

19. ODONTOCHILUS Blume, Fl. Javae Nov. Ser. 1: 66. 1858–1859.

齿唇兰属 *chi chun lan shu*

Chen Xinqi (陈心启 Chen Sing-chi); Stephan W. Gale, Phillip J. Cribb, Paul Ormerod

Cystopus Blume (1858), not L veill  (1847); *Evrardia* Gagnepain (1932), not Adanson (1763); *Evrardiana* Averyanov, nom. illeg. superfl.; *Evrardianthe* Rauschert; *Pristiglottis* Cretzoiu & J. J. Smith.

Herbs, terrestrial, autotrophic or rarely holomycotrophic. Rhizome creeping, cylindrical, several noded, fleshy; roots narrowly filiform to fibrous, arising singly from rhizome nodes or rarely absent. Stem erect or ascending, with 1 to a few loose tubular sheaths at base, and a few scattered or subsulate leaves, or leafless (when holomycotrophic), glabrous. Leaves green or purple, occasionally with 1–3 white stripes, suborbicular, ovate-lanceolate, or elliptic, oblique, with a short to long petiole-like base dilating into tubular amplexicaul sheath. Inflorescence erect, terminal, racemose, glabrous or pubescent; peduncle with a few scattered sheathing bracts; rachis laxly to subdensely few to many flowered; floral bracts membranous, glabrous or pubescent. Flowers resupinate or erect and not resupinate; ovary twisted or not, slender, glabrous or pubescent. Sepals glabrous or pubescent; dorsal sepal free or connate for half its length with lateral sepals; lateral sepals similar to dorsal sepal, completely enclosing base of lip. Petals usually appressed to dorsal sepal, linear-ligulate to ovate, membranous; lip 3-partite, spurless; hypochile subglobose, aseptate and saccate or with a central septum and bisaccate, containing a pair of fleshy calli; mesochile usually elongate, tubular, external margin with an entire or fimbriate-pectinate flange, rarely with 2 flanges on either side, or rarely not flanged at all. Column dilated, twisted or not, ventrally with 2 intramarginal, lamellate appendages (wings); anther erect, ovoid, 2-locular; pollinia 2, obovoid-obpyriform or clavate, usually attenuate into slender stalks that attach to a solitary small viscidium; rostellum deltoid, remnant shortly to deeply bifid; stigma lobes separate to confluent, placed directly beneath rostellum. Capsule ellipsoid.

About 40 species: N India and the Himalayas, through SE Asia, as far north as Japan, east to the SW Pacific islands; 11 species (two endemic) in China.

The circumscription of *Odontochilus* has been contentious, with the structural similarity of its flowers to those of *Anoetochilus* often resulting in its inclusion in the latter. It is defined here (following Pridgeon et al., Gen. Orchid. 3: 126–129. 2003) by the combination of a saccate but spurless lip that is enclosed at its base by the lateral sepals and the placement of the confluent or occasionally separate stigma lobes directly beneath the rostellum.

