

### 135. APPENDICULA Blume, Bijdr. 297. 1825.

牛齿兰属 niu chi lan shu

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Herbs, epiphytic, lithophytic, or rarely terrestrial. Stems tufted, erect or pendulous, often ± compressed, slender, with many nodes, simple or branched, pseudobulbs absent, enclosed in persistent basal sheaths of leaves. Leaves many, distichous, flat, often twisted at base so that blades all lie in one plane, with tubular amplexicaul sheaths at base, articulate. Inflorescences terminal, lateral, or both, usually rather short, sometimes shortened and capitate, few to many flowered; floral bracts persistent. Flowers resupinate, white or greenish, very small. Sepals free; lateral sepals adnate at base to column foot forming a mentum. Petals often slightly smaller than dorsal sepal; lip adnate at base to column foot, unlobed or sometimes slightly 3-lobed, base saccate, apex recurved, adaxially with a round or concave basal appendage, sometimes lengthened into small keels, sometimes with a medium keel or callus on distal surface or mid-lobe. Column stout, with long and broad foot; anther subterminal, erect; pollinia 6, waxy, subclavate, in 2 groups, on a slender solitary forked caudicle or 2 separate ones, attached to a common viscidium; rostellum erect, large, often 2-lobed.

About 60 species: tropical Asia to Oceania, mainly in Indonesia and New Guinea; four species in China.

- 1a. Leaves lanceolate-oblong, ca. 5 cm, apex acuminate and shallowly bilobed; lip with a hairy appendage ..... 3. *A. fenixii*
- 1b. Leaves oblong to narrowly ovate-elliptic, 1–4 cm, apex obtuse or rounded and shallowly bilobed; lip with a glabrous appendage.
  - 2a. Adaxial surface of lip with a lamellate appendage in distal half and another appendage near base ..... 1. *A. cornuta*
  - 2b. Adaxial surface of lip with only one appendage near base or middle.
    - 3a. Lip suborbicular in outline; flowers greenish or greenish white; leaves not turning blackish when dried ..... 2. *A. reflexa*
    - 3b. Lip subglobose in lower half, epichile broadly ovate, subacute; flowers white; leaves turning blackish when dried ..... 4. *A. annamensis*

#### 1. *Appendicula cornuta* Blume, Bijdr. 302. 1825.

牛齿兰 niu chi lan

*Appendicula bifaria* Lindley; *A. bifaria* var. *wallichiana* J. D. Hooker; *Dendrobium bifarium* (Lindley) J. D. Hooker, nom. superfl.; *Podochilus cornutus* (Blume) Schlechter.

Plants epiphytic or lithophytic. Stems tufted, ascending or pendulous, subterete, 20–50 cm, 2–3 mm in diam., unbranched, internodes ca. 1 cm, completely enclosed in tubular sheaths of leaves. Leaves many, distichous, alternate; blade narrowly ovate-elliptic or suboblong, 25–35 × 6–12 mm, apex unequally 2-lobed or emarginate, often apiculate, tubular-sheathed at base; sheaths persistent, ca. 1 cm, amplexicaul. Inflorescence terminal or lateral, shorter than leaves, usually 1–1.5 cm, 2–6-flowered; floral bracts often reflexed, lanceolate, 4–5 mm. Flowers white, ca. 5 mm in diam.; pedicel and ovary 3–5 mm. Dorsal sepal elliptic, ca. 3.5 × 1.8–2 mm, concave, acuminate; lateral sepals obliquely triangular, 4–5 × 2–2.5 mm; mentum ca. 1 mm. Petals ovate-oblong, 2.5–3 × ca. 1.5 mm; lip suboblong, 3.5–4 × ca. 1.5 mm, slightly contracted near middle, margin crisped, apex obtuse, distal part with a thickened lamellate appendage, with another large appendage near base; basal appendage spreading backward, suborbicular or broadly ligulate, margin incurved. Column ca. 2 mm, foot 2–2.5 mm. Capsule ellipsoid, 5–6 × 2.5–3 mm. Fl. Jul–Aug, fr. Sep–Oct.

Lithophytic on rocks in forests or on humid cliffs; below 800 m. S Guangdong, Hainan [Cambodia, NE India, Indonesia, Malaysia, Myanmar, Philippines, Thailand, Vietnam].

#### 2. *Appendicula reflexa* Blume, Bijdr. 301. 1825.

台湾牛齿兰 tai wan niu chi lan

*Appendicula cornuta* Blume var. *formosana* (Hayata) S. S. Ying; *A. formosana* Hayata; *A. formosana* var. *kotoensis* (Hayata) T. P. Lin; *A. kotoensis* Hayata; *Podochilus kotoensis* (Hayata) S. S. Ying; *P. taiwanianus* S. S. Ying.

