

37. NEOTTIANTHE (Reichenbach) Schlechter, Repert. Spec. Nov. Regni Veg. 16: 290. 1919.

兜被兰属 *dou bei lan shu*

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Himantoglossum subg. *Neottianthe* Reichenbach, Icon. Bot. Pl. Crit. 6: 26. 1828; *Symphiosepalum* Handel-Mazzetti.

Herbs, terrestrial, slender. Tubers subglobose to ovoid, unlobed, fleshy, neck with several slender roots. Stem erect or ascending, with tubular sheaths at base, (1 or)2-leaved, glabrous. Leaves basal, subopposite, (though cauline, alternate, and widely spaced in *Neottianthe secundiflora*), base contracted into amplexicaul sheath. Inflorescence a terminal raceme, glabrous; peduncle elongate, with 1 to a few scattered sterile bracts; rachis usually several to many flowered, rarely with a solitary flower. Flowers often secund, resupinate, pink, purple, or rarely pale yellow; ovary slightly twisted, cylindrical-fusiform, glabrous. Sepals connivent and forming a hood, narrowly oblong to lanceolate, subequal in size. Petals appressed to dorsal sepal, linear to oblong; lip spreading, spurred at base, 3-lobed; disk densely finely papillate; lobes linear to oblong; mid-lobe longer and wider than lateral lobes; spur straight or curved forward. Column erect, short; anther erect, oblong or ellipsoid, apex obtuse, 2-locular, locules parallel; pollinia 2, oblong, granular-farinaceous, sectile; caudicles short; viscidia small, ovate, orbicular, or elliptic, naked; rostellum small, 3-lobed, raised, deltoid; stigma lobes confluent, raised, lying below rostellum; auricles 2, on either side of anther, small, inconspicuous, suborbicular. Capsule erect.

About seven species: E Europe, through Russia and China to Japan, extending to alpine areas of subtropical Asia; seven species (five endemic) in China.

- 1a. Flowers pale yellow to yellowish green; spur ca. 2.5 mm 6. *N. luteola*
- 1b. Flowers pink, purplish red, or purple; spur 2.8–20 mm.
 - 2a. Rachis 1- or rarely 2-flowered; lip 12–13 × 12–13 mm; spur 15–20 mm 7. *N. camptoceras*
 - 2b. Rachis 2–22-flowered; lip 4–10 × 1–7 mm; spur 2.8–7 mm.
 - 3a. Plants 1-leaved.
 - 4a. Leaf blade ovate or broadly ovate, 1.2–1.6 × 1–1.2 cm; spur ca. 3 × 1.5 mm 4. *N. ovata*
 - 4b. Leaf blade oblong, 4–6 × 1.2–1.8 cm; spur 5–6 × 1.8–2 mm 5. *N. oblonga*
 - 3b. Plants usually 2-leaved.
 - 5a. Leaves cauline, alternate, widely spaced 3. *N. secundiflora*
 - 5b. Leaves basal, subopposite.
 - 6a. Plants 8–9 cm tall; dorsal sepal 9–10 × 3–3.5 mm; lateral sepals 10–11 × 3.5–4 mm 2. *N. compacta*
 - 6b. Plants (4–)8–24 cm tall; dorsal sepal 4–7 × 1.5–2.7 mm; lateral sepals 5–8 × 1.5–2.8 mm 1. *N. cucullata*

1. *Neottianthe cucullata* (Linnaeus) Schlechter, Repert. Spec. Nov. Regni Veg. 16: 292. 1919.

二叶兜被兰 *er ye dou bei lan*

Plants (4–)8–24 cm tall. Tubers subglobose to ovoid, 8–15 mm. Stem erect or ascending, with 1 or 2 tubular sheaths at base, (1 or)2-leaved. Leaves basal, subopposite, dark green, adaxially often with purple spots, ovate, elliptic, oblanceolate-spatulate, or narrowly oblong, 2.2–9 × (0.5–)1–3 cm, apex acute to obtuse. Peduncle ebracteate or with 1–4 sterile bracts; rachis 1.5–8 cm, laxly to subdensely 4–22-flowered; floral bracts lanceolate, 5–12 mm, lower ones exceeding ovary, apex acuminate. Flowers often secund, rose-pink to deep purple; ovary and pedicel slightly arcuate, 5–7 mm. Sepals connivent and forming a hood; hood 5–8 × 3–5 mm; dorsal sepal oblong-lanceolate to lanceolate, (4–)5–7 × 1.5–2.7 mm, 1-veined, apex acute; lateral sepals lanceolate, oblique, 5–8 × 1.5–2.8 mm, 1-veined, apex acute to acuminate. Petals appressed to dorsal sepal, linear-lanceolate, 4–7 × 0.5–1.2 mm, 1-veined, apex acute to acuminate; lip spreading, narrowly oblong, 5–10 × 1.8–3 mm, base cuneate, 3-lobed near middle; lateral lobes linear-lanceolate, 2–6 × 0.3–0.5 mm, 1-veined, apex acute; mid-lobe linear-lanceolate, 4–8 × 1–2 mm, 3-veined, apex obtuse; spur pendulous, straight to strongly curved forward, cylindrical-conic,

4–6 mm, ca. 1 mm in diam. at base, apex obtuse. Fl. Jul–Oct.