- 1a. Plants holomycotrophic, achlorophyllous and lacking leaves, purplish red or brown.
 - 2a. Flowers resupinate; petals and lip white 3. *O. saprophyticus*
 - 2b. Flowers not resupinate; petals and lip purplish red, yellow, or fawn-colored.
 - 3a. Dorsal sepal ca. 7 × 4 mm; lip T-shaped, ca. 16 mm, with 2 hornlike, divergent, V-shaped lacunae at apex; lobes of epichile oblong, ca. 5 × 2.5 mm 1. *O. poilanei*
 - 3b. Dorsal sepal 3.8–4.1 × 1.8–2 mm; lip Y-shaped, 11.2–12.2 mm, without lacunae at apex; lobes of epichile subquadrate, 3.2–4 × 2.8–3.2 mm 2. *O. guangdongensis*
- 1b. Plants autotrophic, leafy, green, dark green, greenish brown, or dark greenish purple.
 - 4a. Sepals uniformly green or yellowish green, sometimes tinged red toward apex; hypochile of lip bisaccate, divided by a central longitudinal septum.
 - 5a. Lip mesochile lacking flanges 4. *O. crispus*
 - 5b. Lip mesochile with a fimbriate-pectinate flange along each external margin.
 - 6a. Floral bracts ca. 5 mm, much shorter than ovary; ovary and pedicel pubescent 5. *O. elwesii*
 - 6b. Floral bracts 8–15 mm, subequal in length to or exceeding ovary; ovary and pedicel glabrous.
 - 7a. Adaxial surface of leaves uniformly dark green; flowers white or yellowish white; lateral sepals 9–10 mm 6. *O. brevistylis*
 - 7b. Adaxial surface of leaves dark green with whitish stripes along midvein and 2 lateral veins; flowers yellow; lateral sepals 6–7.5 mm 7. *O. lanceolatus*
 - 4b. Sepals white, pale green, or purplish with either dark brownish green patches or purplish red longitudinal stripes; hypochile of lip globose-saccate (though hypochile of *O. clarkei* occasionally shallowly 2-lobed), aseptate.
 - 8a. Plants 7.5–8.5 cm tall; leaf petiole-like base and tubular sheath 0.3–0.5 cm; lip 12–13 mm 8. *O. nanlingensis*
 - 8b. Plants 10–30 cm tall; leaf petiole-like base and tubular sheath 1.5–3.5 cm; lip 17–26 mm.
 - 9a. Lip epichile lobes ca. 5.5 mm 9. *O. tortus*
 - 9b. Lip epichile lobes ca. 10 mm.
 - 10a. Flowers erect, not resupinate; ovary and pedicel not twisted; lip uniformly white; mesochile 9.5–16 mm, not dilated at base 10. *O. inabae*
 - 10b. Flowers resupinate; ovary and pedicel twisted; mesochile ca. 5 mm, dilated at base, reddish; epichile lobes yellow 11. *O. clarkei*

1. *Odontochilus poilanei* (Gagnepain) Ormerod, Lindleyana 17: 225. 2002.

齿爪齿唇兰 chi zhao chi chun lan

Evrardia poilanei Gagnepain, Bull. Mus. Natl. Hist. Nat., sér. 2, 4: 596. 1932; *Chamaegastrodia poilanei* (Gagnepain) Seidenfaden & A. N. Rao; *Evrardiana poilanei* (Gagnepain) Averyanov; *Evrardianthe poilanei* (Gagnepain) Rauschert; *Hetaeria poilanei* (Gagnepain) Tang & F. T. Wang.

Plants holomycotrophic, 12–18 cm tall. Rhizome yellowish white, short, stout. Stem erect, purplish red, stout, leafless, with many sheathing scales; scales overlapping, purplish red, membranous, pubescent on outer surface and margin. Rachis 3–7 cm, subdensely several to more than 10-flowered, pubescent; floral bracts purplish red, ovate, ca. 10 mm, ca. as long as ovary, outer surface pubescent, apex acuminate. Flowers fragrant, erect, not resupinate; ovary and pedicel purplish red, cylindrical-fusiform, not twisted, 10–12 mm, pubescent. Sepals purplish red, pubescent on outer surface; dorsal sepal connivent with petals, ovate, cymbiform, ca. 7 × 4 mm, 1-veined, apex subacute; lateral sepals slightly spreading, ovate, oblique, ca. 7 × 3.3 mm, apex acute. Petals purplish red, linear-lanceolate, oblique, falcate, ca. 7 × 1.5 mm, 1-veined, apex acute; lip deep yellow, T-shaped, ca. 16 mm; hypochile slightly dilated, concave-saccate, ca. 2 mm, aseptate, containing 2 sessile, domed calli at base; mesochile 6–8 mm; flanges narrow, irregularly erose-crenulate; epichile transversely dilated, ca. 3 × 12 mm wide, 2-lobed, with 2 hornlike, divergent, V-shaped lacunae at apex; lobes diverging at right angles to axis of lip, oblong, ca. 5 × 2.5 mm, minutely papillate on both surfaces, margin incised-erose, apex truncate. Column short, with 2 subsquare, lamellate wings; anther ovoid, ca. 2.5 mm, apex acuminate; rostellum erect, furcately 2-lobed. Fl. Aug.

Damp places in broad-leaved evergreen forests, valleys; 1000–1800 m. SE Xizang, SE Yunnan [Japan, Myanmar, Thailand, S Vietnam].

