

27. **PERISTROPHE** Nees in Wallich, Pl. Asiat. Rar. 3: 77, 112. 1832.

观音草属 *guan yin cao shu*

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Herbs or shrubs, with cystoliths. Leaf blade margin entire or slightly toothed. Inflorescences in axillary or terminal cymes, these sometimes aggregated into a leafy panicle-like complex; cymes consisting of (1 or)2–4(or more) involucre; involucre of usually 1–3 flowers enclosed by 2(or more) pairs of bracteoles that conceal calyx and corolla tube. Outer pair of bracteoles equal to unequal in size and larger than inner pair(s). Calyx small, 5-lobed; lobes equal. Corolla white to pink or purple, usually large, resupinate 180°; tube slender, twisted, apically ± widened into throat; limb 2-lipped; upper lip (in lower position) entire to 2-cleft; lower lip (in upper position) 3-lobed; lobes ascending cochlear in bud. Stamens 2, inserted at corolla throat, exerted from corolla tube; anthers 2-theous; thecae unequally inserted or superposed (contiguous or separated by gap), base mucicous; staminodes absent. Ovary with 2 ovules per locule; stigma slightly enlarged or 2-cleft. Capsule with a solid stalk, 4-seeded; retinacula present; placenta not rising elastically from base of valves. Seeds discoid, smooth to tuberculate, lacking trichomes.

About 40 species: tropical and subtropical Africa, Asia, and Madagascar, with one species possibly extending to Australia (see R. M. Barker, J. Adelaide Bot. Gard. 9: 192. 1986); ten species (three endemic) in China.

- 1a. Outer involucre bracteoles abaxially pubescent with gland-tipped trichomes.
  - 2a. Corolla ca. 4.5 cm, pubescent with gland-tipped and non-glandular trichomes ..... 1. *P. lanceolaria*
  - 2b. Corolla ca. 1 cm, outside pubescent with non-glandular trichomes ..... 2. *P. paniculata*
- 1b. Outer involucre bracteoles abaxially glabrous or pubescent with non-glandular trichomes.
  - 3a. Anther thecae superposed (i.e., one entirely above other and with a gap between them).
    - 4a. Corolla ca. 1 cm; outer involucre bracteoles subulate to lanceolate to linear, less than 3 mm wide; capsule pubescent with non-glandular trichomes ..... 2. *P. paniculata*
    - 4b. Corolla 3–3.4 cm; outer involucre bracteoles ovate to elliptic, more than 5 mm wide; capsule pubescent with gland-tipped and non-glandular trichomes ..... 10. *P. japonica*
  - 3b. Anther thecae inserted at same level or at different levels but overlapping.
    - 5a. Anther thecae inserted at same level ..... 3. *P. yunnanensis*
    - 5b. Anther thecae inserted at different levels.
      - 6a. Outer involucre bracteoles less than 2 × as long as calyx.
        - 7a. Leaf blade subglabrous ..... 4. *P. tianmuensis*
        - 7b. Leaf blade densely pubescent ..... 5. *P. strigosa*
      - 6b. Outer involucre bracteoles more than 2 × as long as calyx.
        - 8a. Corolla and capsule glabrous ..... 6. *P. montana*
        - 8b. Corolla and capsule pubescent.
          - 9a. Leaf blade adaxially puberulent (especially along midvein) or becoming subglabrescent; corolla 3–5.7 cm ..... 7. *P. bivalvis*
          - 9b. Leaf blade adaxially sparsely pubescent; corolla 2–4 cm.
            - 10a. Outer involucre bracteoles narrowly ovate to lanceolate, more than 4 × as long as wide ..... 8. *P. floribunda*
            - 10b. Outer involucre bracteoles ovate to oblong to elliptic, less than 3 × as long as wide.
              - 11a. Outer involucre bracteoles ovate to oblong, abaxially slightly villous, base subcordate ..... 9. *P. fera*
              - 11b. Outer involucre bracteoles ovate to elliptic, abaxially subglabrous to puberulent, base cuneate to truncate ..... 10. *P. japonica*

**1. *Peristrophe lanceolaria*** (Roxburgh) Nees in Wallich, Pl. Asiat. Rar. 3: 114. 1832.

五指山蓝 *wu zhi shan lan*

*Justicia lanceolaria* Roxburgh, Fl. Ind. 1: 122. 1820.

