

54. MICROTOENA Prain, Hooker's Icon. Pl. 19: t. 1872. 1889.

冠唇花属 *guan chun hua shu*

Herbs erect. Leaf blade margin dentate. Cymes dichotomous, axillary and/or in terminal panicles; bracts and bracteoles linear, early deciduous. Calyx campanulate, 10-veined; teeth 5, triangular to linear, subequal or posterior teeth much longer; fruiting calyx dilated or saccate-dilated, base rounded. Corolla yellow, rarely white, marked with purple-red or brown on upper lip; tube exerted, straight, base narrow, dilated above middle, annulus absent inside; upper lip straight, galeate, base obliquely cuneate or sometimes short clawed; lower lip spreading, 3-lobed, middle lobe ligulate to ovate, lateral lobes ovate or circular. Stamens 4, subequal, included in upper lip or slightly exerted; filaments complanate, usually glabrous; anther cells 2, apically divaricate, becoming confluent. Style as long as stamens, anterior lobe subulate, posterior lobe short to inconspicuous. Nutlets ovoid, glabrous, adaxially veined, abaxially rounded, constricted at base, areole small.

About 24 species: Asia, 20 species in China.

- 1a. Middle lobe of lower corolla lip narrow, ligulate; upper corolla lip always purple-red or brown.
 - 2a. Dichotomous cymes 2- or 3-flowered, axillary 2. *M. pauciflora*
 - 2b. Dichotomous cymes many flowered, axillary or in terminal panicles.
 - 3a. Leaf base broadly truncate-cuneate, decurrent into winged petiole 5. *M. insuavis*
 - 3b. Leaf base cordate.
 - 4a. Calyx ca. 3 mm; leaves triangular-ovate, rarely oblong-ovate; stem spreading villous, retrorsely minutely tomentose 1. *M. patchoulii*
 - 4b. Calyx 6.5 mm; leaves ovate-cordate; stem sparsely glandular villous, spreading hispid 3. *M. mollis*
- 1b. Middle lobe of lower lip of corolla circular to ovate or obovate; upper corolla lip yellow (yellow and purple-red in *M. delavayi*).
 - 5a. Cymes ± sessile, in terminal ± spicate panicles 4. *M. subspicata*
 - 5b. Cymes pedunculate and/or axillary, not in terminal ± spicate panicle.
 - 6a. Calyx teeth triangular-subulate, apex slightly curved or hooked.
 - 7a. Posterior tooth of calyx ca. 2× as long as other teeth 16. *M. urticifolia*
 - 7b. Calyx teeth subequal, or posterior tooth only slightly longer.
 - 8a. Panicle compact; calyx glabrous except for ciliolate margins 18. *M. prainiana*
 - 8b. Panicle lax; calyx glandular hairy.
 - 9a. Leaves subglabrous except sometimes for veins; calyx broadly campanulate, finely glandular puberulent outside 20. *M. megacalyx*
 - 9b. Leaves hairy; calyx campanulate.
 - 10a. Leaves ovate-cordate to triangular-ovate, adaxially finely strigose, abaxially densely appressed tawny hispidulous along veins 17. *M. moupinensis*
 - 10b. Leaves oblong-ovate, adaxially sparsely minutely hispid, abaxially spreading hispid along veins 19. *M. longisepala*
 - 6b. Calyx teeth triangular to linear, if triangular-subulate and apically slightly curved, then posterior tooth linear, long.
 - 11a. Posterior calyx tooth 2.5–3× as long as other teeth, anterior 4 teeth minute, narrowly triangular to triangular-subulate, equal.
 - 12a. Stems, petioles, and abaxial leaf surface densely hairy; cymes in short compact panicles; posterior calyx tooth linear, ca. 3× as long as other teeth; upper corolla lip not auriculate 13. *M. miyiensis*
 - 12b. Stem, petioles, and abaxial leaf surfaces sparsely hairy; cymes in elongated loose panicles; posterior calyx tooth lanceolate ca. 2.5× as long as other teeth; upper corolla lip basally ligulate-auriculate 12. *M. maireana*
 - 11b. Posterior calyx tooth up to 2× as long as anterior teeth.
 - 13a. Calyx teeth lanceolate to linear-lanceolate.
 - 14a. Cymes 1–3-flowered, axillary.
 - 15a. Cymes 2- or 3-flowered; peduncle 3–5 mm 11. *M. albescens*
 - 15b. Cymes 1-flowered; peduncle 6–15 mm 10. *M. affinis*
 - 14b. Cymes many flowered, in terminal panicles though sometimes also axillary.
 - 16a. Upper corolla lip often purple-red (yellow in var. *lutea*); terminal panicles ca. 2–3× 3–41 cm 6. *M. delavayi*
 - 16b. Corolla uniformly yellow; terminal panicles 4.5–13× ca. 3.5 cm 9. *M. stenocalyx*
 - 13b. Calyx teeth triangular-lanceolate, triangular, or oblong.
 - 17a. Calyx teeth only slightly unequal, posterior tooth longer, oblong, apex subacute 14. *M. robusta*
 - 17b. Calyx teeth obviously unequal, posterior tooth much longer, triangular-ovate to triangular-lanceolate.
 - 18a. Calyx teeth triangular-ovate; panicle of 3(–5)-flowered cymes, terminal on lateral branches, or a few cymes solitary, nearly apical 15. *M. vanchingshanensis*
 - 18b. Calyx teeth triangular-lanceolate; inflorescences not as above.
 - 19a. Cymes axillary and terminal, lax, branches 1-sided; at least some peduncles over 2 cm;