2. *Odontochilus guangdongensis* S. C. Chen, S. W. Gale & P. J. Cribb, **nom. nov.**

广东齿唇兰 guang dong chi chun lan

Replaced synonym: *Chamaegastrodia nanlingensis* H. Z. Tian & F. W. Xing, Novon 18: 261. 2008, not *Odontochilus nanlingensis* (L. P. Siu & K. Y. Lang) Ormerod, Taiwania 48: 91. 2003 [see p. 83].

Plants holomycotrophic, 20–26 cm tall. Rhizome hazel in color, translucent, fleshy, slender, up to 25 cm; roots coralloid. Stem erect, light brown, slender to stout, leafless, with many sheathing scales; scales overlapping, brick-red, membranous, puberulent along margin. Rachis up to 6 cm, subdensely 4–9-flowered, puberulent; floral bracts maroon, ovate-lanceolate, ca. 8 × 3.2 mm, ca. as long as ovary, outer surface puberulent, apex acuminate. Flowers not resupinate; ovary and pedicel fusiform, not twisted, ca. 8 mm, finely puberulent. Sepals fawn-colored, puberulent on outer surface and densely so at apex; dorsal sepal connivent with petals, ovate, cymbiform, 3.8–4.1 × 1.8–2 mm, 1-veined, apex acute; lateral sepals slightly spreading, narrowly

ovate-falcate, oblique, 7–7.2 × 3.2–3.5 mm, 2-veined, apex acute. Petals fawn-colored, linear-lanceolate, oblique, falcate, 4.5–4.8 × 1–1.3 mm, 1-veined, apex acute; lip yellow, Y-shaped, 11.2–12.2 mm; hypochile slightly dilated, concave-saccate, 2–2.2 mm, containing 2 sessile, subglobose calli at base; mesochile ca. 5.5 mm; flanges narrow, irregularly erose-crenulate; epichile transversely dilated, 3.2–4 × ca. 7 mm, 2-lobed; lobes diverging at acute angle to one another, subquadrate, 3.2–4 × 2.8–3.2 mm, margin slightly erose, apex truncate. Column short, with 2 oblong, lamellate wings; anther lanceolate, ca. 2 mm, apex acuminate; rostellum erect, furcately 2-lobed. Capsule brick-red, ellipsoid, ca. 11 × 5 mm. Fl. Aug.

• Humus-rich soils in evergreen broad-leaved forests; 1300–1600 m. Guangdong, Hunan.

3. *Odontochilus saprophyticus* (Averyanov) Ormerod, Taiwania 48: 141. 2003.

腐生齿唇兰 fu sheng chi chun lan

Pristiglottis saprophytica Averyanov, Updated Checkl. Orchids Vietnam, 90. 2003.

Plants holomycotrophic, achlorophyllous, 15–18 cm tall. Rhizome 2–4.5 cm, 0.5–2 cm in diam. Stem erect, pinkish brown, leafless, with 6 or 7 sheathing scales; scales overlapping, membranous, pubescent on outer surface. Rachis ca. 7.5 cm, subdensely 12- or 13-flowered, pubescent; floral bracts elliptic-ovate, concave, 8–10 × 4–5 mm, outer surface pubescent, apex acuminate. Flowers resupinate; ovary and pedicel 10–11 mm, pubescent. Sepals olive pinkish brown, pubescent on outer surface; dorsal sepal connivent with petals and forming a hood, ovate, cymbiform, 4–5 × ca. 3 mm, 1-veined, apex obtuse; lateral sepals reflexed, oblong, oblique, 8–9 × 2–3 mm, 1-veined, apex subacute. Petals white, narrowly oblong, 4–5 × 1.5–2 mm, 1-veined, apex acute; lip white, T-shaped, 11–12 × 4–5 mm; hypochile concave-saccate, ca. 2 mm, aseptate, containing 2 sessile, ligulate calli at base; mesochile 4–5 mm; flanges irregularly erose-papillate; epichile 2-lobed; lobes diverging at right angles to axis of lip, subquadrate-obovate, 4–5 × 3–4 mm. Column ca. 1.5 mm, with 2 semicircular to cordate wings; anther narrowly ovoid, ca. 2 mm; rostellum erect, furcately 2-lobed. Fl. May–Jun.

