Flora of Nepal
नेपालका वनस्पति

Ranunculaceae (partial)

Ranunculaceae: Webedition 1 (2019)

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Genera in this account
Clematis (p.2)

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Appendices
1: Illustration plates
2: Format, abbreviations and categories used in Flora of Nepal

See printed volumes of the Flora of Nepal (www.rbge.org.uk/publications/floraofnepal) and the project website (www.floraofnepal.org) for further information on the Flora of Nepal and acknowledgement of the institutes and people involved with this international collaborative project.




Ranunculaceae

Alan Elliott

1. *Clematis* L., Linnaeus, Sp. Pl. 1:543 (1753).

Archiclematis Tamura; *Atragene* L.; *Naravelia* Adans.

Alan Elliott

Woody climbers or rarely subshrubs, perennial, evergreen or deciduous. Leaves rarely alternate, usually opposite or occasionally fascicled, rarely simple. Leaflets usually ternate or pinnate or bipinnate, rarely with terminal leaflets modified to tendrils. Petioles with bases unwinged, or occasionally winged and fused to form a ring around the stem. Inflorescences cymose, sometimes flowers solitary, pedunculate, 2-bracteate or ebracteate. Flowers bisexual, occasionally solitary and axillary, usually in a cymose inflorescence, sometimes solitary or in a fascicle on an axillary shortshoot. Caylx campanulate, cylindrical or open. Sepals 4, petaloid, spreading or erect or ascending. Petals absent. Stamens numerous, rarely outer stamens sterile modified into linear or petaloid staminodes; anthers introse. Carpels numerous, usually pubescent or villous, ovules solitary. Achenes compressed; persistent style usually much elongated, plumose.

About 300 species throughout the world. 21 species in Nepal.

Key to Species

1a	Stamens at least partly pubescent	2.
b	Stamens completely glabrous	11.
2a	Leaves alternate, simple	**1. *C. alternata***
b	Leaves opposite, ternate or pinnate	3.
3a	Flowers solitary, ebracteate, or in a fascicle on an axillary shortshoot	4.
b	Flowers in a cymose inflorescence or if solitary, bracteate, axillary or occasionally terminal	5.
4a	Sepals yellow with a purple-brown base, ovate to obovate, 24–28 × 13–16 mm	**8. *C. kilungensis***
b	Sepals red-brown, obtuse to elliptic, 17 × 15 mm	**12. *C. barbellata***
5a	Sepals spreading, ascending or open. Stamens wider at the base, narrowing above	6.
b	Sepals erect. Stamens strap shaped	7.
6a	Sepals emarginate, not reflexed	**10. *C. graveolens***
b	Sepals entire, acute or acuminate tip, reflexed	**11. *C. tibetana***
7a	Petiole bases fused to form a ring around the stem	8.
b	Petioles bases not fused to form ring around the stem	9.
8a	Inflorescences 1–9-flowered. Sepals brown	**5. *C. confusa***
b	Inflorescences 3–9-flowered. Sepals creamy yellow	**6. *C. connata***
9a	Stems, petioles, pedicels and sepals all with dense velutinous hairs	**7. *C. grewiiflora***
b	Stems, petioles, pedicels and sepals glabrescent, pubescent or canescent or villose	10.
10a	Leaflets 5–10 × 5–10 cm. Bracteoles narrowly ovate, usually 3-toothed	**4. *C. buchananiana***
b	Leaflets 2–5 × 1.6–3 cm. Bracteoles awl-shaped	**9. *C. rehderiana***
11a	Flowers solitary in leaf axils	12.
b	Flowers in axillary or terminal inflorescences	15.
12a	Sub-shrub. Leaflets 0.5 × 1.5 cm. Sepals 5–7	**21. *C. phlebantha***
b	Climbing shrub with twining petioles. Leaflets 2.5–7.5 × 2–4 cm. Sepals 4	13.

13a Pedicels bracteate. Sepals campanulate ..... **13. *C. napaulensis***
b Pedicels ebracteate. Sepals spreading, flat .....14.

14a Sepals oval-elliptic, 10–30 × 20–25 mm..... **14. *C. montana***
b Sepals oblong to narrowly ovate, 30–60 × 15–20 mm ..... **15. *C. tongluensis***

15a Connective not protruding beyond tip of anther..... **18. *C. puberula***
b Connective protruding beyond tip of anther.....16.

16a Staminodes present. Leaves pinnate, with apical leaflets modified into tendrils ..... **2. *C. zeylanica***
b Staminodes absent. Leaves simple, ternate, pinnate, bipinnate but lacking tendrils.....17.

17a Leaves simple. Flowers brown ..... **20. *C. smilacifolia***
b Leaves ternate, pinnate or bipinnate. Flowers white, creamy white or whitish yellow .....18.

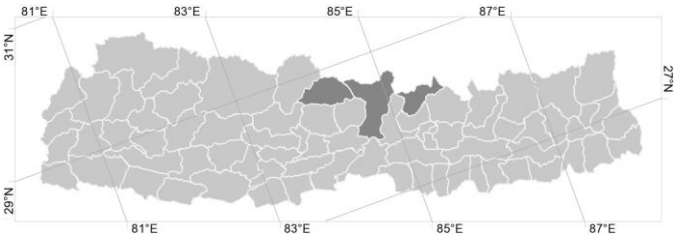
18a Inflorescence 3–7-flowered. Sepals narrowly ovate or oblong, 10–20 × 5–6 mm ..... **19. *C. zemuensis***
b Inflorescence 9- to many-flowered. Sepals 5–7 × 1.5–2 mm.....19.

19a Leaflet margins simple or denticulate, sparsely pubescent above, sparsely pilose below..... **16. *C. gouriana***
b Leaflet margins coarsely serrate, glabrous above, sparsely pilose below ..... **17. *C. grata***

1. *Clematis alternata* Kitam. & Tamura, Kitamura & Tamura, Acta Phytotax. Geobot. 15(5):129 (1954).
Archiclematis alternata (Kitam. & Tamura) Tamura

Climber. Stem ridged, pubescence reflexed or appressed, becoming canescent at the nodes. Leaves alternate, petiole to 5 cm, simple, 3- or 5-lobed, 5–10 × 4–7 cm, base cordate, apex acute to short acuminate, margin serrulate, sparsely pubescent above, pubescent to pilose below. Inflorescence axillary, flowers solitary or in a 3-flowered cyme, peduncle 5–8 cm. Bracts ca. 1 cm with 3 teeth towards apex. Flowers deep red, narrowly campanulate. Pedicel to 6 cm, pubescent, bracteoles awl-like, ca. 0.5 mm. Sepals 4, oblong to ovate, 25 × 5–10 mm, erect, tip recurved, apex acute, sparsely pubescent inside and out, margin dense tomentum. Stamens 10–30 mm, filaments 7–25 mm, flat, wider and with pilose hairs towards the base, anthers 2.5–3 mm, connective glabrous, acutely protruding or not protruding. Achenes not seen.

Distribution: Nepal and Tibetan Plateau.



Altitudinal range: 1500–3400 m.

Ecology: Grows through small shrubs and trees on forested rocky slopes.

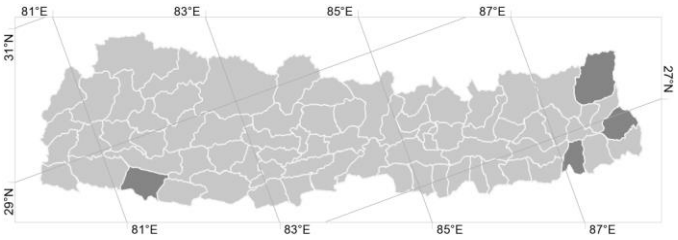
Flowering: July. Fruiting: August.

This species is known only from northern central Nepal and adjacent areas of the Tibetan Plateau.

2. *Clematis zeylanica* (L.) Poir., Poiret, Encycl. (Lamarck) Suppl.2:296 (1811).
Atragene zeylanica L.; *Naravelia pilulifera* var. *yunnanensis* Y.Fei; *N. zeylanica* (L.) DC.

Climber. Stem shallowly ribbed, glabrate to sparsely pubescent. Leaves pinnate, leaflets 5, petiole 5.5–7 cm, sparsely pubescent to sparsely pilose. Basal pair of leaflets leaf-like, ovate, 6–11 × 6–8 cm, base rounded to cuneate, apex shortly acuminate, margin entire, sparsely pilose above, denser on veins, glabrate below, sparsely pilose on veins, petiolule 1–2 cm, sparsely pilose, apical 3-leaflets modified into tendrils. Inflorescences axillary, to 39-flowered cyme, to 25 cm, pubescent to pilose, bracts leaf-like 1–4.5 × 0.4–3 cm, glabrate above, sparsely pilose below. Flowers yellowish white, open. Pedicel to 2 cm; bracteoles minute, deltoid, pilose. Sepals 4, ovate, 6–10 × 3–4 mm, spreading, tip not reflexed, apex acute, villous outside, margin tomentose, glabrous inside, margin tomentose. Staminodes to 10 mm × 0.8–1 mm, clavate, obtuse apex, glabrous; stamens narrowly ovate, 4.5–5 × 0.5–1 mm glabrous, flat; filaments to 1 mm; anthers to 3.5 mm, connective protruding to 0.5 mm, acute. Achenes fusiform, 6–10 × 0.8–1 mm, tortuose, distinct rim, glabrous; persistent style to 3cm, velutinous.