Herbs to 1 m tall, erect. Branches stout, densely covered with white retrorse trichomes or sometimes glabrescent. Petiole (0.5–)1.5–3.5 cm; leaf blade lanceolate to ovate-lanceolate, (6–)10–17 × (1–)3–6 cm, abaxially sparsely pubescent or glabrescent, adaxially glabrescent except for a few trichomes along midvein toward base, secondary veins 5–7 on each side of mid-

vein, base narrowly cuneate and slightly oblique, margin entire, apex acuminate. Inflorescences of axillary pedunculate cymes of (1–)3 involucre with cymes sometimes in axils of distal bracts and collectively forming a terminal panicle-like complex 5–7 cm; outer involucre bracteoles linear-lanceolate, 10–18 × 1.5–3 mm, gland-tipped pubescent; inner involucre bracteoles similar to outer ones except smaller. Calyx ca. 9 mm; lobes linear, ca. 1 mm broad. Corolla pink, ca. 4.5 cm, outside pubescent with gland-tipped and non-glandular trichomes; tube base ca. 1.5 mm wide for ca. 2.5 cm; lip in lower position obovate, ca. 2 × 0.8 cm, slightly 2-lobed; lip in upper position oblong, ca. 2 × 0.6 cm, 3-lobed, lobes ovate and ca. 1 × 1 mm. Staminal

filaments ca. 1.8 cm, glabrous; anther thecae oblong, ca. 3 × 0.6 mm, superposed. Capsule 1.4–1.8 cm, pubescent with gland-tipped trichomes. Seeds ca. 3 × 2 mm, smooth. Fl. Dec–Mar, fr. Mar–Jun.

Wet places; 500–700 m. Hainan, Yunnan [India, Laos, Myanmar, Thailand, Vietnam].

**2. *Peristrophe paniculata*** (Forsskål) Brummitt, Kew Bull. 38: 451. 1983.

双萼观音草 shuang e guan yin cao

*Dianthera paniculata* Forsskål, Fl. Aegypt.-Arab. 7. 1775; *D. bicalyculata* Retzius; *Dicliptera paniculata* (Forsskål) I. Darbyshire; *Justicia bicalyculata* (Retzius) Vahl; *Peristrophe bicalyculata* (Retzius) Nees.

Herbs to 1.2 m tall, erect, perennial. Stems hirsute, usually 4- or 6-angled. Petiole 3–12 mm; leaf blade ovate to lanceolate, (1–)3–4.5 × (0.5–)1.5–2 cm, abaxially scabrid, adaxially slightly scabrid, base attenuate to broadly cuneate, margin remotely serrulate and slightly ciliate, apex acuminate, acute, or sometimes rounded. Inflorescences of axillary pedunculate cymes with (1–)4(or more) involucre (cymes sometimes branching internally) in axils of leaves or bracts and collectively often forming a terminal leafy panicle-like complex; rachis and inflorescence branches pubescent; outer involucral bracteoles unequal, abaxially pubescent with gland-tipped (sometimes absent) and non-glandular trichomes, larger outer involucral bracteole ± linear, ca. 10 × 2 mm, 1-veined, and apex acute and mucronate, shorter outer involucral bracteole subulate to lanceolate, ca. 6 × 0.1 mm; inner involucral bracteoles narrowly linear to subulate, unequal in length. Calyx lobes lanceolate, ca. 3 mm, outside sparsely pubescent with non-glandular trichomes, inside sparsely pubescent with sessile gland-tipped trichomes, margin membranous at base, apex long acuminate. Corolla light to dark purple, ca. 1 cm, outside pubescent with non-glandular trichomes; tube basally cylindrical for ca. 5 mm; lip in lower position narrowly elliptic, 5–7 × 1–2 mm, apex emarginate; lip in upper position elliptic, 3–7 × 2–3 mm, 3-lobed. Staminal filaments ca. 5 mm, white hairy; anther thecae ovoid, superposed, not touching. Ovary ovoid, pubescent and glandular; style glabrous; stigma 2-lobed. Capsule 0.9–1.3 cm, pubescent with non-glandular trichomes. Seeds 2.2–2.5 mm, rough and tuberculate. Fl. Aug–Dec, fr. Oct–Feb.

Weedy areas, roadsides; 600–2200 m. Guangxi, Sichuan, Yunnan [Cambodia, India, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Thailand, Vietnam; tropical Africa, Australia].