Leaf litter in tropical montane forests; 900–1100 m. Hainan [Vietnam].

4. *Odontochilus crispus* (Lindley) J. D. Hooker, Fl. Brit. India 6: 99. 1890.

小齿唇兰 xiao chi chun lan

Anoectochilus crispus Lindley, J. Proc. Linn. Soc., Bot. 1: 180. 1857; *Cystopus crispus* (Lindley) Kuntze.

Plants autotrophic, 6–20 cm tall. Stem ascending, 3–5-leaved. Leaves abaxially pale green, adaxially dark green, ovate, 1.2–1.5 × 0.9–1.2 cm, apex acute; petiole-like base and tubular sheath 0.5–1 cm. Peduncle 1.5–7 cm, with 1 or 2 sterile bracts, pubescent, purplish red; rachis 1–5 cm, subdensely (1–)3–8-flowered, pubescent; floral bracts purplish, lanceolate, 7–9 mm, nearly as long as ovary, outer surface pubescent, apex acu-

minate. Flowers resupinate, greenish white; ovary and pedicel twisted, cylindric, 8–10 mm, glabrous. Sepals green, pubescent on outer surface, 1-veined; dorsal sepal forming a hood with petals, narrowly ovate, cymbiform, ca. 6×2.3 mm, apex acuminate; lateral sepals narrowly elliptic, oblique, ca. 6.5×2.7 mm, apex subacute. Petals green, triangular, falcate, ca. 6×2 mm, glabrous, 1-veined, apex acuminate; lip white, Y-shaped, ca. 13 mm; hypochile slightly dilated, shallowly bisaccate, ca. 2 mm, containing a central longitudinal septum and 1 stalked, fleshy callus on either side; mesochile ca. 4 mm, margin incurved and entire to shallowly crenulate, lacking flanges; epichile longitudinally dilated, long, 2-lobed; lobes diverging at an acute angle to one another, oblong to obovate, ca. 7×3 mm, margin crenulate or serrulate, apex truncate-obtuse. Column stout, not twisted, with 2 lamellate wings; rostellum short, erect, bifid; stigma lobes separate. Fl. Sep–Oct.

Damp places in forests, valleys; 1600–1800 m. SE Xizang, NW Yunnan [Bhutan, NE India, Nepal].

5. *Odontochilus elwesii* C. B. Clarke ex J. D. Hooker, Fl. Brit. India 6: 100. 1890.

西南齿唇兰 xi nan chi chun lan

Anoectochilus elwesii (C. B. Clarke ex J. D. Hooker) King & Pantling; *A. purpureus* (C. S. Leou) S. S. Ying; *Cystopus elwesii* (C. B. Clarke ex J. D. Hooker) Kuntze; *Odontochilus purpureus* C. S. Leou.

Plants autotrophic, 15–25 cm tall. Stem ascending or erect, somewhat robust, ca. 3 mm in diam., 6- or 7-leaved. Leaves abaxially pale red or pale green, adaxially deep green to dark greenish purple and sometimes with 3 reddish veins, ovate to ovate-lanceolate, $1.5\text{--}5 \times 1\text{--}3$ cm, apex acute; petiole-like base and tubular sheath 0.5–2 cm. Peduncle 8–11 cm, with 1–3 sheathing sterile bracts, pubescent; rachis 1–6 cm, laxly 2–4-flowered, pubescent; floral bracts ovate, ca. 5 mm, much shorter than ovary, outer surface pubescent, apex mucronate. Flowers resupinate; ovary and pedicel twisted, cylindric-fusiform, ca. 13 mm, pubescent. Sepals green or white, tinged purplish red toward apex, outer surface pubescent, 1-veined; dorsal sepal forming a hood with petals, with 2 broad purplish red stripes, ovate, cymbiform, ca. 7×4 mm, apex acuminate; lateral sepals ovate, oblique, ca. 10×6 mm, saccate at base. Petals white, ovate, strongly oblique, falcate, ca. 7×4 mm, 1-veined, apex acuminate; lip white, Y-shaped, ca. 15 mm; hypochile slightly dilated, shallowly bisaccate, ca. 3.5 mm, containing a central longitudinal septum and 1 fleshy, subsquare callus on either side; mesochile dark purple, 5–7 mm, with a fimbriate flange along either margin; flanges composed of 4 or 5 filaments; epichile transversely dilated, ca. 12×14 mm, 2-lobed; lobes diverging widely, suboblong, ca. 10×5 mm, margin slightly undulate, apex truncate. Column ca. 4 mm, stout, with 2 suboblong, lamellate wings; anther narrowly ovoid, ca. 4 mm; pollinia clavate, ca. 3 mm, attached to a narrowly lanceolate viscidium ca. 1.5 mm; rostellum erect, small, remnant furcately bifid; stigma lobes separate, suborbicular, large. Fl. Jul–Aug.