Distribution: Nepal, E Himalaya, Assam-Burma, S Asia and E Asia.



Altitudinal range: 150–2000 m.

Ecology: Subtropical forest; sal forest.

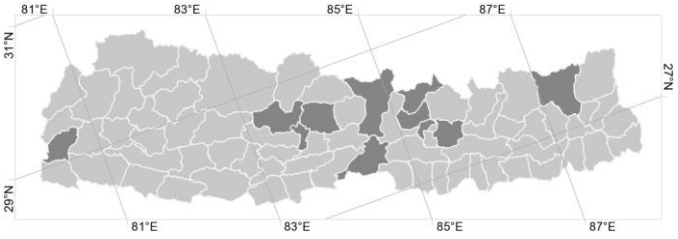
Flowering: October. Fruiting: November–January.

Clematis zeylanica is readily distinguished from all other Nepalese species in by its terminal leaflets which are modified into tendrils, though they may not be present on immature plants (Johnson 2001).

3. *Clematis acuminata* DC., de Candolle, Syst. Nat. 1:148 (1817).
Clematis acuminata var. *wallichii* Hook.f. & Thomson

Climber. Stem ridged, pubescent or sparsely pubescent. Leaves opposite, ternate, petiole to 5 cm. Leaflets ovate to narrowly ovate, 3- or 5-lobed, 5–12 × 1.5–3 cm, base rounded or cordate, apex acuminate, distinctly longer on terminal leaflet than lateral leaflets, margin serrulate at middle, otherwise entire, glabrescent below, sparsely pubescent above. Inflorescence axillary, a 1–3(–9)-flowered cyme, peduncle 1–4 cm. Bracts leaf-like, entire or 3-lobed, to 5 mm. Flowers creamy white, campanulate. Pedicel 2.5–3 cm, bracteoles ca. 2 mm, awl-shaped. Sepals 4, oblong to ovate, 10–15 × 0.3–0.4 mm, erect, tip recurved, apex acute, sparsely pubescent inside and outside. Stamens 5–8 mm, filaments 2.5–5.5 mm, linear, pilose, anthers to 2.5 mm, connective pilose, not protruding. Achenes ovate to almost round, 6 × 4 mm, flat with a distinct rim, pubescent, style persistent, to 2.5 cm, plumose.

Distribution: Nepal, W Himalaya, E Himalaya, Assam-Burma and E Asia.



Altitudinal range: 200–3000 m.

Ecology: Climbing on shrubs or small trees in forests, on hillsides and in river gullies.

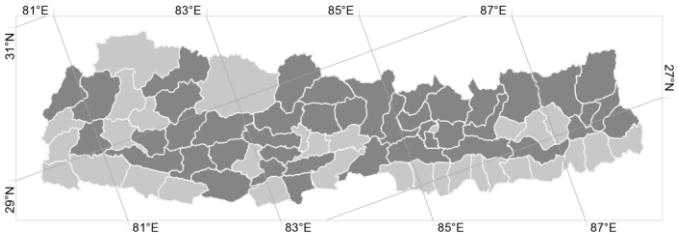
Flowering: October–December. Fruiting: January–May.

Clematis acuminata is found from NW India to western China, with several intraspecific taxa described. The only variety that occurs in Nepal is *C. acuminata* var. *acuminata*.

4. *Clematis buchananiana* DC., de Candolle, Syst. Nat. 1:140 (1817).
Clematis buchananiana var. *rugosa* Hook.f. & Thomson; *C. buchananiana* var. *tortuosa* Hook.f. & Thomson; *C. staintonii* W.T.Wang; *C. tortuosa* Wall. ex C.E.C.Fisch.; *C. vitifolia* Wall. *nom. nud.*

Climber. Stems ridged, subglabrous or pubescent to canescent. Leaves opposite, ternate or pinnate, petiole to 8 cm. Leaflets (3 or)5 or 7, ovate, entire or shallowly 3- or 5-lobed, 5–10 × 5–10 cm, base cordate to obtuse, apex cuspidate to obtuse, margin coarsely serrate, subglabrous to pubescent or pilose above and below. Inflorescence axillary, a 3–9-flowered cyme, peduncle 4.5–7 cm. Bracts leaf-like, entire, 3-lobed or ternate, sessile, irregularly toothed to serrulate, ca. 1 cm long, sparsely pubescent. Flowers yellow, campanulate. Pedicels 3–5 cm, bracteoles to 2 mm, narrowly ovate, usually 3-toothed. Sepals 4, ovate to obovate, 15–30 × 2–10 mm, erect, tip recurved, apex obtuse or acute or mucronate, sparsely pubescent to glabrescent inside, tomentose outside. Stamens to 10 mm, filaments 6–7 mm, narrow linear, densely pubescent at base otherwise pubescent or glabrous, anthers 3–4 mm, connective barely protruding. Achenes rhombic, 2–4 × 1–2 mm, densely pubescent, flattened with indistinct rim, persistent style to 4 cm, plumose.

Distribution: Nepal, W Himalaya, E Himalaya, Assam-Burma, S Asia, E Asia and SE Asia.



Altitudinal range: 900–3900 m.

Ecology: Climbing over shrubs and small trees in *Quercus* forest, *Abies* and *Larix* forest, and on degraded hillsides.

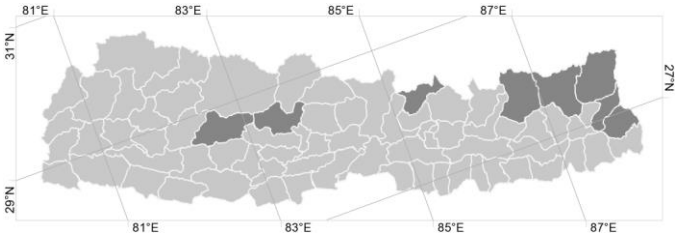
Flowering: July–October. Fruiting: November–February.

Clematis buchaniana is a rather variable species but the differences observed are not considered consistent enough to recognise distinct taxonomic entities within it.

5. *Clematis confusa* Grey-Wilson, Bot. Mag. (Kew Mag.) 8(4):161 (1991).
Clematis connata var. *confusa* (Grey-Wilson) W.T.Wang

Climber. Stems ridged, subglabrous. Leaves opposite, ternate or pinnate with 3 or 5 leaflets, petiole to 15 cm, subglabrous to very sparsely pubescent; petiole bases fused to form a ring around the stem to 6mm wide. Leaflets ovate, shallowly 3-lobed, terminal leaflet occasionally deeply 3-lobed, 4.5–11 × 2.4–9 cm, base cordate, apex acuminate, margin coarsely serrate, subglabrous to very sparsely pubescent above and below. Inflorescence axillary, cyme 1–5-flowered, peduncle to 6 cm. Bracts leaf-like, falcate, with 2 teeth towards base. Flowers brown, campanulate. Pedicels to 3.8 cm, ebracteolate. Sepals 4, ovate, 12–20 × 5–7 mm, erect, tip recurved, appressed golden pubescent outside, lanate inside, margin tomentose. Stamens to 15 mm, filaments lanate, to 11 mm, anthers 3.5–4 mm, connective lanate, apex acute, pubescent. Achenes not seen.

Distribution: Nepal and E Himalaya.



Altitudinal range: 2580–3600 m.

Ecology: Climbing on shrubs in open forests.

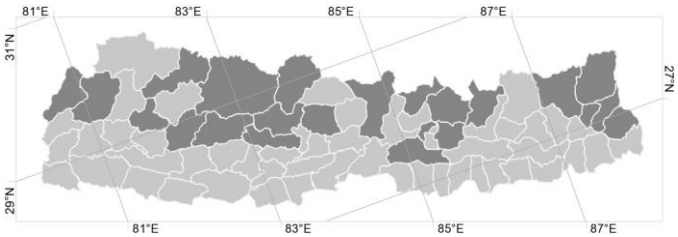
Flowering: September–October. Fruiting: October.

Clematis confusa is only known from a few localities in Nepal, Sikimm and western Bhutan. It differs from *C. connata* in having inflorescences with 1 to 5 brown flowers while those of *C. connata* have up to 9 pale yellow or white flowers. However, vegetatively the two species are very similar, so it is possible that *C. confusa* has been under-recorded because sterile specimens have been misidentified as *C. connata*.

