished from the previous two species by bearing leaves in whorls of 4(–5), the largest not more than 8 × 1.5 mm; corolla similar to *G. hexaphylla*, but tip of lobes less than 1 mm long, stamens attached to the middle of tube, not the base. n & wSichuan; similar habitats, 3,300–4,500 m. VII–IX.

Gentiana ternifolia* Franch. Distinguished from the other species in this group by having most leaves in whorls of 3 and by the 5-lobed **corolla** lacking tail-like tips to the lobes; corolla blue with deeper stripes, tubular-campanulate to funnel-shaped, 45–65 mm long. n & nwYunnan; wet meadows, 3,000–4,100 m. IV–V.

Gentiana caelestis* (C. Marq.) Harry Sm. (*syn. G. veitchiorum* Hemsl. *var. caelestis* C. Marq.) Tufted perennial to 8 cm tall, with ascending shoots, several of which are non-flowering. **Leaves** ovate to elliptic, uppermost the largest, surrounding base of calyx, to 18 × 4 mm. **Flowers** solitary, stalkless, usually 5-parted; calyx with linear-elliptic lobes; corolla pale blue, sometimes with darker streaks inside tube, tubular-

campanulate, 40–50 mm long, plicae half the length of main lobes. swSichuan, seTibet, nwYunnan; alpine meadows and other grassy places, shrubberies, roadsides, 2,600–4,500 m. VIII–X.

***Gentiana obconica* T. N. Ho** Readily distinguished from the previous species by its dark blue, more cone-shaped **flowers**, often with a paler base, black-striped outside. **Leaves** rather fleshy, increasing in size up the stem, largest ovate-elliptic, to 11 × 3 mm. seTibet [swTibet, c & eHimalaya]; alpine meadows, stony open scrub, 4,000–5,500 m. VIII–IX.

Gentiana veitchiorum* Hemsl. Tufted, patch-forming, stoloniferous perennial with ascending simple stems not more than 8 cm tall, with well-developed basal leaf-rosettes. **Leaves** opposite, shiny deep green, ovate to elliptic or lanceolate, to 15 × 5 mm, pointed, grooved, with a rough margin; rosette-leaves to 55 × 5 mm. **Flowers** solitary and stalkless; calyx tubular with diverging leaf-like lobes to 11 mm long; corolla intense blue with deeper streaks and tiny spots, yellowish or whitish towards base of tube, occasionally pale lavender or whitish overall, narrowly funnel-shaped, 40–60 mm long, plicae often fringed. sGansu, seQinghai, w, nw & swSichuan, seTibet, nwYunnan [swTibet]; dryish meadows, banks, open shrubberies, forest margins, 2,500–4,800 m. VII–X.

***Gentiana ornata* (Wall. ex G. Don) Griseb.** Similar to the previous species, but **stems** glabrous (not minutely hairy-papillose) and **flowers** campanulate, generally a paler blue with a yellowish white base and dark blue streaks and spots, 25–40 mm long. seTibet [swTibet, c & eHimalaya]; alpine meadows, banks, stony pastures, low alpine scrub, 3,300–5,000 m. VIII–XI.

***Gentiana nyalamensis* T. N. Ho** Similar to *G. veitchiorum*, but **stem-leaves** somewhat longer, to 20 mm, and **flowers** more campanulate, 25–47 mm long, paler blue with whitish or yellowish base, streaked dark blue outside and with some spotting inside. seTibet [swTibet, Bhutan]; grassy and rocky meadows, 3,500–4,700 m. VIII–IX.

- Gentiana duclouxii*; cYunnan (YMY)
- Gentiana arethusae*; Baimashan, nwYunnan (PC)
- Gentiana arethusae*; Tianchi, nwYunnan (EL)
- Gentiana hexaphylla*; north of Jigzhi, seQinghai (CGW)
- Gentiana hexaphylla*; Shenshan, Jigzhi, seQinghai (HJ)
- Gentiana ternifolia*; cult. (AGS)
- Gentiana caelestis*; nwYunnan (HJ)
- Gentiana obconica*; Serkhyen La, seTibet (HJ)
- Gentiana veitchiorum*; Napahai, Zhongdian, nwYunnan (JM)
- Gentiana veitchiorum*; Napahai, Zhongdian, nwYunnan (PC)
- Gentiana veitchiorum*; Litang to Batang, wSichuan (HJ)
- Gentiana ornata*; ne Nepal (CGW)
- Gentiana nyalamensis*; Kongbo Gyamda, seTibet (HJ)