Damp places in evergreen broad-leaved forests, bamboo forests, valleys; 300–1500 m. Guangxi, Guizhou, Sichuan, C Taiwan, Yunnan

[Bhutan, NE India, N Myanmar, Thailand, N Vietnam].

6. *Odontochilus brevistylis* J. D. Hooker, Fl. Brit. India 6: 100. 1890.

短柱齿唇兰 duan zhu chi chun lan

Anoectochilus brevistylis (J. D. Hooker) Ridley; *A. candidus* (T. P. Lin & C. C. Hsu) K. Y. Lang; *A. inabae* Hayata var. *candidus* (T. P. Lin & C. C. Hsu) S. S. Ying; *A. tonkinensis* Gagnepain; *Cystopus brevistylis* (J. D. Hooker) Kuntze; *Odontochilus candidus* T. P. Lin & C. C. Hsu; *O. inabae* (Hayata) Hayata var. *candidus* (T. P. Lin & C. C. Hsu) S. S. Ying.

Plants autotrophic, 12–18 cm tall. Stem ascending, dark purple-brown, 3–4 mm in diam., 4- or 5-leaved. Leaves abaxially pale green, adaxially dark green, ovate-lanceolate to oblong, oblique, $2.5\text{--}5 \times 1\text{--}2$ cm, apex acute; petiole-like base and tubular sheath 1–1.5 cm. Peduncle 6–8 cm, pubescent, with 1 or 2 sterile bracts; rachis 4–7 cm, subdensely 5–9-flowered, pubescent; floral bracts lanceolate, 10–15 mm, subequal in length to or exceeding ovary, outer surface pubescent, apex acuminate. Flowers resupinate, white or yellowish white; ovary and pedicel twisted, cylindric-fusiform, 9–10 mm, glabrous. Sepals yellowish green, outer surface pubescent, 1-veined; dorsal sepal forming a hood with petals, ovate, cymbiform, $6\text{--}6.5 \times 4\text{--}4.5$ mm, apex acute; lateral sepals ovate-elliptic, oblique, $9\text{--}10 \times 3.5\text{--}3.7$ mm, apex subobtuse. Petals white, ovate, strongly oblique, falcate, $6\text{--}6.5 \times$ ca. 3 mm, glabrous, 1-veined, apex long apiculate; lip white or yellowish white, Y-shaped, 16–18 mm; hypochile slightly dilated, bisaccate, ca. 2 mm, containing a central longitudinal septum and 1 fleshy, hooked callus on either side; mesochile 6–8 mm, with a pectinate flange along each margin; flanges composed of 4 or 5 filaments to ca. 3 mm and 3 or 4 shorter obtuse teeth; epichile longitudinally dilated, ca. 6×8 mm, 2-lobed; lobes diverging at an acute angle to one another, obovate-flabellate, ca. 5.5×3.5 mm, margin slightly crenulate, apex obtuse. Column twisted, ca. 3 mm, stout, with 2 lamellate wings; anther ovoid, short, apex obtuse; pollinia attached to 1 small, narrowly elliptic viscidium; rostellum broad, bifid; stigma lobes separate. Fl. Aug. $2n = 40, 42$.

Damp places in evergreen broad-leaved forests; 1700–1900 m. SE Xizang, Yunnan [Malaysia (Peninsular), Thailand, Vietnam].

7. *Odontochilus lanceolatus* (Lindley) Blume, Coll. Orchid. 80. 1859.