6. *Clematis connata* DC., Prodr. (DC.) 1:4 (1824).
Clematis amplexicaulis Edgew.; *C. buchananiana* subsp. *connata* Kunze; *C. buchananiana* subsp. *connata* var. *latipes* Kuntze; *C. buchananiana* var. *trullifera* Franch.; *C. connata* var. *lanceolata* S.N.Biswas; *C. connata* var. *trullifera* W.T.Wang; *C. coriigera* H.Lév.; *C. gracilis* Edgew.; *C. nutans* var. *pseudoconnata* Kuntze; *C. velutina* Edgew.; *C. venosa* Royle

Climber. Stems ribbed, pubescent to pilose. Leaves pinnate, 5 or 7 leaflets, petiole to 8 cm, sparsely pubescent to pilose, petiole bases fused to form a ring around the stem to 6 mm wide. Leaflets ovate to narrowly elliptic, 2–14 × 1–10 cm, bases rounded to truncate, apex acute to short acuminate, margins coarsely serrate but irregular, sparsely pubescent above and below when young becoming glabrate when mature. Inflorescences axillary, cyme to 3–9-flowered, peduncle 10–20 cm, bracts leaf-like, entire to shallowly 3-lobed, obovate to ovate or falcate, toothed to irregularly toothed, pubescent. Flowers pale yellow to white, campaulate. Pedicel to 3–5 cm, golden pubescent to velutinus; bracteoles leaf-like, entire to shallowly 3-lobed,obovate to ovate or falcate, toothed to irregularly toothed, pubescent or glabrate. Sepals 4, narrowly ovate, 15–30 × 2–8 mm, erect, tip recurved, apex acute to obtuse, pubescent to velutinous outside, margin tomentose, pubescent inside but glabrous toward base. Stamens to 12 mm; filaments pubescent, villous at the middle, glabrescent at the apex, 7–12 mm; anthers 3–5 mm, connective glabrous, acutely protruding or not. Achenes obovate or elliptic almost orbicular, 3–4 × 2.5 mm, densely silky hairy; persistent style to 3.5 cm, plumose.

Distribution: Nepal, W Himalaya, E Himalaya, Tibetan Plateau and E Asia.



Altitudinal range: 1350–3400 m.

Ecology: Climbing through shrubs and on trees in *Abies*, *Rhododendron* and *Betula* forest.

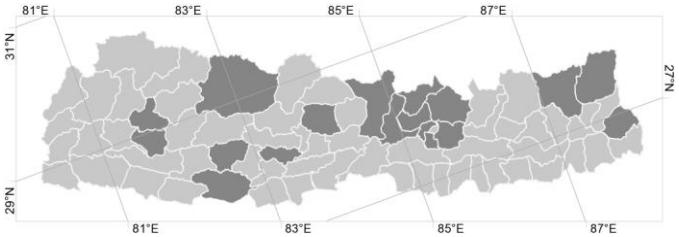
Flowering: July–October. Fruiting: September–October.

Clematis connata is widespread throughout the Himalaya. Sterile specimens can be confused with *C. confusa* because these species have winged petiole bases, but in flower *C. connata* is easily distinguished by its pale yellow to white flowers.

7. *Clematis grewiiflora* DC., de Candolle, Syst. Nat. 1:140 (1817).
Clematis buchananiana subsp. *grewiiflora* (DC.) Kuntze; *C. loasifolia* DC.

Climber. Stem ridged, covered in golden brown velvety hairs. Leaves opposite, ternate or pinnate, 5 leaflets. Leaflets ovate to broadly ovate, entire or 3- or 5-lobed, 1.5–10 × 0.5–10 cm, tip acute or acuminate, sometimes mucronate, margin irregularly serrate, golden brown or white velutinous to densely white or golden brown villous above, densely golden villous below. Inflorescence axillary, a (1–)3–7-flowered cyme, peduncle to 25 mm. Bracts ovate or linear, often 3-lobed, velutinous. Flowers yellow, campanulate. Pedicels to 5 cm, golden velutinous, bracteoles leaf-like, entire to shallowly 3-lobed, obovate to ovate or falcate, more or less irregularly serrate, velutinous. Sepals 4, 18–30 × 11 mm, oblong narrowly ovate, erect, tip reflexed, apex acute or truncate, golden brown velutinous inside and out. Stamens to 20 mm, filaments to 15 mm, linear with long silky hairs, shorter towards base, anthers to 5 mm, connective glabrous, acutely protruding or not. Achenes ovate or obovate, 5 × 3 mm, flattened, adpressed hairy, persistent style to 4 cm, plumose.

Distribution: Nepal, W Himalaya, E Himalaya and Tibetan Plateau.



Altitudinal range: 1100–2800 m.

Ecology: Climbing over rocks and shrubs in open places.

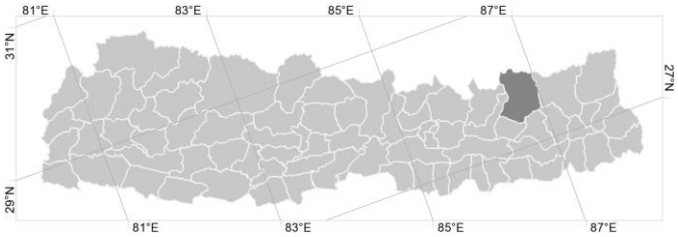
Flowering: November–December. Fruiting: December–March.

Clematis grewiiflora is readily distinguished from closely related species by the very dense white or golden tomentum on its stems, leaves and sepals. Although *C. loasiflora* has been distinguished from *C. grewiiflora* on the density and colour of the indumentum and the slight elevational difference between them, the distinction is not maintained here because of the wide variation in the indumentum of *C. grewiiflora* specimens.

8. *Clematis kilungensis* W.T.Wang & M.Y.Fang, Wang & Fang, Fl. Reipubl. Popularis Sin. 28:355 (1980).

Climber. Stem shallowly ridged, sparsely pubescent when immature, glabrous when mature. Leaves opposite, ternate, emerging from fascicles of small hairy leaf buds clustered at nodes. Leaflets ovate, 2.5–4.5 × 1.8–2.4 cm, base rounded, apex acute to shortly acuminate, margin coarsely serrate, subglabrous above, pilose on veins, sparsely pilose below, denser on veins. Inflorescence a fascicle 1-flowered on an axillary shortshoot. Bracts ternate, sessile, ca. 1 cm, 1- or 2-toothed, densely lanuginose. Flowers yellow with purple-brown base, campanulate. Pedicel 4.5–7 cm, ebracteolate. Sepals 4, ovate to obovate, 24–28 × 13–16 mm, ascending, tip reflexed, apex acute, sparsely pubescent above and below, margin densely villous. Stamens to 12 mm, filaments to 9 mm, densely lanuginose, anthers to 3 mm, connective subglabrous or lanuginose, acutely protruding. Achenes not seen.

Distribution: Nepal and Tibetan Plateau.



Altitudinal range: 3400–4000 m.

Ecology: In open places and *Abies spectabilis* and *Pinus wallichiana* forest.

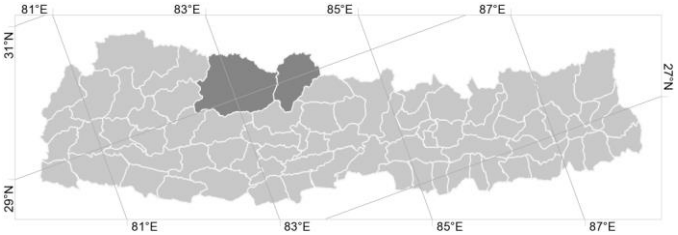
Flowering: May–June. Fruiting: Unknown.

Clematis kilungensis is found only in Solukhumbu District and Gyirong Xian to the north of Langtang on the Tibetan plateau, its type locality.

9. *Clematis rehderiana* Craib, Craib, Bull. Misc. Inform. Kew:150 (1914).
Clematis nutans var. *thyrsoidea* Rehder & E.H.Wilson; *C. veitchiana* Craib

Climber. Stems ribbed, sparsely pubescent denser at the nodes. Leaves pinnate 5 or 7 leaflets, petiole pubescent. Leaflets ovate, 3-lobed, 2–5 × 1.6–3 cm, apex acute, margin serrate, villose above and below. Inflorescence axillary, (5–)9–12-flowered cyme; peduncle to 13 cm; bracts ovate or rhombic, 3-lobed, 10–30 × 5–25 mm, villose. Flowers pale yellow, campanulate. Pedicel to 3 cm; bracteoles awl-shaped, villose. Sepals 4, narrowly ovate, 14–20 × 0.5 mm, erect, tip recurved, apex acute, pubescent to villose inside and outside, margin tomentose. Stamens to 15 mm villose; filaments linear with a widend base, villose; anthers 2–2.5 mm, connective protruding, acute. Achenes not seen.