Plants epiphytic. Stems tufted, suberect or pendulous, 40–50 cm, internodes ca. 1 cm, completely enclosed in tubular leaf sheaths. Leaves many, distichous; blade oblong to elliptic, 2–4 × 0.7–1.5 cm, base with tubular sheaths, articulate, apex obtuse or rounded, shallowly bilobed, often aristate in sinus. Inflorescence terminal or lateral, ca. 1 cm, 5–15-flowered; floral bracts ovate or subtriangular, 1.5–2 mm. Flowers greenish or greenish white, fleshy; pedicel and ovary ca. 2 mm. Dorsal sepal oblong-ovate, ca. 2.5 × 1.5 mm, obtuse; lateral sepals triangular-ovate, 3–3.5 × 2–2.5 mm; mentum ca. 1.5 mm. Petals obovate-elliptic, 1.8–2.5 × 0.7–1 mm; lip obovate-suborbicular in outline, 2.3–3 mm, contracted near middle, with a concave base and a broader limb, with a shortly ligulate appendage toward saccate base. Column ca. 0.8 mm, foot conspicuous. Fl. Jan–Dec.

Epiphytic on tree trunks in evergreen forests; 100–1200 m. S Taiwan [India (Nicobar Islands), Indonesia, Malaysia, New Guinea, Philippines, Thailand, Vietnam; Australia, Pacific islands (Solomon Islands)].

#### 3. *Appendicula fenixii* (Ames) Schlechter, Repert. Spec. Nov. Regni Veg. Beih. 1: 336. 1912.

长叶牛齿兰 chang ye niu chi lan

*Podochilus fenixii* Ames, Philipp. J. Sci., C, 6: 48. 1911; *Appendicula terrestris* Fukuyama.

Plants terrestrial. Stems ascending, 35–50 cm, completely enclosed in tubular leaf sheaths. Leaves many, distichous; blade

lanceolate-oblong, ca.  $5 \times 1-1.3$  cm, base with tubular sheaths, apex acuminate, obliquely bilobed. Inflorescence terminal or lateral, 0.5–2 cm, ca. 10-flowered; floral bracts ovate, 3–4 mm. Flowers white, not opening widely; pedicel and ovary 4–5 mm. Dorsal sepal ovate,  $3.5-4 \times$  ca. 2.5 mm; lateral sepals obliquely triangular, slightly larger than dorsal sepal; mentum short. Petals elliptic or oblong, ca.  $3 \times 1.5$  mm, obtuse; lip  $\pm$  pandurate-oblong,  $4-4.5 \times 2.5-3$  mm, concave at base, adaxially with a ligulate hairy appendage extending from middle to base, with 2 small ridges above middle and another small apical callus. Column short, foot long. Fl. Jan–Dec.

Forests; 200–400 m. S Taiwan [Philippines].

**4. *Appendicula annamensis*** Guillaumin, Bull. Soc. Bot. France 77: 340. 1930.

小花牛齿兰 xiao hua niu chi lan

Plants lithophytic. Stems tufted, densely leafy, to 33 cm, ca. 1.5 mm in diam. Leaves spreading; blade pale green, drying blackish, ovate-oblong to ovate-elliptic or elliptic,  $0.8-1.7 \times 0.5-0.8$  cm, weakly obtusely bilobed, minutely apiculate. Inflorescences usually pseudoterminal,  $5-20 \times 5-8$  mm, successively ca. 20-flowered but usually with 1–3 flowers open at once; floral bracts ovate,  $2-2.5 \times 1.5-2$  mm, acute, deflexed. Flowers white. Dorsal sepal broadly ovate, ca.  $2.5 \times 1.8$  mm, acute, weakly dorsally carinate; lateral sepals broadly obliquely ovate, ca.  $3 \times 2.1$  mm, subacute; mentum rather tapered, ca. 1 mm. Petals oblong-elliptic, ca.  $2 \times 1-1.1$  mm, obtuse to subacute; lip ca.  $3 \times 2$  mm, subglobose in basal half, in upper half a broadly ovate, subacute epichile; callus retrorse, varying from fleshy, prostrate, flattish, and subquadrate to thinly fleshy, erect, cupulate-concave, and transversely elliptic. Column ca. 1.5 mm including ca. 0.9-mm-long rostellum; foot ca. 1 mm; anther cap lacking a distinct median umbo. Fl. Apr–May.

Lithophytic on rocks on steep slopes. S Hainan [Vietnam].

In October 1937, T. Tang and F. T. Wang determined *Fung 20206* (AMES, K), from Hainan, as the Philippine species *Appendicula micrantha* Lindley. Their determination was eventually published by Merrill and F. P. Metcalf (Lingnan Sci. J. 21: 6. 1945) and followed in FRPS (19: 60. 1999). Ormerod (Taiwania 49: 95. 2004) re-identified *Fung 20206*, as well as *How 72125* (AMES) also from Hainan, as *A. annamensis*.

*Appendicula annamensis* differs from *A. micrantha* in its black-drying leaves, flowers with a slightly more tapered (not squarish) mentum, petals oblong-elliptic (not obliquely obovate-elliptic), dorsal sepal much broader, and anther cap lacking a distinct median umbo.