- bracts reduced, minute, or absent 7. *M. muliensis*
 19b. Cymes all dichotomous, axillary; peduncles (1–)1.6 cm; bracts lanceolate,
 2–3 mm 8. *M. omeiensis*

1. *Microtoena patchoulii* (C. B. Clarke ex J. D. Hooker) C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 44. 1965.

滇南冠唇花 dian nan guan chun hua

Plectranthus patchoulii C. B. Clarke ex J. D. Hooker, Fl. Brit. India 4: 624. 1885; *Microtoena cymosa* Prain; *M. insuavis* (Hance) Prain ex Dunn.

Herbs. Stems 1–2 m tall, spreading villous, retrorse tomentose, base semiwoody, much branched. Petiole of stem leaves 1.5–4 cm; leaf blade usually triangular-ovate, 2.5–9×2–7.5 cm, strigose, densely so abaxially on veins, base broadly cuneate to subcordate, margin coarsely mucronate-serrate, apex acute. Cymes ± 1-sided, axillary or in terminal panicles; floral leaves 0.8–2.1×0.3–1.5 cm, gradually reduced toward stem apex; bracts linear, ca. 2–3 mm. Calyx ca. 3×1.7 mm, densely glandular pubescent and hirtellous; teeth subequal, lanceolate, to as long as calyx; fruiting calyx dilated, conspicuously netted. Corolla ca. 1.5 cm, glabrous, mouth ca. 3 mm wide; upper lip purple or brown, ca. 7 mm, base truncate, apex emarginate; lower lip oblong, middle lobe narrowly ligulate, ca. 0.7×0.4 mm; lateral lobes ovate, ca. 2 mm wide. Nutlets black-brown, triquetrous, ovoid, ca. 1.6×1.3 mm, smooth. Fl. Oct–Feb, fr. Feb–Mar.

Forests, open grassy slopes; (600–)1100–2000 m. Yunnan [India, Myanmar].

An aromatic herb used medicinally for coughs, asthma, abdominal pain, and enteritis.

2. *Microtoena pauciflora* C. Y. Wu ex Hsuan, Acta Phytotax. Sin. 10: 44. 1965.

少花冠唇花 shao hua guan chun hua

Herbs slender, erect. Stems spreading pilose, retrorse minutely tomentose. Petiole 0.6–1.8 cm; leaf blade ovate to ovate-oblong, 2–3×1.1–2.5 cm, strigose, densely so abaxially, base rounded to broadly cuneate, margin denticulate, apex acute. Cymes axillary, dichotomous, 2- or 3-flowered; peduncle ca. 5 mm, glandular pubescent; bracts oblong to narrowly oblong, linear toward apex, ca. 5×3 mm. Calyx narrowly campanulate, ca. 4×1.5 mm, puberulent; teeth as long as to slightly longer than calyx tube, lanceolate, posterior teeth slightly longer. Corolla ca. 1.3 cm, throat ca. 6 mm wide, glabrous; upper lip purple-brown, ca. 6 mm, emarginate, arcuate at base; lower lip oblong, almost as long as upper lip; middle lobe narrowly ligulate, ca. 2×1 mm; lateral lobes ovate, shorter than and ca. 2× as wide as middle lobe. Anthers slightly exerted; ovary glabrous. Nutlets unknown. Fl. Dec.

• Villages; 1600 m. Yunnan.

Used medicinally.

This species may only be a variety of *Microtoena patchoulii*.

3. *Microtoena mollis* H. Léveillé, Repert. Spec. Nov. Regni Veg. 9: 222. 1911.