Distribution: Nepal, Tibetan Plateau and E Asia.



Altitudinal range: 2800–3400 m.

Ecology: Climbing of small trees and shrubs along field margins and on south facing open slopes and remnant forest patches in *Caragana* scrub.

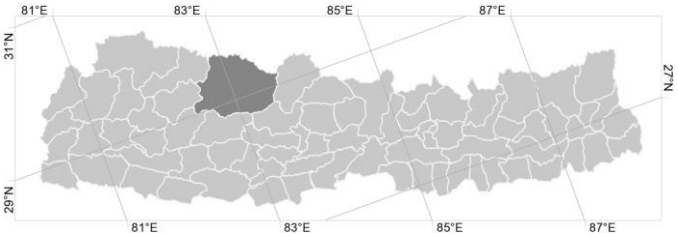
Flowering: July–September. Fruiting: September.

Although the names *Clematis rehderiana* and *C*. *roylei* both have been used for this species in Nepal the latter species is from NW India. The Nepalese population is disjunctly distributed, with the species' main distribution in China and this relationship should be further investigated to ascertain the status of this species in Nepal.

10. ***Clematis graveolens*** Lindl., Lindley, J. Hort. Soc. London 1:307 (1846).
Clematis orientalis subsp. *graveolens* (Lindl.) Kuntze; *C. orientalis* subsp. *graveolens* var. *aitchisoni* Kuntze; *C. parvifolia* Edgew.

Climber. Stem ridged, subglabrous, pubescent at the nodes. Leaves opposite, bipinnate, leaflets 5 or 7, petiole 3.5–5 cm, subglabrous to sparsely pubescent. Leaflets elliptic or narrowly ovate, 1–3.5 × 0.5–1.4 cm, 1–3 small lobes near base, base cuneate, apex acute, subglabrous above, subglabrous or sparsely pubescent below. Inflorescence axillary or occasionally terminal, flowers solitary or in a 3-flowered cymule, peduncle to 9 cm. Bracts leaf-like but smaller, entire or 3-lobed. Flowers yellow, rotate. Pedicels to 10 cm, ebracteolate. Sepals 4, elliptic, 11–15 × 5–10 mm, spreading or reflexed, tip reflexed or flat, apex truncate or emarginate, subglabrous outside with tomentose margin, pubescent to languinose inside with subglabrous margin. Stamens to 12 mm, entirely glabrous or sparsely pilose, filaments to 10 mm, anthers ca. 2 mm, connective protruding. Achenes ovate to obovate, 2–3 × 1–2 mm, flat, distinct rim, canescent, persistent style to 4 cm, plumose.

Distribution: Nepal and W Himalaya.



Altitudinal range: 1900–3200 m.

Ecology: Open places, riverbanks, trailing over rocks and shrubs.

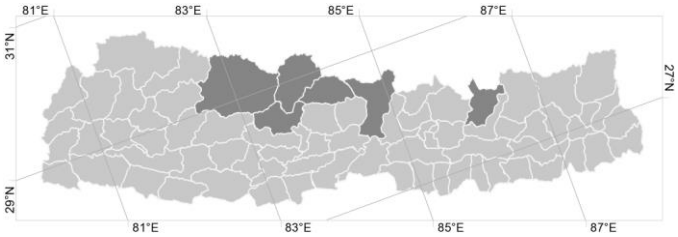
Flowering: August–September. Fruiting: September–December.

Clematis graveolens is easily identifiable among the Nepalese species because the apex of the sepals is emarginate, and it has very small leaflets. Indeed, foliage alone is enough to distinguish sterile specimens from all other Nepalese species.

11. ***Clematis tibetana*** Kuntze, Kuntze, Ver. Bot. Vereins. Prov. Brandenburg 26:172 (1885).
Clematis tibetana var. *debilis* Kuntze; *C. tibetana* var. *normalis* Kuntze

Climber. Stems ribbed, glabrate to sparsely pilose. Leaves ternate, pinnate or bipinnate, petiole 3–7 cm, sparsely pilose. Leaflets (3 or)5 or 7(or 13), ovate, 2–4-lobed, 2–4 × 1–2(–2.5) cm, base cuneate to rounded, apex acute, margin entire to laciniate, glabrous above and below. Inflorescence axillary, solitary or cymule, 1 or 3-flowered; peduncle 2–4 cm sparsely pilose; bracts ternate or simple with 3 lobes, sparsely pilose. Flowers yellow, sometimes mottled with brown, campanulate or openly campanualate. Pedicels 4–8 cm sparsely pilose; ebracteolate. Sepals 4, oblong, 15–20 × 4–7 mm, ascending, tip recurved or incurved, apex acute or acuminate, pilose to canescent outside, glabrate to sparsely pubescent inside, margin tomentose. Stamens to 6 mm, sparsely pilose; filaments to 4 mm; anthers 1.7–4 mm, connective not protruding. Achenes obovate, 3–3.5 × 1.5–2 mm; persistent style 3–4 cm, plumose.

Distribution: Nepal, W Himalaya, E Himalaya and Tibetan Plateau.

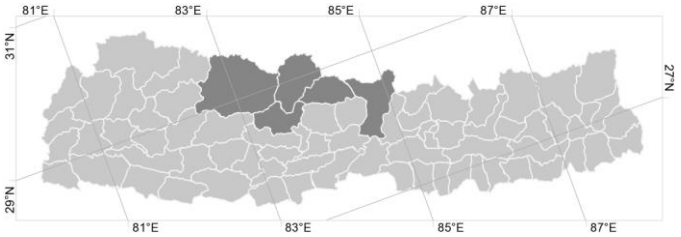


1a Sepals recurved at tip. Anthers 1.8–2.5 mm ..... subsp. ***brevipes***
b Sepals incurved at tip. Anthers 2.4–4 mm ..... subsp. ***vernayi***

1. *Clematis tibetana* subsp. *brevipes* (Tamura) K.Yonekura
Clematis chrysantha var. *paucidentata* Tamura; *C. orientalis* var. *uniflora* Tamura; *C. tibetana* subsp. *vernayi* var. *laciniifolia* Grey-Wilson

Sepals recurved at tip. Anthers 1.8–2.5 mm.

Distribution: Nepal.
Distribution: Endemic in Nepal.



Altitudinal range: 1700–4000 m.

Ecology: Generally open, dry habitats, often at degraded sites. Growing over rocks and shrubs on stream sides and riverbanks.

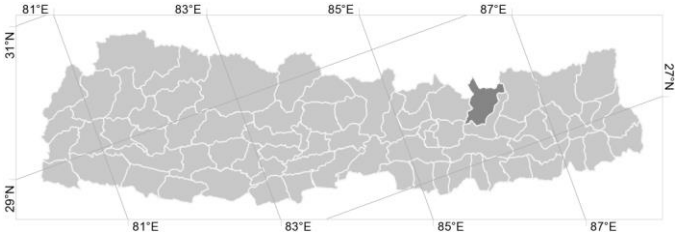
Flowering: June–September. Fruiting: July–September.

Yonekura (2008) considered *Clematis tibetana* subsp. *brevipes* to be intermediate between *C. tibetana* subsp. *tibetana* (distributed in NW India and adjacent Tibet) and *C. tibetana* subsp. *vernayi* (from the Tibetan Plateau around Lhasa. Although the three subspecies have distinct distributions, they are separated morphologically by only slight differences in anther size, and sepal shape and size.

2. *Clematis tibetana* subsp. *vernayi* (C.E.C.Fisch.) Grey-Wilson, Grey-Wilson, Kew Bull. 44:48 (1989).
Clematis vernayi C.E.C.Fisch., Fischer, Kew Bull.:95 (1937).; *Clematis tibetana* var. *vernayi* (C.E.C.Fisch.) W.T.Wang

Nepal. Tibetan Plateau.

Distribution: Nepal and Tibetan Plateau.



Altitudinal range: ca. 4000 m.

Ecology: Dry habitats growing over rocks on hillsides and river banks and walls around settlements.

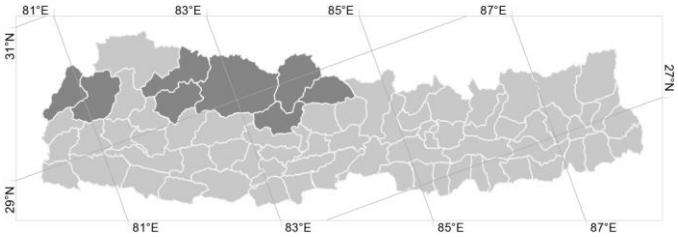
Flowering: July. Fruiting: July–August.

Hingston 84, collected at Rangshar is the only record of this subspecies from Nepal. Although it was collected on the 1924 Everest expedition which approached the mountain from Tibet, Hingston noted that they crossed the border into Nepal in the Rangshar valley.