齿唇兰 chi chun lan

Anoectochilus lanceolatus Lindley, Gen. Sp. Orchid. Pl. 499. 1840; *A. bisaccatus* Hayata; *A. flavus* Benthham & J. D. Hooker; *A. luteus* Lindley; *Cystopus flavus* (Benthham & J. D. Hooker) Kuntze; *C. lanceolatus* (Lindley) Kuntze; *Odontochilus bisaccatus* (Hayata) Hayata ex T. P. Lin; *O. yunnanensis* Rolfe; *Pristiglottis bisaccata* (Hayata) K. Nakajima.

Plants 15–30 cm tall. Stem ascending, green-brown, 4- or 5-leaved. Leaves abaxially pale green, adaxially dark green with whitish stripes along midvein and 2 lateral veins, ovate, ovate-lanceolate, or elliptic, $1.5\text{--}8 \times 1\text{--}5$ cm, apex acute; petiole-like base and tubular sheath 0.9–2 cm. Peduncle 4–6 cm,

pubescent, with 1 or 2 sheathing sterile bracts; rachis 4–6 cm, subdensely 3–10-flowered, pubescent; floral bracts lanceolate to ovate-lanceolate, 8–10 mm, subequal in length to ovary, abaxially glabrous, ciliate along basal margin, apex acuminate. Flowers resupinate, yellow; ovary and pedicel twisted, fusiform, 9–10 mm, glabrous. Sepals yellowish green, glabrous, 1-veined; dorsal sepal forming a hood with petals, ovate to ovate-oblong, cymbiform, 4–6 × 3–4 mm; lateral sepals spreading, ovate-elliptic, oblique, 6–7.5 × 4–5 mm, apex acute to slightly obtuse. Petals whitish green, ovate, strongly oblique, 4–6 × 2.5–4 mm, 1-veined; lip golden yellow, Y-shaped, 12–18 mm; hypochile slightly dilated, bisaccate, ca. 3 mm, containing a central longitudinal septum and 1 subulate, usually curved callus on either side; mesochile 4–6 mm, with a pectinate flange along either margin; flanges composed of 4–7(–9) obtuse teeth to ca. 2.5 mm; epichile transversely dilated, 2-lobed; lobes diverging widely, cuneate-oblong to obovate, 5–6 × 4–4.5 mm, margin entire or slightly crenulate, apex truncate. Column very short, squat, with 2 deltoid wings toward apex; rostellum twisted, broad, remnant bifid; stigma lobes separate, large. Fl. Jun–Sep. $2n = 60$, 120.

Damp places in evergreen broad-leaved forests, valleys; 800–2200 m. Guangdong, Guangxi, C Taiwan, Yunnan [Bhutan, NE India, Myanmar, Nepal, Thailand, Vietnam].

8. *Odontochilus nanlingensis* (L. P. Siu & K. Y. Lang) Ormerod, *Taiwania* 48: 91. 2003.

南岭齿唇兰 *nan ling chi chun lan*

Anoetochilus nanlingensis L. P. Siu & K. Y. Lang, *Acta Phytotax. Sin.* 40: 164. 2002.

Plants autotrophic, 7.5–8.5 cm tall. Stem ascending, green-brown, 1–1.5 mm in diam., 3–5-leaved. Leaves abaxially purple, adaxially deep green, ovate, 0.6–0.8 × 0.4–0.6 cm, apex acute; petiole-like base and tubular sheath 0.3–0.5 cm, base sheathing. Peduncle 3–4 cm, with 2 sheathing sterile bracts, villos; rachis 1.5–3 cm, subdensely (1 or 2)- or 3(or 4)-flowered; floral bracts purplish, narrowly ovate, 5–7 × 2.5–3 mm, glabrous with sparsely ciliate margin, apex long acuminate. Flowers resupinate; ovary and pedicel fusiform, 7–8 mm. Sepals white with a reddish purple longitudinal stripe on either side of midvein, 1-veined; dorsal sepal forming a hood with petals, narrowly ovate, 5–6 × 2–2.5 mm, glabrous, apex obtuse; lateral sepals oblong-lanceolate, oblique, 8–9 × 2.8–3 mm, saccate at base. Petals white with a reddish purple longitudinal band along midvein, linear-lanceolate, oblique, 5–6 × ca. 1 mm, margin ciliate, apex acute; lip white, Y-shaped, 12–13 mm, membranous; hypochile concave, globose-saccate, 2–2.5 × 1.5–2 mm, aseptate, containing 2 narrowly oblong calli; mesochile 4.5–5 mm, with a fimbriate flange along each margin, with 3 or 4 reddish purple blotches on either side of midvein; flanges composed of 5–8 narrow, well-spaced filaments, each filament 1–2 mm; epichile dilated, 2-lobed, with a solitary reddish purple blotch in sinus; lobes diverging at an acute angle to one another, obovate, 4–5 × 3.5–4 mm, margin slightly undulate, apex truncate-obtuse. Column ca. 1.5 mm, stout; anther purple-red, narrowly lanceolate, ca. 3.5 mm; rostellum pink, apex forked; stigma lobes separate, subrotund. Fl. Jun–Jul.