毛冠唇花 mao guan chun hua

Herbs. Stems sparsely glandular villous, spreading hispid. Petiole 2–4 cm; leaf blade ovate-cordate, 3.5–7×2.3–5.2 cm,

adaxially appressed ciliate, abaxially spreading minutely hispid on veins, base cordate, margin mucronate crenate-serrate, apex short acuminate. Cymes dichotomous, axillary, (2–)5–11-flowered; peduncle 1–1.8 cm, glandular puberulent; floral leaves similar to stem leaves, densely hairy; bracts 4–5 mm. Calyx ca. 6.5×3.5 mm, glandular puberulent; teeth lanceolate, 2.8–3.2 mm. Corolla yellow, tinged red, ca. 1.7 cm, throat to 4.5 mm wide; upper lip ca. 1 cm, emarginate, base subtruncate; lower lip ca. 8 mm, lateral lobes semicircular; middle lobe ligulate, reflexed, ca. 2×1 mm. Nutlets black-brown, ca. 1.5×1.2 mm, adaxially obtusely ribbed, glabrous. Fl. Feb–Mar, fr. Apr–May.

• Forests, forest margins; 1000 m. Guangxi, Guizhou, Yunnan.

4. *Microtoena subspicata* C. Y. Wu ex Hsuan, Acta Phytotax. Sin. 10: 45. 1965.

近穗状冠唇花 jin sui zhuang guan chun hua

Herbs robust. Stems ca. 43 cm tall, white pubescent. Petiole 2–6 cm; leaf blade ca. 10×1.5 cm, papery, adaxially sparsely white minutely hispid except for finely strigose veins, abaxially pubescent, base broadly truncate-cuneate, apex abruptly long acuminate; lateral veins 5-paired. Inflorescences terminal ± spicate panicles 2.5–11×ca. 2 cm, glandular hairy; cymes dichotomous, 2–5-flowered; peduncle to 2 mm; lower bracts leaflike, rhombic, ca. 1.5×1 cm; upper bracts ovate, to 6×3 mm. Calyx ca. 3 mm, sparsely pubescent; teeth triangular-ovate, ca. 1 mm, apex acute, posterior tooth somewhat longer; fruiting calyx to 7×3.5 mm. Corolla yellow, sparsely minutely hispid outside, ca. 1.6 cm, erect, throat to 4 mm wide; upper lip ca. 8 mm; lower lip somewhat shorter, middle lobe obovate; lateral lobes circular, wider than middle lobe. Nutlets triquetrous, subglobose, ca. 1.4×1.1 mm, glabrous. Fl. Oct, fr. Nov.

• Valleys, hillsides; 700–1000 m. Guangxi, Guizhou, Yunnan.

- 1a. Panicle ± spicate, 2.5–4.5 cm; leaves ovate, regularly crenate-serrate 4b. var. *intermedia*
 1b. Panicle ± spicate, 7–11 cm; leaves triangular-ovate, irregularly crenate-dentate 4a. var. *subspicata*

4a. *Microtoena subspicata* var. *subspicata*

近穗状冠唇花 jin sui zhuang guan chun hua

Leaf blade triangular-ovate, margin irregularly crenate-serrate. Panicle ± spicate, 7–11 cm.

• Valleys, hillsides; 900–1000 m. Guangxi, Guizhou.

4b. *Microtoena subspicata* var. *intermedia* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 46. 1965.

中间变种 zhong jian bian zhong

Leaf blade ovate, margin regularly crenate-serrate. Panicle ± spicate, 2.5–4.5 cm.

• Shady areas in valleys; 700 m. Yunnan.

5. *Microtoena insuavis* (Hance) Prain ex Briquet, Nat. Pflanzenfam., div. 4, 3a: 269. 1895.

冠唇花 *guan chun hua*

Gomphostemma insuave Hance, J. Bot. 22: 231. 1884; *Microtoena esquirolii* H. Lévillé.

Herbs or subshrubs. Stems 1–2 m tall, appressed pubescent. Petiole 3–8.5 cm; leaf blade ovate to broadly ovate, 6–10× 4.5–7.5 cm, papery, pubescent, densely so on veins, base broadly truncate-cuneate, decurrent into a winged petiole, margin serrate-crenate, apex acute. Cymes dichotomous with 1-sided branches, in open terminal panicles. Calyx ca. 2.5× 1.5 mm, puberulent; teeth triangular-lanceolate, ca. 1/2 as long as calyx, posterior tooth somewhat longer; fruiting calyx dilated. Corolla red, purple on upper lip, ca. 1.4 cm, throat to ca. 3 mm wide; upper lip ca. 7 mm, base truncate, apex emarginate; lower lip longer, middle lobe ligulate, lateral lobes triangular. Nutlets ca. 1.2× 1 mm in diam., slightly corrugate. Fl. Oct–Dec, fr. Dec–Jan.

Forests, forest margins; 700–1000 m. Guangdong, Guizhou, Yunnan [Indonesia, Vietnam].

6. *Microtoena delavayi* Prain, Bull. Soc. Bot. France 42: 424. 1895.