12. *Clematis barbellata* Edgew., Edgeworth, Trans. Linn. Soc. London 20(1):25 (1846).
Clematis barbellata var. *obtusa* Kitam. & Tamura

Climber. Stem terete, slightly ridged. Leaves opposite, ternate, emerging from fascicles of small hairy leaf buds clustered at nodes, petiole to 8 cm. Leaflets ovate to narrowly ovate, more or less 3-lobed, terminal leaflet 2–5(–6.5) × 1–3 cm, lateral leaflets (1.3-)-2–4.5 × (0.9-)-1.2–2 cm, base rounded, apex acute or cupidate, margin coarsely serrate, subglabrous or sparsely pubescent to pubescent above and below. Inflorescence a fascicle of 1, 2 or occasionally 4 flowers on an axillary shortshoot, ebracteate. Flowers dull purple to brown, broadly campanulate. Pedicel to 10 cm, villous when young becoming sparsely villous when mature; bracteoles trident-like, emerging from fascicle. Sepals 4, obtuse to elliptic, 17 × 15 mm, ascending, tip recurved, apex acute to rounded, densely pubescent inside and out, margin densely tomentose. Stamens 15–20 mm, filaments 12–17 mm, flattened, pubescent; anthers 2–3 mm; connective densely pubscent at tip, not protruding. Achenes ovate or obovate, 3–4 × 2–3 mm, indistinct rim, glabrous to subglabrous, persistent style golden, to 4 cm, plumose.

Distribution: Nepal and W Himalaya.



Altitudinal range: 2500–3600 m.

Ecology: Climbing on shrubs and small trees in secondary, riverine and mixed forests.

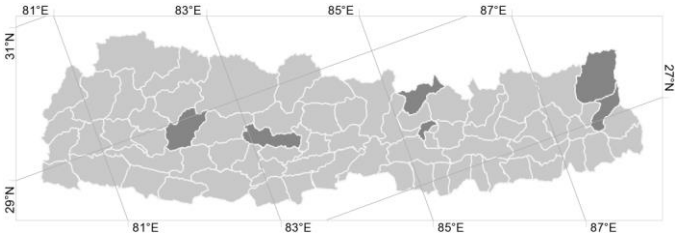
Flowering: May–June. Fruiting: July–September.

Two collections from Mustang were described as *Clematis barbellata* var. *obtusa* by Kitamura & Tamura (1955), which was distinguished from the typical variety by its externally villose, elliptic-ovate rather than acuminate sepals. However *C. barbellata* exhibits continuous variation in sepal length, shape and indumentum from east to west, so the variety is not recognised here.

13. *Clematis napaulensis* DC., de Candolle, Syst. Nat. 1:164 (1817).
Clematis cirrhosa L.

Climber. Stems ribbed, glabrate when immature becoming glabrous. Leaves ternate, opposite on immature stems verticillate from fascicles of leaf bud on mature stems, petiole 2–6 cm. Leaflets narrowly ovate, 2 or 3-lobed, 10 × 3.5 cm, base rounded or cuneate or cordate, apex acute or cuspidate, margin entire or with few teeth, glabrous or glabrate above and below. Inflorescence a fascicle of 1 to 10 flowers on an axillary shortshoot; ; peduncle to 1.5 cm; bracteoles 2 fused, cupulate. Flowers greenish creamy yellow, campanulate. Sepals 4, oblong, 1–2 × 0.5–1 cm, erect, tip recurved to strongly recurved, apex acute, glabrate inside, velutinous outside. Stamens 1–3 cm; filaments wider at base, glabrous; anthers 2.5–3 mm, connective not protruding.Achenes ovate to almost round, 6 × 4 mm, flat with distinct rim, pubescent, presistent style to 4.5 cm, plumose.

Distribution: Nepal, E Himalaya and E Asia.



Altitudinal range: 1500–3400 m.

Ecology: Growing through small shrubs and trees in **f**orests and open areas.

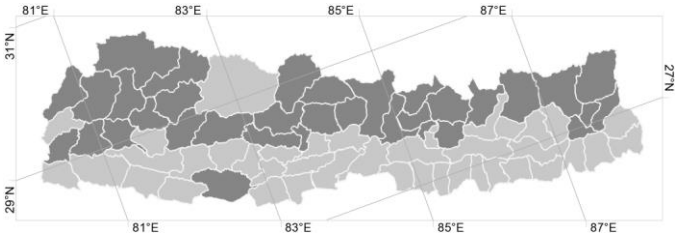
Flowering: October–February. Fruiting: February–March.

The fragmentary distribution record of *Clematis napaulensis* suggests that may be under recorded in Nepal. In cultivation it is reported to be deciduous in late summer (Johnson 2001), and if this also happens in the wild, coupled with its late flowering time, this may have led to this species being overlooked during fieldwork.

14. *Clematis montana* Buch.-Ham. ex DC., de Candolle, Syst. Nat. 1:164 (1817).
Anemone curta Wall. *nom. nud.*; *Clematis anemoniflora* D.Don *later homonym*; *C. montana* subsp. *normalis* Kuntze; *C. montana* subsp. *normalis* var. *anemoniflora* Kuntze; *C. montana* subsp. *normalis* var. *angustifolia* Kuntze; *C. montana* subsp. *normalis* var. *breviflora* Kuntze; *C. montana* subsp. *normalis* var. *brevipedunculata* Kuntze; *C. montana* subsp. *normalis* var. *edentata* Kuntze; *C. montana* subsp. *normalis* var. *flavida* Kuntze; *C. montana* subsp. *normalis* var. *incisa* Kuntze; *C. montana* subsp. *normalis* var. *nutantiflora* Kuntze; *C. montana* subsp. *normalis* var. *obtusisepala* Kuntze; *C. montana* subsp. *normalis* var. *pubescens* Kuntze; *C. montana* subsp. *normalis* var. *rubens* Kuntze; *C. montana* subsp. *normalis* var. *uniflora* Kuntze; *C. montana* subsp. *praecox* var. *herbacea* Kuntze; *C. montana* var. *brevifoliola* Kuntze; *C. montana* var. *grandiflora* Hook.; *C. punduana* Wall.; *C. tripartita* W.T.Wang; *C. wallichii* W.T.Wang

Climber. Stem ridged, sparsely pubescent when immature. Leaves opposite, ternate, in clusters. Leaflets variable, ovate to elliptic or narrowly ovate, 0.9–2.5 × 0.5–1.5 cm, base rounded or almost cuneate, acute or acuminate tip, simple or irregularly dentate margin, subglabrous above and below. Inflorescence a fascicle of 1, 2 or occasionally 4 flowers on an axillary shortshoot. Bracts leaf-like. Flowers white or occasionally slightly pink, rotate. Pedicels to 10 cm, ebracteolate. Sepals 4, oval to elliptic, 18–30 × 20–25 mm, spreading, tip reflexed, apex obtuse or cuspidate or occasionally emarginate, glabrous to subglabrous inside and outside. Stamens to 7.5 mm, glabrous, filaments linear, to 4 mm, anthers to 3.5 mm, connective not protruding. Achenes rounded to elliptic, 3–5 × 3–4 mm, glabrous, with distinct rim, persistent style to 4 cm, plumose.

Distribution: Nepal, W Himalaya, E Himalaya, Tibetan Plateau, Assam-Burma, E Asia and SW Asia.



Altitudinal range: 1200–3900 m.

Ecology: Climbing over trees and shrubs in forests and more open areas.

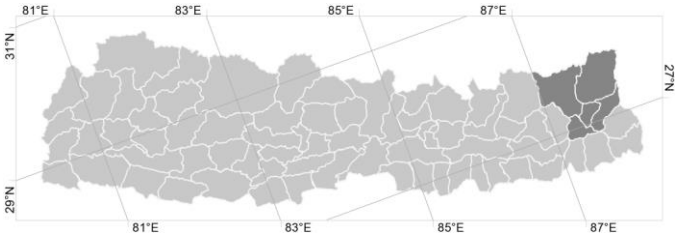
Flowering: April–August. Fruiting: June–Sepember.

Clematis montana is a widespread and variable species whose distribution stretches from Afghanistan to Taiwan. A full revision of all the variation across the range is needed to put the differences in morphology in Nepal in context. It was therefore decided to take the broad view and treat all the morphological diversity within a single species.