• Forests; 600–1600 m. Guangdong, Taiwan.

9. *Odontochilus tortus* King & Pantling, *J. Asiat. Soc. Bengal*, Pt. 2, Nat. Hist. 65: 125. 1896.

一柱齿唇兰 *yi zhu chi chun lan*

Anoetochilus densiflorus Mansfeld; *A. repens* (Downie) Seidenfaden & Smitinand; *A. tortus* (King & Pantling) King & Pantling; *Odontochilus densiflorus* (Mansfeld) Tang & F. T. Wang ex Merrill & Metcalf; *O. repens* Downie; *Pristiglotis torta* (King & Pantling) Averyanov.

Plants autotrophic, 18–25 cm tall. Stem ascending, stout, ca. 5 mm in diam., 5- or 6-leaved. Leaves abaxially pale green, adaxially deep green, elliptic to ovate-lanceolate, slightly oblique, 2.5–8 × 2–4.5 cm, apex acute; petiole-like base and tubular sheath 2–2.5 cm. Peduncle relatively short, stout, pubescent, with 1 or 2 sterile bracts; rachis subdensely many flowered; floral bracts ovate-lanceolate, slightly longer than ovary, outer surface pubescent, apex acuminate. Flowers resupinate; ovary and pedicel twisted, cylindrical, ca. 13 mm, sparsely pubescent. Sepals purplish green with brownish purple stripes on either side of midvein, sparsely pubescent on outer surface, 1-veined; dorsal sepal forming a hood with petals, ovate, concave, ca. 8 × 4 mm, apex acute; lateral sepals spreading, oblong, oblique, ca. 9 × 3 mm, apex acute. Petals greenish white with brownish purple stripes on either side of midvein, ovate, oblique, falcate, ca. 8 × 4 mm, glabrous, 1-veined, apex apiculate; lip white, Y-shaped, ca. 17 mm; hypochile slightly dilated, globose-saccate, ca. 3 mm, aseptate, containing 2 oblong, shallowly 3-lobed calli; mesochile ca. 7 mm, with a pectinate flange along each margin; flanges composed of 4 or 5 filaments and 4 or 5 shorter obtuse teeth; epichile transversely dilated, ca. 6 × 11 mm, 2-lobed; lobes diverging widely, obovate, ca. 5.5 × 4 mm, margin crenulate, apex obtuse. Column ca. 2.5 mm, with 2 triangular-linear wings; anther narrowly ovoid, ca. 6 mm, apex acuminate; rostellum obovate, very large, ca. 3 × 2 mm, remnant deeply bifid; stigma lobes confluent, large. Fl. Jul–Sep.

Dense forests, along valleys; 400–1300 m. N and W Guangxi, Hainan, SE Xizang, S and SW Yunnan [Bhutan, Myanmar, Thailand, N Vietnam].

10. *Odontochilus inabae* (Hayata) T. P. Lin, *Native Orchids Taiwan* 1: 216. 1975 [*“inabai”*].

台湾齿唇兰 *tai wan chi chun lan*

Anoetochilus inabae Hayata, *Icon. Pl. Formosan.* 4: 102. 1914 [*“inabai”*].