云南冠唇花 *yun nan guan chun hua*

Herbs perennial, rhizomatous. Stems 1–2 m, pubescent, sometimes also spreading minutely hispid. Petiole 2–10 cm; leaf blade cordate to oblong-ovate, 5–16.5(–18)× 3–14 cm, papery, finely strigose, abaxially sometimes also spreading minutely hispid on veins, base truncate-cuneate to cordate, margin mucronate crenate-serrate, apex short caudate-acuminate. Cymes dichotomous, many flowered, axillary or in terminal panicles ca. 2–3× 3–4 cm; peduncle 1.5–6 cm; bracts lanceolate to linear, 6–10 mm. Calyx ca. 6.5× 3 mm, puberulent, sparsely minutely hispid; teeth narrowly oblong to lanceolate, 1.5–2 mm, apex obtuse to acuminate, posterior tooth ca. 3 mm; fruiting calyx saccate-dilated, netted. Corolla yellow, sometimes tinged red or purple-red on upper lip, ca. 1.5–2.6 cm, throat to 5.5 mm wide; upper lip ca. 6.5 mm, back rounded, base subtruncate; lower lip as long as upper, lobes circular, middle lobe largest. Nutlets black-brown, flattened, triquetrous, globose, ca. 2 mm in diam. Fl. Aug, fr. Sep–Oct.

• Shady, wet areas in forests, forest margins, grassy slopes, thickets; 2000–2900 m. Sichuan, Yunnan.

- 1a. Calyx teeth narrowly oblong, apex obtuse 6d. var. *amblyodon*
- 1b. Calyx teeth narrowly lanceolate, apex acute or acuminate.
 - 2a. Corolla ca. 1.5 cm 6a. var. *delavayi*
 - 2b. Corolla to 2.6 cm.
 - 3a. Corolla yellow 6c. var. *lutea*
 - 3b. Corolla yellow with purple-red on upper lip, white on lower lip 6b. var. *grandiflora*

6a. *Microtoena delavayi* var. *delavayi*

云南冠唇花 *yun nan guan chun hua*

Microtoena delavayi Prain var. *vera* Prain; *M. tenuiflora* C. Y. Wu.

Leaf blade cordate to cordate-ovate. Calyx teeth narrowly lanceolate, apex acute or acuminate. Corolla yellow tinged red on upper lip, ca. 1.5 cm.

• Shady wet areas in forests, forest margins, grassy slopes, thickets; 2200–2600 m. Yunnan.

6b. *Microtoena delavayi* var. *grandiflora* Prain, Bull. Soc. Bot. France 42: 425. 1895.

大花变种 *da hua bian zhong*

Leaf blade cordate to oblong-ovate. Corolla ca. 2.6 cm, yellow, tinged purple-red on upper lip, white on lower lip.

• Sparse forests, forest margins; 2800 m. Sichuan, Yunnan.

6c. *Microtoena delavayi* var. *lutea* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 48. 1965.

黄花变种 *huang hua bian zhong*

Leaf blade cordate to oblong-ovate. Corolla ca. 2.6 cm, yellow.

• Shaded wet areas in evergreen broad-leaved forests; 2000 m. Yunnan.

6d. *Microtoena delavayi* var. *amblyodon* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 48. 1965.

钝齿变种 *dun chi bian zhong*

Cymes with short branches, ca. 3× 2.5 cm; peduncle 3–7 cm. Calyx teeth narrowly oblong, apex obtuse. Corolla yellowish.

• Shaded wet areas in broad-leaved forests; 2700–2900 m. Yunnan.

7. *Microtoena muliensis* C. Y. Wu ex Hsuan, Acta Phytotax. Sin. 10: 50. 1965.

木里冠唇花 *mu li guan chun hua*

Herbs robust. Stems glabrous. Petiole 3–6 cm, adaxially dusty pubescent in shallow groove; leaf blade oblong-ovate, 6.5–15× 4–8.5 cm, membranous, adaxially sparsely minutely hispid, abaxially glabrous, base subtruncate, attenuate-decurrent into narrowly winged petiole, margin coarsely mucronate-crenate, apex caudate-acuminate; lateral veins 4–6-paired. Panicles axillary and terminal, 5–13.5× 2.5–5.5 cm, with lax, dichotomous, 3–15-flowered cymes, branches 1-sided; bracts absent or minute. Calyx ca. 4× 2.5 mm, dusty glandular outside; teeth triangular-lanceolate, 1.1–1.7 mm, posterior tooth ca. 2 mm. Corolla yellow, ca. 2.5 cm, sparsely puberulent; tube ca. 2 mm wide at base, dilated to 7 mm at throat; upper lip ca. 9 mm, base with 2 triangular teeth; lower lip subcircular, reflexed, middle lobe circular, lateral lobes ovate-triangular. Filaments black-brown at apex. Nutlets black-brown, triquetrous, ovoid, ca. 1.6× 1 mm, smooth, glabrous. Fl. Sep.