**3. *Peristrophe yunnanensis*** W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 187. 1918.

滇观音草 dian guan yin cao

Herbs 1–2 m tall. Stems sulcate, densely grayish pubescent when young, later glabrescent. Petiole 1–10 mm; leaf blade lanceolate to ovate, 2.5–3 × ca. 1 cm, abaxially pubescent, adaxially sparsely puberulent especially on veins or glabrescent, base cuneate, margin entire, apex acuminate. Outer involucral bracteoles linear, ca. 3 mm; inner involucral bracteoles 2.5–6 mm. Calyx 5–7 mm; lobes linear, glabrous or subglabrous, apex

acute. Corolla pink to violet, ca. 1.8 cm, outside slightly pubescent. Staminal filaments basally pubescent; anther thecae oblong, ca. 2 mm, parallel, inserted at same level, touching each other. Capsule not seen. Fl. Apr, Aug.

• Thickets; 1900–2200 m. Sichuan, Yunnan.

**4. *Peristrophe tianmuensis*** H. S. Lo, Bull. Bot. Res., Harbin 8(1): 4. 1988.

天目山蓝 tian mu shan lan

Herbs 30–35 cm tall. Stems 6-angled, pubescent. Petiole 3–10 mm; leaf blade broadly ovate, 1.5–6 × 1–4 cm, both surfaces subglabrous, secondary veins 3–6 on each side of midvein, base broadly cuneate to subrounded, margin entire, apex cuspidate to acute. Cymes terminal or pseudo-axillary; outer involucral bracteoles narrowly lanceolate, 3.5–6 mm, pubescent; inner involucral bracteoles similar to outer involucral bracteoles. Calyx ca. 3 mm; lobes linear, pubescent. Corolla light purple, ca. 2 cm; tube slender; lip in lower position oblong-elliptic, ca. 1 cm, apex emarginate; lip in upper position oblong-spatulate, minutely 3-lobed. Staminal filaments 7.5–8 cm, pubescent; anther thecae linear, parallel, inserted at different levels, touching each other for 2/3 of length. Ovary pubescent; style ca. 2 cm, glabrous. Capsule 8–9 mm, pubescent. Seeds ca. 1.2 × 1.2 mm. Fl. Aug, fr. Oct.

• Thickets. Zhejiang (Tianmu Shan).

**5. *Peristrophe strigosa*** C. Y. Wu & H. S. Lo, Fl. Hainan. 3: 596. 1974.

糙叶山蓝 cao ye shan lan

Herbs 40–100 cm tall, annual. Stems 6-angled, pubescent. Petiole 1.5–2.5 cm; leaf blade ovate to lanceolate-ovate, 7–13 × 3–5.5 cm, both surfaces densely pubescent, secondary veins 6–8 on each side of midvein, base broadly cuneate, margin entire, apex acuminate to shortly caudate. Cymes terminal or axillary, 3(or 5)-branched, with 3–5 involucre; peduncle ca. 4 mm; outer involucral bracteoles ovate, ca. 5 × 2 mm, concave, apex aristate; inner involucral bracteoles subulate, ca. 2.5 mm. Calyx ca. 5 mm; lobes linear-lanceolate, apex acuminate. Corolla purple, ca. 4.2 cm, outside pubescent; tube basally cylindrical for ca. 2.4 cm; lip in lower position elliptic-obovate, ca. 1.6 × 0.6 cm, apex obtuse to retuse; lip in upper position oblong, ca. 1.6 × 0.5 cm, slightly narrowed at tip, 3-lobed, lobes suboblong and ca. 1 × 1 mm. Staminal filaments ca. 1 cm, pubescent; anther thecae linear, parallel, inserted at different levels. Ovary oblong, ca. 2 mm, pubescent; style ca. 3.5 cm, glabrous. Capsule clavate, ca. 1.7 cm, densely strigose-pubescent. Seeds ca. 2.5 × 2 mm, tuberculate-punctate. Fl. Nov–Jan, fr. Jan–Mar.

• Dense forests. Hainan.

**6. *Peristrophe montana*** Nees in Wallich, Pl. Asiat. Rar. 3: 113. 1832.

岩观音草 yan guan yin cao

Herbs to 1 m tall, erect, glabrous. Petiole 1.5–4.5 cm; leaf blade narrowly oblong, lanceolate, or rarely ovate, 4–9(–20) × 3–5 cm, both surfaces glabrous, secondary veins 6–8 on

each side of midvein, base rounded, margin entire, apex acute. Cymes terminal or axillary; peduncle 1.5–1.7 cm; outer involucre bracteoles various, broadly ovate to linear-lanceolate, 1–1.8 × 0.2–1 cm, pinnately veined, base rounded to truncate, margin entire, apex obtuse; inner cymule bracteoles linear, 3–4 mm. Calyx ca. 5 mm; lobes linear. Corolla pink, 4.5–6 cm, outside glabrous; lip in lower position elliptic, apex emarginate; lip in upper position oblong, 3-lobed. Filaments pubescent; anther thecae linear. Ovary glabrous; style glabrous. Capsule ca. 2 cm, shiny, glabrous. Seeds ca. 3 × 2.6 mm. Fl. Oct–Dec, fr. Dec–Feb.