15. *Clematis tongluensis* (Brühl) Tamura
Clematis montana var. *tongluensis* Brühl, Brühl, Ann. Roy. Bot. Gard. [Calcutta] 5(2):74 (1896).; *Clematis montana* subsp. *sinchungica* Kuntze; *C. montana* var. *intermedia* Brühl; *C. tongluensis* (Brühl) Tamura var. *tongluensis*

Climber. Stems ribbed, glabrate to sparsely pubescent. Leaves ternate, petiole 3–7.5 cm, sparsely pubescent. Leaflets oblong-ovate or ovate-narrowly ovate, 2-3-lobed, 2.5–7.5 × 2–4 cm, base cuneate to rounded, apex acute to short acuminate, margin coarsely serrate, sparsely pubescent above and below but denser on veins. Inflorescence axillary, flowers solitary; peduncle sparesly pubescent; ebracteate. Flowers white, open. Sepals 4, oblong to narrowly ovate, 30–60 × 15–20 mm, spreading, tip slightly recurved, apex acute, sparsely pilose inside, glabrate outside, margin fimbrate. Stamens to 12 mm, glabrous; filaments 6–8 mm; anthers 3–4 mm, connective acutely protruding. Achenes 2–3 × 2–3mm, pubescent, persisent style to 3.5 cm, plumose.

Distribution: Nepal and E Himalaya.



Altitudinal range: 2500–3100 m.

Ecology: Climbing on shrubs in *Quercus semecarpifolia* and *Rhododendron* forest.

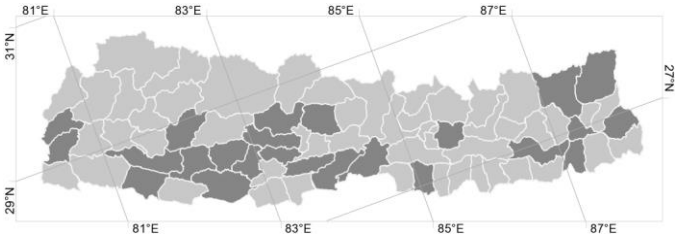
Flowering: July–August. Fruiting: August–October.

Although *Clematis tongluensis* is superficially very similar to *C. montana*, it is readily distinguished by its larger, strap like sepals. In addition, it flowers on short stems from the current year's growth and not from the fascicled leaf bundles at axils like *C*. *montana*.

16. *Clematis gouriana* Roxb. ex DC., de Candolle, Syst. Nat. 1:138 (1817).
Clematis gouriana Roxb. *nom. nud.*, Roxburgh, Hort. Bengal.:43 (1814).; *Clematis cana* Wall.; *C. martini* H.Lév.

Climber. Stems ridged, sparsely pubescent, almost canescent at nodes. Leaves opposite, pinnate, leaflets 5 (or 9), occasionally basal leaflets bipinnate, petiole flattened at base. Leaflets, broadly to narrowly ovate, 3–10 × 1–4.5 cm, base rounded or cordate, apex acute to mucronate, margin simple or denticulate, sparsely pubescent above and below, pubescent on veins. Inflorescence an axillary or terminal cyme, 9- to many-flowered, peduncle 10–15 cm. Bracts leaf-like, simple, 3-lobed or ternate. Flowers white to creamy white, rotate. Pedicels 7–17 mm, pubescent, bracteoles small, awl-shaped, ca. 2 mm, glabrescent or sparsely pubescent. Sepals 4(–5), oblong or obovate, 5–7 × 1.5–2 mm, spreading, tip becoming slightly reflexed, apex obtuse, subglabrous or pubescent inside, pubescent outside, tomentose margin. Stamens to 9 mm, filaments linear, 2–7 mm, glabrous, anthers 1–1.5 mm, glabrous, connective acutely protruding. Achenes oblong or narrowly ovate, 4 × 1 mm, pubescent, distinct narrow rim, persistent style to 6 cm, plumose.

Distribution: Nepal, W Himalaya, E Himalaya, Assam-Burma, S Asia, E Asia and SE Asia.



Altitudinal range: 140–2100 m.

Ecology: Climbing on shrubs in mixed *Bombax* forest; riverine forest with *Pinus roxburghii*, *Shorea robusta* and *Lagerstroemia parvifolia;* distrubed riverine forest with *Trewia nudiflora* and *Litsea salicifolia*.

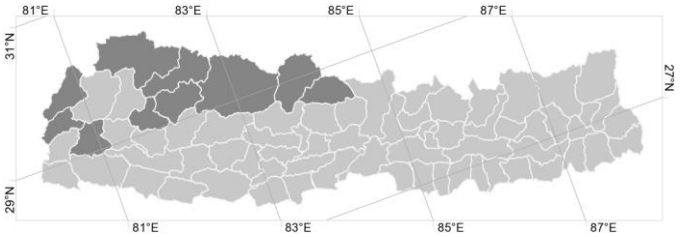
Flowering: October–November. Fruiting: November–January.

Clematis gouriana is a widespread species which occurs across much of southern Asia. As it is a species of sub-tropical to warm temperate forests it is probably under-collected in Nepal and is likely to be more widely distributed than currently recorded.

17. *Clematis grata* Wall., Wallich, Pl. Asiat. Rar. 1[4]:83 (1830).
Clematis cordata Royle; *C. vitalba* subsp. *grata* (Wall.) Kuntze

Climber. Stem ridged, pubescent, canescent at the nodes. Leaves opposite, pinnate, leaflets 5, petiole to 5cm. Leaflets ovate, 4.5–7 × 4.5–5 cm, base rounded, apex acute to shortly acuminate, margin coarsely serrate, subglabrous above, pubescent on veins, sparsely pilose below, denser on veins. Inflorescence axillary, cyme, 9- to many- flowered, peduncle to 13 cm. Bracts simple, 3-lobed or petiolate, ternate, with 1–2 teeth, ca. 1 cm, densely pubescent. Flowers white, rotate. Pedicels to 4 cm, densely pubescent to canescent; bracteoles linear or awl-like, to 1 mm, occasionally 1–2 toothed. Sepals 4, ovate to obovate, 5 × 2 mm, spreading, tip becoming reflexed, apex acute, glabrous inside, densely pubescent outside. Stamens to 5 mm, entirely glabrous, filaments linear, to 4 mm, anthers ca. 1 mm, connective acutely protruding. Achenes ovate to almost round, 2–2.5 × 2 mm, pubescent, with a distinct rim, persistent style to 3 cm.

Distribution: Nepal and W Himalaya.



Altitudinal range: 1300–3800 m.

Ecology: Climbing over shrubs in open forests and degraded hillsides.

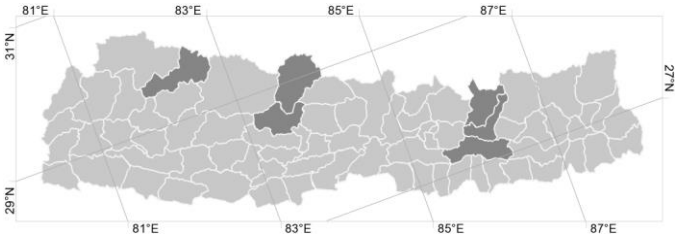
Flowering: June–September. Fruiting: July–December.

Clematis grata is a western Himalayan species which does not occur to the east of Manang. Varieties of *C. grata* which were described from China have been transferred to other species.

18. *Clematis puberula* Hook.f. & Thomson, Hooker & Thomson, Fl. Brit. India 1[1]:4 (1872).

Climber. Stems ribbed, pubescent, densest at nodes. Leaves pinnate, biternate or bipinnate with lower segment pairs ternate, petiole to 20 cm, flattened at base, pubescent. Leaflets ovate or narrowly ovate, entire or shallowly 2 or 3-lobed, 0.5–6.5 × 2.5(–3.5) cm, apex acute to cuspidate, base rounded, margin entire or with few teeth; petiolules to 3.5 cm, pubescent. Inflorescence axillary, cyme 3–15-flowered; peduncle 2–3 cm, glabrous to pubescent; bracts narrowly ovate to narrowly obovate, to 5 mm, apex acute, margin entire, pubescent above and below. Flowers pale yellow to creamy white, open. Pedicel, 1–2 cm sparsely pubescent to pubescent; bracteoles small, narrowly ovate to ovate, to 3 mm, pubescent. Sepals 4(or 5) oblong, spathulate, 8–15 × 2–3(–5) mm wide, spreading, apex acute, villose outside, margin tomentose, glabrate inside. Stamens 3–9.5 mm; filaments to 7 mm, narrowly linear, flat, glabrous; anthers c. 1mm, oblong, connective not protruding. Achenes not seen.

Distribution: Nepal, E Himalaya, Tibetan Plateau, Assam-Burma and E Asia.



Altitudinal range: 900–3000 m.

Ecology: Growing over shrubs and trees in open places**.**

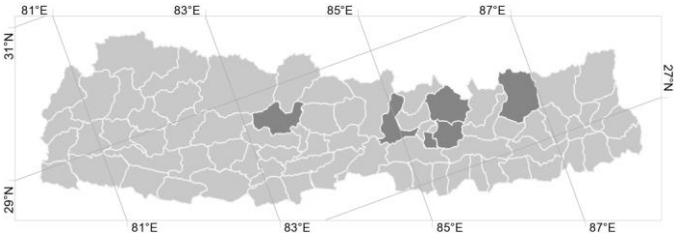
Flowering: August–December. Fruiting: September–December.