• Broad-leaved forests on sunny slopes; 2700 m. Sichuan.

8. *Microtoena omeiensis* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 51. 1965.

峨眉冠唇花 *e mei guan chun hua*

Herbs robust. Stems 1–2 m tall, sparsely villous or puberulent. Petiole to 13 cm; leaf blade oblong-ovate to triangular-ovate, 4–13× 3–10 cm, membranous, adaxially sparsely minutely hispid, abaxially sparsely fine strigose on veins, rarely glabrous, base truncate-cuneate to cordate, margin coarsely mucronate-crenate, apex caudate-acuminate. Cymes dichotomous, axillary, ca. 3 cm; peduncle to 1.6 cm,

slender, sparsely villous or puberulent; bracts lanceolate, 2–3 mm. Calyx ca. 5×3 mm, dusty glandular, finely bristly on veins and margins; teeth triangular-lanceolate, anterior teeth 4, 0.6–1 mm, posterior tooth ca. 2× as long; fruiting calyx saccate-dilated, conspicuously netted. Corolla ca. 3 cm, puberulent outside; throat ca. 7 mm wide; upper lip ca. 8 mm, base truncate, sides dentate; lower lip ca. 1 cm, middle lobe oblong, ca. 2.5 mm. Nutlets dark brown, lenticular-obovoid, ca. 1.9×1.5 mm, glabrous. Fl. Aug, fr. Aug-Sep.

- Open grasslands; 1500–4000 m. Sichuan.

Used medicinally for colds and rheumatism.

9. *Microtoena stenocalyx* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 49. 1965.

峡萼冠唇花 xia e guan chun hua

Herbs perennial, rhizomatous. Stems 1–2 m, base semiwoody, tawny pilose, glabrescent. Petiole 1–3.7 cm; leaf blade ovate-cordate to triangular-ovate, 4.5–8.5×2.4–5 cm, densely tawny setose, base cordate to truncate-cuneate, margin coarsely dentate, apex long acuminate. Panicles compact, terminal, 4.5–13× ca. 3.5 cm; cymes 3–7-flowered; lower peduncles 1–3.5 cm; bracts lanceolate, ca. 1.5×3–4.5 mm; bracteoles to 1.2 cm. Calyx ca. 12×3 mm, glandular puberulent, tawny setose on veins and teeth; teeth linear-lanceolate, subulate-acuminate, straight, posterior tooth ca. 6 mm, others ca. 4.5 mm; fruiting calyx transversely veined. Corolla yellow-white, ca. 2.5 cm, subglabrous, puberulent on back, throat to 5.5 mm wide; upper lip ca. 7 mm, with a lateral basal tooth; lower lip subequal to upper, oblong; middle lobe subcircular, ca. 3 mm in diam.; lateral lobes smaller, triangular-ovate. Nutlets black-brown, triquetrous, obovoid, base acute, ca. 1.8×1.2 mm. Fl. Jul, fr. Sep.

- Forests, thickets; 2000–2400 m. Yunnan.

10. *Microtoena affinis* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 48. 1965.

相近冠唇花 xiang jin guan chun hua

Stems woody, short glandular hairy. Leaves on new shoots; petiole 1.7–2.2 cm; leaf blade ovate to ovate-orbicular, 1.1–2.5×1–2.6 cm, papery, puberulent, base rounded or truncate-cuneate, remotely crenate, apex acuminate or obtuse. Cymes axillary, 1-flowered; floral leaves reduced; peduncle 0.6–1.5 cm, slender, glandular puberulent; bracts 4–6× ca. 1 mm. Calyx ca. 8.5×2 mm, glandular puberulent outside, glabrous inside; teeth linear-lanceolate, posterior tooth ca. 5 mm, other teeth ca. 2.5 mm. Corolla purple, ca. 1.7 cm, throat to 4 mm wide; upper lip ca. 5.5 mm; lower lip as long, middle lobe circular. Nutlets not seen. Fl. Nov.

- Evergreen broad-leaved forests; 2800 m. Yunnan.

This species may be a form of *Microtoena delavayi*.

11. *Microtoena albescens* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 49. 1965.