Wet shady cliffs. Hainan [India, Sri Lanka].

**7. *Peristrophe bivalvis*** (Linnaeus) Merrill, Interpr. Herb. Amboin. 476. 1917.

观音草 guan yin cao

*Justicia bivalvis* Linnaeus, Syst. Nat., ed. 10, 2: 850. 1759; *Hypoestes bodinieri* H. Léveillé; *J. baphica* Sprengel; *J. roxburghiana* Roemer & Schultes; *J. tinctoria* Roxburgh; *Peristrophe baphica* (Sprengel) Bremekamp; *P. roxburghiana* (Roemer & Schultes) Bremekamp; *P. tinctoria* (Roxburgh) Nees.

Herbs to 1 m tall, perennial. Stems 5- or 6-angled, much branched, sulcate, pubescent. Petiole to 3.5 cm; leaf blade ovate to lanceolate-ovate, 3–14.5 × 1.5–5.3 cm, both surfaces puberulent (especially along midvein) or becoming subglabrescent, secondary veins 5 or 6 on each side of midvein, base broadly cuneate to subrounded, margin entire to sinuate, apex acuminate to acute. Cymes axillary or terminal, pedunculate, often consisting of 1–3 (or more) pedunculate involucre terminating branches; peduncle 0.3–2.3 cm; outer involucre bracteoles broadly ovate, ovate, or elliptic, unequal in size, puberulent to subglabrous, base rounded to cuneate, apex acute; larger outer involucre bracteole (1.8–)2.3–3.3 × 0.8–1.5 cm; smaller outer involucre bracteole 0.71–0.85 × as long as larger one; inner cymule bracteoles triangular-subulate, 1–2 mm. Calyx 4.5–5 mm, pubescent; lobes lanceolate. Corolla pink, 3.5–5.7 cm, outside pubescent with non-glandular trichomes; tube ca. 1.5 mm in diam.; lip in lower position broadly ovate-elliptic, 2.2–2.6 × ca. 1.8 cm, apex emarginate; lip in upper position oblong, 2–2.5 × ca. 0.9 cm, 3-lobed. Staminal filaments ca. 1.3 cm, puberulent; anther thecae linear, subequally to unequally inserted (overlapping for most of their length), 3.2–4 mm. Ovary pubescent; style glabrous; stigma 2-cleft. Capsule ca. 1.5 cm, pubescent. Seeds ca. 1.5 × 1.5 mm. Fl. Aug–Mar.

Forests; 500–1000 m. Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hunan, Jiangxi, Taiwan, Yunnan [Cambodia, India, Indonesia, Laos, Malaysia, Thailand, Vietnam].

**8. *Peristrophe floribunda*** (Hemsley) C. Y. Wu & H. S. Lo, Fl. Hainan. 3: 561. 1974.

海南山蓝 hai nan shan lan

*Dicliptera crinita* (Thunberg) Nees var. *floribunda* Hemsley, J. Linn. Soc., Bot. 26: 248. 1890.

Herbs, erect, perennial. Stems stout, 4-angled, sulcate, pu-

bescent. Petiole 0.5–2 cm; leaf blade ovate to lanceolate, 2–9 × 1.5–3.5 cm, both surfaces pubescent along veins, secondary veins 4–6 on each side of midvein, base broadly cuneate to subrounded, margin entire, apex acuminate to acute-acuminate. Cymes terminal or axillary; outer involucre bracteoles narrowly ovate to lanceolate, unequal in size, both surfaces pubescent, base cuneate, rounded, or sometimes cordate, margin entire and ciliate, apex acuminate; larger outer involucre bracteoles 1.5–2 × 0.3–0.5 cm; smaller outer involucre bracteoles 4/5–5/6 size of larger ones; inner involucre bracteoles shorter than calyx. Calyx ca. 4.5 mm, pubescent; lobes ca. 3.5 mm. Corolla light purple to pink, outside pubescent; tube slender, ca. 1 mm in diam.; lip in lower position ovate-elliptic, apex slightly emarginate; lip in upper position oblong, 3-lobed. Staminal filaments ca. 1 cm, pubescent; anther thecae linear, parallel, slightly unequally inserted. Ovary hirsute; style basally hirsute. Capsule 1.2–1.3 mm, densely pubescent. Seeds ca. 2.5 mm in diam. Fl. Jun–Sep.