Four varieties are recognised in the *Flora of China* (Wang & Bartholomew 2001), but all the Nepalese specimens belong to *Clematis puberula* var. *puberula*. Its wide range suggests that the fragmented distribution in Nepal is due to under collection.

19. ***Clematis zemuensis*** W.W.Sm., Smith, Rec. Bot. Surv. India 4:166 (1911).

Climber. Stem ribbed, glabrate to pubescent.Leaves clusted around nodes, pinnate, bipinnate or biternate, 5 or 7 or 9 leaflets, petiole to 2cm, pubescent. Leaflets ovate or narrowly ovate, 2 or 3-lobed, 1–3 × 0.5–2 cm, base rounded or oblique, apex acute to cuspidate or shortly acuminate, margin irregularly serrate, pubescent to pilose above, densely pubescent to pilose below, denser on midvein, petiolule to 1.5 cm, pubescent. Inflorescence axillary, 3–7-flowered cyme, pubescent; peduncle to 10 cm, pubescent to canescent; bracts to 0.5 cm, pubescent to canescent. Flowers yellowish white, open. Pedicels 2–5 cm, pubescent; bracteoles to 5 mm long, linear margin toothed, pubescent. Sepals 4 (or 6), narrowly ovate or oblong, 10–20 × 5–6 mm, spreading, tip slightly reflexed, apex acute to cuspidate or mucronacte, pilose outside, margin tomentose, glabrous inside. Stamens 5–7 mm glabrous; filaments linear 2–3 mm, flat; anthers to 4 mm, connective acutely protruding. Achenes not seen.

Distribution: Nepal and E Himalaya.



Altitudinal range: 1600–3100 m.

Ecology: Growing over *Juniperus* and *Rhododendron* on open hillsides.

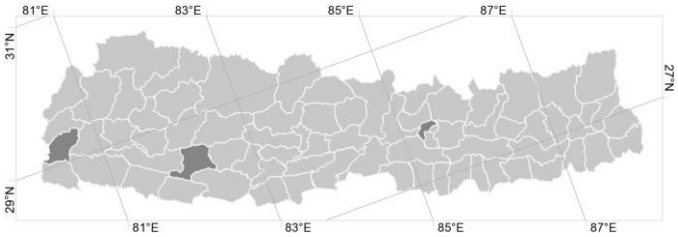
Flowering: July–August. Fruiting: Unknown.

Clematis zemuensis is generally cited as an eastern Himalayan species with a range limited to Sikkim and Bhutan (Grey-Wilson 2000, Johnson 2001) despite being identified as occurring in Nepal as early as the 1950s.

20. ***Clematis smilacifolia*** Wall., Wallich, Asiat. Res. 13:402 (1820).
Clematis inversa Griff.; *C. loureiroana* var. *subpeltata* Hand.-Mazz.; *C. subpeltata* Wall.

Climber. Stems glabrous to glabrate. Leaves simple, ovate to deltoid-ovate, 8–11.5 × 6–9 cm, leathery, , base cordate to subcordate, margin entire, apex obtuse to acute, glabrous above and below, petiole 6–12.5 cm, glabrate. Inflorescence axillary, a 3–7-flowered cyme; peduncle 5–11 cm, glabrate; bracts linear, 2.5–2.7 cm, glabrate. Flowers brown, open. Pedicels to 4 cm, glabrate; ebracteolate. Sepals 4, linear, 15–25 × 4–5 mm, reflexed, tip strongly recurved, apex obtuse, sparsely pubescent to sparsely villose inside and outside, margin tomentose. Stamen to 25 mm glabrous; filaments 15-20 mm; anthers 3–4 mm, connective distinctly protruding to 4mm. Achenes c. 1 × 0.5 cm, glabrate to sparsely villose, distinct rim; persitent style to 4cm plumose.

Distribution: Nepal, E Himalaya, Tibetan Plateau, Assam-Burma, S Asia, E Asia and SE Asia.



Altitudinal range: 700–1600 m.

Ecology: Open places.

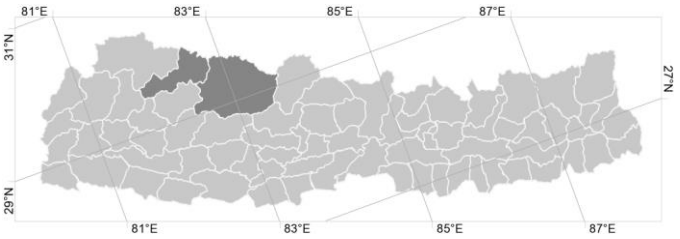
Flowering: November–December. Fruiting: December–March.

Clematis smilacifolia has a wide distribution from Uttar Pradesh in NW India to SE Asia. It is unclear whether it is uncommon in Nepal or merely under-collected. Although the species includes several varieties, all the collections seen from Nepal so far are *C. smilacifolia var. smilacifolia*.

21. ***Clematis phlebantha*** L.H.J.Williams, Williams, J. Roy. Hort. Soc. 93:345 (1968).
Clematis limprichtii auct. non Ulbr.

Sub-shrub. Stems, villous when immature, glabrous when mature. Leaves pinnate, (5 or)7(or 9) leaflets, petiole to 10 mm, villous. Leaflets obdeltoid, 0.5 × 1.5 cm, 3 or 5-lobed, silvery villous above, white lanate below. Inflorescence terminal or axillary, solitary, 1(or 3)-flowered. Flowers white, open. Pedicels to 8 cm, lanate; bracteoles absent or leaf-like, unequally 2-lobed or 3-lobed, villose. Sepals 5–7, obovate, 10–20 × 5–10 mm, spreading, apex cuspidate, villous outside thinning to the margins, glabrous inside. Stamens to 7 mm, glabrous; filaments 3–5 mm, linear; anthers 1.5–2 mm, connective not protruding. Achenes elliptic, 5 × 2.5 mm, villous, persistent style to 3cm, plumose.

Distribution: Nepal.
Distribution: Endemic to Nepal.



Altitudinal range: 2500–3700 m.

Ecology: Shrub on open slopes, rock crevices and cliffs.

Flowering: June–July. Fruiting: August–September.

Clematis phlebantha is endemic to Nepal and has so far only been found around Phoksumdo Tal in Dolpa District and on the Barbung Khola in Mugu District. It is easily distinguished from all other Nepalese species of *Clematis* as it is a sub-shrub rather than a climber, with small leaflets covered with silvery villous hairs above and dense white lanate hairs below.

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Flora of Nepal takes an innovative approach to Flora writing, with an underlying data base system managing the *Flora of Nepal Knowledge Base* from which the printed volumes and the 'online Flora' (www.floraofnepal.org) are generated. The Internet-accessible dataset augments the printed Flora by presenting all herbarium specimen data, detailed taxonomic information (such as full nomenclatural references and typification), distribution maps with point occurrences and images used when preparing the Flora. Much of this information is accumulated as a normal part of taxonomic working practices when undertaking a floristic revision, but it is usually lost to a wider audience as it is rarely included in the traditional printed Flora.

Flora of Nepal includes all native and fully naturalized vascular plants recorded within the political borders of Nepal, including brief references to agricultural and horticultural plants as appropriate. For pragmatic reasons the arrangement of families in the printed *Flora of Nepal* follows a modified Englerian sequence, closely following that of the *Flora of China* and, to a lesser extent, the *Flora of Bhutan*.[1, 2] In recent years the world view on the arrangement of families has radically changed following overwhelming phylogenetic evidence. The emergent family-level classification, now in its third iteration as APG III, is reasonably stable and widely accepted.[3] It has not been possible to alter the family sequence in *Flora of Nepal* printed volumes midway through the project, but as the data are stored separately in a database, the families can be reorganized electronically at a later date to reflect alternative classifications. Circumscription of families and genera, however, generally does follow a contemporary understanding of their relationships, except where group experts advise otherwise. Genera and species are treated in taxonomic order, or if there is disagreement then morphologically similar species are usually grouped together or occasionally listed alphabetically. Infraspecific taxa are always presented in alphabetical order. Intermediate ranks, such as subfamily, tribe, subgenus, section and series, are only used when they are useful in the treatment of large families or genera.