白花冠唇花 bai hua guan chun hua

Herbs. Stems ca. 60 cm tall, sparsely bristly pubescent. Petiole 1–5 cm, slender; leaf blade broadly ovate, 5.2–5.7× ca. 4.2 cm on main stem, 2.1–2.4×1.4–1.7 cm on lateral branches, sparsely hirsute, base truncate to rounded, margin mucronate

crenate-serrate, apex short acuminate to acute. Cymes axillary, 2- or 3-flowered, secund; peduncle 3–5 mm, pilose; bracts ca. 2 mm. Calyx ca. 5×2.5 mm, glandular puberulent, finely floccose-pilose at base, margins ciliate; teeth lanceolate, 1.5–1.7 mm, posterior tooth ca. 3 mm; fruiting calyx tubular, 8.5–10×4.5 mm, base rounded, distinctly netted; teeth 3–3.5 mm, posterior tooth to 6 mm. Corolla white, ca. 2.3 cm; tube ca. 1.5 mm wide at base, dilated to 6 mm at throat; upper lip ca. 5.5 mm; lower lip subequal to upper, middle lobe circular, 2 mm in diam. Nutlets unknown. Fl. Oct.

- Forests. Guizhou.

12. *Microtoena maireana* Handel-Mazzetti, Symb. Sin. 7: 927. 1936.

石山冠唇花 shi shan guan chun hua

Herbs. Stems much branched, glabrous except for floccose-pilose grooves. Petiole 1–2.5 cm; leaf blade broadly ovate-triangular, 2–3×2–3 cm, adaxially sparsely strigose, abaxially subglabrous or very sparsely spreading pilose on very elevated veins, base truncate to broadly cuneate, margin narrowly serrate, apex acuminate. Panicles terminal, lax, spreading glandular pilose, cymes 3–6-flowered, in axils of gradually reduced leaves; peduncle 5–10 mm; bracts lanceolate, ± shorter than calyx. Calyx broadly tubular, 5–7 mm; teeth acuminate, posterior tooth lanceolate, ca. 2.5× as long as other teeth, anterior teeth narrowly triangular; fruiting calyx dilated, to 1 cm, subglabrous. Corolla yellow, 2–2.5 cm, pilose; upper lip semicircular, 5–8 mm, ligulate, base with curved auricles 1–2 mm; lower lip spreading, subequal upper, undulate; middle lobe longer, ovate; lateral lobes narrowly elliptic. Nutlets black-brown, triquetrous, obovoid, somewhat corrugate.

- Rocky mountains; 2600 m. Yunnan.

13. *Microtoena miyiensis* C. Y. Wu & H. W. Li, Fl. Reipubl. Popularis. Sin. 66: 579. 1977.

米易冠唇花 mi yi guan chun hua

Herbs perennial. Stems ca. 45 cm, base prostrate, ± flexuous, stramineous, densely white pilose and strigose; axillary branchlets 1–3 cm, sterile. Petiole slender, 2–5.5 cm; leaf blade rhombic-ovate, 3.5–6×2.5–4.5 cm, papery, adaxially sparsely appressed bristly, strigose on veins, abaxially densely white bristly, with scattered glands, base cuneate, margin coarsely serrate, apex acuminate. Cymes 2- or 3-flowered, short pedunculate, in compact ovoid panicles 2.5–3 cm; floral leaves short petiolate, ca. 8×5 mm; bracts and bracteoles ca. 4×1 mm. Calyx ca. 5×1.5 mm, densely pilose, 5-veined; teeth triangular-subulate, ca. 1 mm, equal, slightly curved, posterior tooth ca. 3× as long as other teeth. Corolla white or yellow-green, ca. 2.2 cm, slightly puberulent, glandular; tube slender, ca. 1.4 cm, throat abruptly dilated; upper lip semicircular, ca. 8 mm, apex emarginate; lower lip ca. 8 mm, middle lobe obovate, 2.5×2 mm; lateral lobes subcircular, ca. 2 mm wide. Nutlets unknown. Fl. Aug.

- Shady areas in forests; 2500 m. Sichuan.

14. *Microtoena robusta* Hemsley, J. Linn. Soc., Bot. 26: 307. 1890.

粗壮冠唇花 cu zhuang guan chun hua

Herbs aromatic, ± pilose. Stems robust, 1.2–1.8 m, hollow. Petiole to as long as blade; leaf blade broadly cordate-ovate to circular-cordate, to 15× 10 cm, abaxially mostly sparsely puberulent, base cordate, margin coarsely crenate, apex acuminate. Panicles terminal and axillary, to 15 cm; cymes short pedunculate. Calyx pilose, dilated in fruit, rigid, conspicuously netted; teeth oblong, subequal, apex subacute, posterior tooth somewhat larger, with transverse veins. Corolla reddish, ca. 2.5 cm, pubescent, straight; tube narrow; upper lip with 2 acute lobes; lower lip lobes circular, lateral ones much shorter. Stamens bearded at middle. Nutlets black-brown, flattened, obovoid, glabrous.

- Hubei, Sichuan.

15. *Microtoena vanchingshanensis* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 52. 1965.