Plants autotrophic, 10–20 cm tall. Stem ascending, 4- or 5-leaved. Leaves green, ovate-oblong to ovate, slightly oblique, 4–6 × 2.5–3.5 cm, apex acute; petiole-like base and tubular sheath 1.5–3.5 cm. Peduncle green, tinged reddish brown, 5–8 cm, pubescent; rachis 2–6 cm, laxly 3–10-flowered; floral bracts pale brown, ovate-lanceolate to lanceolate, 8–12 mm, slightly shorter than ovary, outer surface pubescent. Flowers erect, not resupinate; ovary and pedicel reddish brown or green, cylindrical-fusiform, not twisted, 10–15 mm, pubescent. Sepals pale green with large dark brownish green patches, outer surface pubescent; dorsal sepal forming a hood with petals, ovate,

5–6 × 3.5–4 mm, apex acuminate or shortly cuspidate; lateral sepals oblong, slightly oblique, 11–12 × 4.5–5 mm, apex acute. Petals pale green with large dark brownish green patches, ovate-lanceolate, strongly oblique, 6.5–7 × 2.2–3 mm, apex acuminate-caudate; lip white, Y-shaped, 17–26 mm; hypochile

globose-saccate, ca. 3 mm, aseptate, containing 2 digitate calli; mesochile 9.5–16 × 2–3 mm, with a fimbriate flange along each margin; flanges composed of 5 or 6 filaments and a shallowly crenulate lamella, each filament 4–8 mm; epichile longitudinally dilated, 2-lobed; lobes diverging widely, flabellate, ca. 10 × 5.5 mm, apex obtuse to slightly crenulate. Column slightly twisted, ca. 3.5 mm, with 2 low, lamellate wings; anther ovoid; rostellum erect, furcately bifid; stigma lobes narrowly separated. Fl. May–Aug. $2n = 28$.

Moist forests; 500–1700 m. Taiwan [Japan (Ryukyu Islands), N Vietnam].

11. *Odontochilus clarkei* J. D. Hooker, Fl. Brit. India 6: 100. 1890.

红萼齿唇兰 hong e chi chun lan

Anoectochilus clarkei (J. D. Hooker) Seidenfaden & Smitinand; *Cystopus clarkei* (J. D. Hooker) Kuntze.

Plants autotrophic, to 30 cm tall. Stem ascending or erect, ca. 5 mm in diam., 5- or 6-leaved. Leaves abaxially pale green, adaxially dark green, ovate, ovate-elliptic, or elliptic, oblique, 4–6 × 2–3 cm, apex acute; petiole-like base and tubular sheath 2–2.5 cm. Peduncle 3–5 cm, with 1 or 2 sheathing sterile bracts, pubescent; rachis 4–7 cm, subdensely many flowered; floral bracts purplish red, lanceolate, to 13 mm, slightly exceeding ovary, outer surface pubescent, apex acuminate. Flowers resupinate; ovary and pedicel twisted, cylindric, 8–10 mm, pubescent. Sepals purplish red with a deep purplish red stripe on either side of midvein, outer surface glabrous to sparsely pubescent, 1-veined; dorsal sepal forming a hood with petals, ovate, ca. 5 × 3.2 mm, apex acuminate-caudate; lateral sepals broadly ovate-elliptic, oblique, ca. 9 × 5.5 mm, apex subobtuse. Petals yellow, tinged red and with a deep purplish red stripe on either side of midvein, ovate, strongly oblique, falcate, ca. 6 × 2.5 mm, 1-veined, apex long acuminate; lip Y-shaped, 18–20 mm; hypochile slightly dilated, globose-saccate, ca. 3 mm, aseptate but sometimes shallowly 2-lobed, containing 2 fleshy, somewhat acerose, hooked calli near center; mesochile ca. 5 mm, expanded at base into an orbicular to obcordate plate, reddish, with a pectinate flange along each margin; flanges composed of 2 or 3 obtuse teeth; epichile yellow, longitudinally dilated, 2-lobed, apiculate in sinus between lobes; lobes diverging widely, obovate-cuneate, ca. 10 × 5 mm, apex truncate. Column ca. 2 mm, stout, with 2 elliptic wings; anther ovoid-lanceolate; pollinia attached to a small, elliptic viscidium; rostellum erect, remnant bifid; stigma lobes separate. Fl. Sep.

Shaded places in evergreen broad-leaved forests; ca. 1100 m. SE Xizang [India (Sikkim), Myanmar].