Valleys, forests. Fujian, Guangdong, Guizhou, Hainan, Hunan, Sichuan, Yunnan [India].

**9. *Peristrophe fera*** C. B. Clarke in J. D. Hooker, Fl. Brit. India 4: 556. 1885.

野山蓝 ye shan lan

*Peristrophe fera* var. *intermedia* C. B. Clarke; *P. jalapipifolia* Nees.

Herbs to 1 m tall, erect. Stems 4-angled, sulcate, pubescent. Petiole 5–10(–20) mm; leaf blade ovate to ovate-lanceolate, 5–10 × 2–4.3 cm, both surfaces pubescent, secondary veins 3–5 on each side of midvein, base broadly cuneate, margin subentire or apically obscurely dentate, apex acuminate. Cymes terminal or axillary in apical leaf axils, densely pubescent; outer involucre bracteoles ovate to oblong, unequal in size, slightly villous, base subcordate, margin ciliate, apex acuminate; larger outer involucre bracteoles ca. 1.5 × 0.8–1 cm; smaller outer involucre bracteoles 4/5–5/6 size of larger ones; inner involucre bracteoles 2.2–2.5 mm. Calyx 4–5 mm, pubescent; lobes linear, apex acuminate. Corolla 3–4 cm, outside pubescent; tube ca. 1.5 mm in diam.; lip in lower position broadly elliptic, apex emarginate; lip in upper position narrowly oblong, apex 3-lobed. Staminal filaments ca. 1.5 cm, villous; anther thecae linear, parallel, slightly unequally inserted. Ovary pubescent; style basally hirsute. Capsule ca. 1.4 cm, pubescent. Seeds ca. 1.5 × 1.5 mm. Fl. Jul–Aug.

Dense forests. Guizhou, Hainan, Yunnan [India].

**10. *Peristrophe japonica*** (Thunberg) Bremekamp, Boissiera 7: 194. 1943.

九头狮子草 jiu tou shi zi cao

*Dianthera japonica* Thunberg in Murray, Syst. Veg., ed. 14, 64. 1784; *Dicliptera buergeriana* Miquel; *D. crinita* (Thunberg) Nees; *D. japonica* (Thunberg) Makino; *D. uraiensis* Hayata; *Justicia crinita* Thunberg; *Peristrophe chinensis* Nees; *P. guangxiensis* H. S. Lo & D. Fang.

Herbs 20–80 cm, perennial. Stems 4-angled, basally prostrate and rooting at nodes, bifariously pubescent. Petiole 0.5–

1.5 cm; leaf blade lanceolate to ovate-oblong, (3–)5–13 × (1–)2.5–4.5 cm, both surfaces sparsely pubescent (especially along midvein), secondary veins 3–5 on each side of midvein, base obtuse to cuneate, margin entire or slightly sinuate, apex acuminate to caudate. Inflorescences terminal or axillary pedunculate cymes from axils of distal leaves, cymes consisting of 1–4 (or more) pedunculate involucre; involucre bearing 1–3 flowers; peduncle 0.7–5.5 cm; outer involucral bracteoles ovate to elliptic, subequal to unequal in size, abaxially subglabrous to puberulent, base cuneate to truncate, margin entire, apex acute to obtuse; larger outer involucral bracteoles 1.1–2.5 × 0.5–1.8 cm; smaller outer involucral bracteoles 8–17 × 3–9 mm; inner involucral bracteoles linear, 2–3 mm, abaxially puberulent, apex acuminate. Calyx ca. 4 mm; lobes subulate, pubescent. Corolla white to pale pink to light purple and with pink specks or dark lines on limb, 2–3.4 cm, outside pubescent with non-glandular trichomes; tube basally ca. 1 mm wide for ca. 1.5 cm; lip in lower position elliptic to subcircular, 8–15 × 3–11 mm, entire or slightly emarginate; lip in upper position oblong, 9–15 × 4–7 mm, 3-lobed. Staminal filaments ca. 7 mm, pubescent; anther thecae linear, ca. 1.2 mm, parallel, unequally inserted to superposed. Ovary pilose; style ca. 2 cm; stigma 2-cleft. Capsule 0.8–1.2 cm, pubescent with gland-tipped and non-glandular trichomes. Seeds ca. 2 mm in diam., tuberculate. Fl. Jul–Feb, fr. Jul–Oct.  $2n = 48$ .

Roadsides, grasslands, streamsides, montane slopes, trailsides, evergreen broad-leaved forests, *Machilus-Castanopsis* forests; below 1500 m. Anhui, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan, Zhejiang [Japan].

This species is used medicinally.

Fl. China 19: 463–467. 2011.