梵净山冠唇花 fan jing shan guan chun hua

Herbs. Stems ca. 60 cm tall, base prostrate, yellowish-brown when dry, pilose pubescent, subglabrous at base. Petiole 2–5.2 cm; leaf blade ovate-cordate, 4.5–7.5× 3–4.5 cm, much reduced on lateral branches, membranous, brown, finely bristly, base cordate, margin mucronate-crenate, apex short acuminate. Cymes 3(–5)-flowered, 5–7 in terminal panicles, or axillary; peduncle 3–6 mm; lower floral leaf blades ovate-cordate, 11–13× 7–8 mm; bracts 2.5–4 mm. Calyx ca. 8× 3.5 mm, pilose outside; teeth triangular-ovate, posterior teeth ca. 3 mm, middle tooth largest, anterior teeth ca. 1.5 mm; fruiting calyx with very conspicuous transverse veins. Corolla white, ca. 2.3 cm, glabrous, throat ca. 6 mm wide; upper lip ca. 7 mm; lower lip longer, elliptic, lateral lobes obtuse at apex; middle lobe obovate, ca. 2× 1.5 mm. Nutlets unknown. Fl. Aug.

- Streamsides; 1700 m. Guizhou.

16. *Microtoena urticifolia* Hemsley, J. Linn. Soc., Bot. 26: 308. 1890.

麻叶冠唇花 ma ye guan chun hua

Herbs robust, sparsely fine pilose, minutely hispid, or puberulent. Stems 1–1.2 m. Petiole slender, 5–12.5 cm; leaf blade ovate to cordate-ovate, 7.5–12.5 cm, membranous, sparsely finely strigose, spreading villous on veins especially abaxially, base cordate to cuneate, margin coarsely serrate, apex long acuminate. Cymes lax, in terminal panicles or dichotomous and axillary, pedunculate. Flowers aromatic, short pedicellate. Calyx minutely hispid; teeth subulate to lanceolate, posterior tooth to 2× as long as others. Corolla 2.5–3.1 cm, puberulent; tube nearly straight, abruptly dilated at apex; upper lip acute lobed in front below middle; middle lobe of lower lip longer than lateral lobes. Filaments bearded below middle. Nutlets brown, flattened, ovoid or ellipsoid, shiny.

- Wet areas on sunny hillsides; 900 m. Hubei, Hunan.

- 1a. Cymes in loose, terminal panicles, long pedunculate; calyx teeth subulate 16a. var. *urticifolia*
- 1b. Cymes dichotomous, axillary, short pedunculate; calyx teeth lanceolate 16b. var. *brevipedunculata*

16a. *Microtoena urticifolia* var. *urticifolia*

麻叶冠唇花 ma ye guan chun hua

Cymes in loose, terminal panicles, long pedunculate. Calyx teeth subulate, posterior tooth ca. 2× as long as other teeth (specimens not seen).

- Wet areas on sunny slopes; 900 m. Hubei.

16b. *Microtoena urticifolia* var. *brevipedunculata* C. Y. Wu & Hsuan, Acta Phytotax. Sin. 10: 54. 1965.

短梗变种 duan geng bian zhong

Cymes dichotomous, axillary, short pedunculate; peduncles 5–10 mm. Calyx teeth lanceolate, posterior tooth longer than other teeth.

- Hillsides. Hunan.

17. *Microtoena moupinensis* (Franchet) Prain, Bull. Soc. Bot. France 42: 426. 1895.

宝兴冠唇花 bao xing guan chun hua

Clerodendron moupinense Franchet, Nouv. Arch. Mus. Hist. Nat., ser. 2, 10: 68. 1887.

Herbs perennial. Stems 60–100 cm, base spreading hispid, apex sometimes short glandular hairy. Petiole 0.8–5.8 cm; leaf blade ovate-cordate to triangular-ovate, 2.5–7.2× 2–6 cm, much reduced on branches, adaxially brownish finely strigose, abaxially densely tawny, appressed hispidulous on veins, base cordate to truncate-cuneate, margin coarsely mucronate crenate-dentate, apex short caudate-acuminate. Cymes 2–7-flowered, axillary or in terminal panicles; peduncle 0.3–2.3 cm; bracts slightly shorter than calyx. Calyx ca. 8× 2.5 mm, sparsely minutely hispid, short glandular hairy; teeth triangular-subulate, posterior tooth ca. 4 mm, anterior teeth ca. 3 mm; fruiting calyx dilated, netted. Corolla yellowish or white, ca. 3.3 cm, puberulent on back outside, throat 5.2 mm wide; upper lip ca. 9 mm; lower lip subequal to upper, elliptic; middle lobe oblong, ca. 4× 2 mm; lateral lobes smaller, triangular. Nutlets black-brown, triquetrous, obovoid, ca. 2× 1.2 mm, glabrous, base acute. Fl. Aug-Sep, fr. Oct.