Information on nomenclature and classification is given for all accepted scientific names and synonyms pertaining to Nepal and nearby regions. Emphasis is given to those names listed in the primary checklists for Nepal: *Enumeration of the Flowering Plants of* Nepal,[4] *Annotated Checklist of the Flowering Plants of* Nepal,[5] and *Flowering Plants of Nepal (Phanerogams)*.[6] At the generic level, synonyms widely used in the Asian literature are included. Full bibliographic citation with authorship is given for all accepted names and their basionyms at the rank of genus and below. As far as possible, the bibliographic citations of all accepted names and their basionyms have been verified with the original literature. The basionym precedes all other synonyms, which are listed alphabetically. Misapplied names (misidentifications encountered in the literature) are not included in synonymy, but are discussed in the supporting information at the end of a taxon. Authors of plant names follow the standard forms given in *Authors of Plant Names* and its continuously updated online supplement (www.ipni.org).[7] Bibliographic references are given using the standard abbreviations in BPH-2 for serial publications (journals and periodicals) and in TL-2 (and its supplements) for books.[8, 9] In some cases books were published in several fascicles on different dates, sometimes over different years, but not indicated as such in the printed work. Date of publication is critical for establishing nomenclatural priority, and so it is important to be precise when citing names published in such works. The fascicle composition and publication dates of these often complex cases are clearly explained in TL-2, but the standard abbreviation does not differentiate between them. In these instances the TL-2 abbreviation has been amended with brackets to clearly indicate which fascicle is being referred to, for example Wallich, N., Pl. As. Rar. 2[8]. 1831. Books and periodicals not included in these two standard references have been abbreviated according to the recommendation in Appendix A of BPH-2.

Where a taxon has a widely recognized local name this is given in Devanagri script, followed by its transliteration into the Latin alphabet and the language of the vernacular name in parentheses ‘( )’. One local name is given in the printed Flora, whereas multiple alternative vernacular names in different languages may be included in the *Flora of Nepal Knowledge Base* and made available

online. Separate indexes to vernacular names in Devanagri, their Latin transliterations and scientific names are included at the end of each volume.

Descriptions are given for all taxa (family, genus, species, infraspecies and occasionally intermediate ranks) and wherever possible are based on primary observations and measurements made on specimens from Nepal. If no such material was available to authors, descriptions are taken from specimens from adjacent countries or secondary sources, and annotated as such. Most descriptions are about 150 words long, but exceptionally they are shorter or longer depending on the complexity of the taxon being described. For species with more than one infraspecific taxon, a full description is given for the species and short diagnoses for the lower taxa. Descriptions aim to be consistent and parallel between taxa of the same rank within a higher taxon. Authors were asked to standardize descriptive terms using the definitions given in *Plant Identification Terminology*.[10] If a single measurement is given it refers to length, and if width is also given it is in the format length × width. Ranges are separated by an en-dash (–) and discontinuous states by the word 'or'. Exceptional measurements are given in parentheses '( )'. Taxon statistics and short statements on worldwide distribution are provided for families and genera, with summary statistics of lower taxa represented in Nepal.

Identification keys are dichotomous and presented in a bracketed format, with all elements strictly parallel between the two leads of each couplet. Keys are artificial and not intended to reflect any taxonomic classification. There is usually a single key to genera within a family, combining flowering, fruiting and vegetative characters, but where this is unwieldy separate keys are given for flowering and fruiting material (e.g. Cruciferae, Rosaceae). Keys are also given for species within a genus and taxa within a species. Figures are provided to aid identification by illustrating the diagnostic characters of each family and genus, and for large genera variation in major morphological features is represented.

The geographic distribution within Nepal is indicated for each species and infraspecific taxon at the political district level by a shaded distribution map. The distribution maps are evidence-based, produced from the *Flora of Nepal Knowledge Base* using locality information taken from authenticated herbarium specimens and records of plants *in situ* made by credible observers. Ideally all specimens identified by authors should be geo-referenced and databased when they are preparing *Flora of Nepal* accounts, but where this is not possible a minimum of one specimen per district is required. Sometimes the distribution of a species is greater than the sum of the distribution maps of its infraspecific taxa. This is a result of some herbarium specimens only being identifiable to species level. Occasionally species are known only from poorly localised collections, especially those from the early 19th century. For example, Wallich often only gave 'Napalia' as the locality for many of his 1820–1821 collections. These specimens are most likely to have come from the Kathmandu Valley, known as the 'Nepal Valley' or just 'Nepal' at that time, but they might also have been collected during his inward and outward journeys from India via Hetauda, or by pilgrims going north to 'Gossainthan' (Gossainkund). It is therefore impossible to be sure of the correct district and in such cases this is noted in the supporting information and the map omitted. The *Flora of Nepal* website gives access to the underlying distribution and specimen information through an interactive dot map plotting all geo-referenced occurrence records and a listing of all material recorded.

Distribution for species and infraspecific taxa occurring outside Nepal is indicated by a list of geographical regions, with the resolution becoming coarser with increasing distance from Nepal. In order to utilise information contained within other published Floras these areas are defined according to political borders, with countries or provinces grouped to form regions that have some underlying biogeographic basis. For example, although the Tibetan Plateau extends into parts of Sichuan and Yunnan, we limit it to Xizang and Qinghai. *Flora of Nepal* takes no stance on any politically disputed border areas and is following the current international mapping convention of using the 'lines of control' to delineate its regions. The names used for the regions are intended to be descriptive and non-political. The regions are:

W Himalaya	India (Jammu & Kashmir, Himachal Pradesh, Uttarakhand), northern Pakistan (Khyber Pakhtunkhwa, previously known as North West Frontier Province).
E Himalaya	Sikkim, Darjeeling, Bhutan, NE India (Arunachal Pradesh).
Tibetan Plateau	China (Xizang, Qinghai).
Assam-Burma	Assam, Nagaland, Manipur, Myanmar.

S Asia	Eastern Pakistan (Punjab, Sind, Islamabad), Peninsular India, Sri Lanka, Bangladesh, Maldives.
E Asia	China (excluding Xizang, Xinjiang, Qinghai), Korea, Japan, Taiwan.
SE Asia	Thailand, Laos, Cambodia, Vietnam, Malaysia, Indonesia, Philippines, New Guinea.
N Asia	China (Xinjiang), Russia, Mongolia.
C Asia	Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, Kyrgyzstan.
SW Asia	Afghanistan, western Pakistan (Baluchistan, Federally Administered Tribal Areas), Iran, Middle East, Arabian Peninsula, Turkey, Azerbaijan, Armenia, Georgia.
Asia	collective term for all above areas of Asia.
Europe	includes Ukraine, Belarus, Baltic republics.
Africa	includes Madagascar.
N America	includes C America south to Panama.
S America	south of Panama.
Australasia	Australia, New Zealand, Pacific Islands.
Cosmopolitan	collective term for a generally worldwide distribution.

Altitudes (elevation above sea level) are based on herbarium specimen data or records from credible observers. They are given to the nearest 100 m rounded up or down, with exceptional altitudes given in parentheses '( )'. Likewise, flowering and fruiting times are based on specimens collected from Nepal, or on material from adjacent regions if these data are lacking and a note is provided to explain this. The short statement on the ecological preference of each species and infraspecific taxon is mostly taken from herbarium specimen data. Currently these often lack detail, a reflection of the shortcomings of poor-quality data recorded by the past collectors of herbarium material, but these will improve with more field studies.

Supplementary information is given at the end of a taxon account discussing taxonomic issues, highlighting spot characters useful for identification, noting similar species that could cause confusion, and detailing the misapplication of names. Summary information is provided for ethnobotanical and other uses, but this is not intended to be exhaustive and is derived from secondary sources, such as *Plants and People of Nepal* and *A Compendium of Medicinal Plants of* Nepal.[11, 12]

Abbreviations

Standard abbreviations for the International System of Units (SI) are used for measurements. Herbaria are cited using the standard abbreviation in *Index Herbariorum*.[13] Other abbreviations used in the text include:

C	central.
ca.	*circa* – about, approximately.
comb. nov.	*combinatio nova* – new combination of name and epithet.
dbh	diameter at breast height – measured on tree trunks at 1.3 m above the ground.
E	east, eastern.
et al.	*et alia* – and others.
fig.	figure.
N	north, northern.
nom. cons.	*nomen conservandum* – name officially conserved in ICBN.[14]
nom. illegit.	*nomen illegitimum* – illegitimate name, according to ICBN.[14]
nom. inval.	*nomen invalidum* – invalid name, according to ICBN.[14]
nom. nud.	*nomen nudum* – name lacking a description, or reference to an effectively published description, and so invalid according to ICBN.[14]
nom. rej.	*nomen rejiciendum* – name officially rejected in ICBN.[14]
nom. superfl.	*nomen superfluum* – name superfluous when published, and so illegitimate according to ICBN.[14]
pl.	plate.
q.v.	*quod vide* – which see.
S	south, southern.
s.l.	*sensu lato* – for a taxon treated in a broad sense.
s.s.	*sensu stricto* – for a taxon treated in a narrow sense.

sect.	section.
subfam.	subfamily.
subgen.	subgenus.
subsp.	subspecies.
subvar.	subvariety.
syn.	synonym
var.	variety.
W	west, western.
>	greater than
<	less than

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