- Grasslands, forest margins; 1600–2200 m. Sichuan.

18. *Microtoena prainiana* Diels, Bot. Jahrb. Syst. 29: 556. 1900.

南川冠唇花 nan chuan guan chun hua

Herbs. Stems ca. 1 m tall, subglabrous or retrorse minutely tomentose. Petiole to 8 cm; leaf blade triangular-ovate to ovate-oblong, 6.5–14× 4–8 cm, adaxially sparsely hirtellous, puberulent on veins, abaxially glabrous, base subtruncate to abruptly attenuate, margin coarsely crenate-serrate, apex long acuminate. Cymes dichotomous, axillary or 6–10 in terminal panicles ca. 2 cm in diam.; peduncle 1.4–3 cm; bracts 1–3× 0.8–1.6 cm, margin serrate or subentire. Calyx ca. 8× 3.5 mm, ± membranous, glabrous, margin ciliolate; teeth subequal, triangular-subulate, ca. 3 mm; fruiting calyx dilated, scarious, distinctly transverse veined, teeth hooded at apex. Corolla yellowish, ca. 2.8 cm, finely puberulent, throat ca. 6 mm wide; upper lip ca. 7 mm, apex emarginate; lower lip slightly shorter, subcircular; middle lobe circular, ca. 2 mm in diam.; lateral lobes triangular-ovate, ca. 1.5× 2 mm. Nutlets dark brown, obovoid-oblong, 1.8× 1 mm, base acute, glabrous. Fl. Jul-Aug, fr. Sep.

• Forests, forest margins, streamsides, sloping waste areas; 1000–2000 m. Guizhou, Sichuan, Yunnan.

19. *Microtoena longisepala* C. Y. Wu ex Hsuan, Acta Phytotax. Sin. 10: 55. 1965.

长萼冠唇花 *chang e guan chun hua*

Herbs. Stems ca. 1.5 m tall, usually glabrescent, glandular puberulent. Petiole to 6.5 cm; leaf blade oblong-ovate, 9.5–12 × 5–8 cm, adaxially sparsely minutely hispid, abaxially spreading hispid on veins, base truncate-cuneate, margin coarsely dentate, apex acuminate. Cymes subterminal, in panicles to 12 × 3 cm, few flowered, crowded; peduncle ca. 1 cm; bracts 2–5 mm. Calyx ca. 1.2 cm, narrowly campanulate, densely short yellow glandular hairy, margins sparsely 2- or 3-septate hispid; teeth ca. 6 mm, subulate, apex caudate-acuminate, posterior tooth to 8 mm. Corolla yellow, ca. 2.7 cm, puberulent outside; tube straight, ca. 1.9 cm, throat 5–6.5 mm wide; upper lip straight, ca. 7 mm, apex emarginate; lower lip dark yellow, spreading; middle lobe ovate-orbicular, ca. 4 × 2.5 mm; lateral lobes ovate-triangular, ca. 1/2 as long as middle lobe. Nutlets dark-brown, flattened, triquetrous, obovoid, ca. 1.8 mm.

• Dense forests on shady slopes; 2300 m. Sichuan.

20. *Microtoena megacalyx* C. Y. Wu, Acta Phytotax. Sin. 8: 48. 1959.

大萼冠唇花 *da e guan chun hua*

Herbs. Stems 30–150 cm, densely fine puberulent, subglabrous or glandular puberulent at apex. Petiole to 11 cm; leaf blade ovate, 5–14 × 3.5–10 cm, subglabrous, densely glandular puberulent on veins adaxially, sparsely minutely hispid abaxially, base truncate-cuneate, attenuate into winged petiole, margin mucronate crenate-serrate, apex abruptly acuminate. Cymes dichotomous, 5–15-flowered, usually in terminal panicles ca. 11 cm; peduncle 1–4 cm; bracts leaflike, lanceolate. Calyx campanulate, 5–6 × 3–4 mm, glandular puberulent; teeth triangular, 2–3 mm, long setaceous, capitate glandular, hirsute; fruiting calyx to 12 × 5 mm, netted; teeth ca. 3 mm, hooked, posterior tooth ca. 4.5 mm. Corolla yellowish to white, ca. 2.5 cm; tube straight, slender, ca. 1.5 cm, densely puberulent, throat abruptly dilated; upper lip nearly straight; middle lobe of lower lip subcircular; lateral lobes subtriangular, wider, reflexed. Filaments puberulent. Nutlets black-brown, triquetrous, obovoid, base acute, 1.5–2.1 mm, 1–1.2 mm in diam., smooth, glabrous. Fl. Aug. fr. Sep.

• Broad-leaved forests, grassy slopes near streams, streamsides in forests; 1500–2200 m. Guizhou, Yunnan.