Forests, thickets, grassy slopes, alpine grasslands; 400–4500 m. Anhui, N Fujian, Gansu, NE Guizhou, Hebei, Heilongjiang, Henan, W Hubei, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, Sichuan, Xizang, NW Yunnan, Zhejiang [Bhutan, N India, Japan, Korea, Mongolia, Nepal, Russia; E Europe].

- 1a. Leaves (0.5–)1–3 cm wide; peduncle with 1–4 sterile bracts; petals 4–5 mm; spur usually strongly curved forward and U-shaped 1a. var. *cucullata*
- 1b. Leaves 0.5–1(–2.2) cm wide; peduncle ebracteate or rarely with 1 sterile bract; petals (4–)5–7 mm; spur straight to slightly curved forward 1b. var. *callicola*

1a. *Neottianthe cucullata* var. *cucullata*

二叶兜被兰(原变种) *er ye dou bei lan (yuan bian zhong)*

Orchis cucullata Linnaeus, Sp. Pl. 2: 939. 1753; *Gymnadenia cucullata* (Linnaeus) Richard; *G. cucullata* var. *maculata* Nakai & Kitagawa; *G. monophylla* Ames & Schlechter; *G. pseudodiphyllax* Kraenzlin; *G. scabrilinguis* Kraenzlin; *Habenaria cucullata* (Linnaeus) Höfft; *Himantoglossum cucullatum* (Linnaeus) H. G. Reichenbach; *Neottianthe angustifolia* K. Y.

Lang; *N. cucullata* f. *maculata* (Nakai & Kitagawa) Nakai & Kitagawa; *N. maculata* (Nakai & Kitagawa) Nakai & Kitagawa; *N. monophylla* (Ames & Schlechter) Schlechter; *N. pseudodiphylax* (Kraenzlin) Schlechter; *N. pseudodiphylax* var. *monophylla* (Ames & Schlechter) Soó.

Leaves ovate, elliptic, or sometimes narrowly oblong, (0.5–)1–3 cm wide, base cuneate, apex acute to obtuse. Peduncle with 1–4 small sterile bracts, lowest one sometimes herbaceous; rachis laxly to subdensely 4–22-flowered. Sepals and petals connivent and forming a hood; hood 3–5 mm wide. Dorsal sepal 4–6 × 1.5–2 mm; lateral sepals 1.5–2.5 mm wide. Petals 4–5 × ca. 0.5 mm; spur pendulous, usually strongly curved forward and U-shaped. Fl. Aug–Sep.

Open places in forests, thickets, grassy slopes; 400–4100 m. Anhui, N Fujian, Gansu, Hebei, Heilongjiang, Henan, W Hubei, Jiangxi, Jilin, Liaoning, Nei Mongol, Qinghai, Shaanxi, Shanxi, W Sichuan, Xizang, NW Yunnan, Zhejiang [Bhutan, N India, Japan, Korea, Mongolia, Nepal, Russia; E Europe].

1b. *Neottianthe cucullata* var. *calcicola* (W. W. Smith) Soó, Ann. Hist.-Nat. Mus. Natl. Hung. 26: 353. 1929.

密花兜被兰 mi hua dou bei lan

Gymnadenia calcicola W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 188. 1914; *Neottianthe calcicola* (W. W. Smith) Schlechter; *N. gymnadenioides* (Handel-Mazzetti) K. Y. Lang & S. C. Chen; *Symphiosepalum gymnadenioides* Handel-Mazzetti.

Leaves oblanceolate-spatulate to narrowly oblong, 0.5–1(–2.2) cm wide, base gradually tapering, apex usually acute. Peduncle ebracteate or rarely with 1 sterile bract; rachis subdensely 6–20-flowered. Sepals and petals connivent and forming a hood; hood 4.5–5 mm wide. Dorsal sepal 4–7 × (1.5–)2–2.7 mm; lateral sepals (1.5–)2.5–2.8 mm wide. Petals (4–)5–7 × 0.5–1.2 mm; spur pendulous, straight to slightly curved forward. Fl. Jul–Oct.

Forests, thickets, alpine grasslands; 2100–4500 m. SE Gansu, NE Guizhou, S Qinghai, S and W Sichuan, E and S Xizang, NW Yunnan [Bhutan, India (Sikkim), Nepal].

2. *Neottianthe compacta* Schlechter, Acta Horti Gothob. 1: 136. 1924.

川西兜被兰 chuan xi dou bei lan

Plants 8–9 cm tall. Tubers ellipsoid, 10–20 mm. Stem erect, with 1 or 2 tubular sheaths at base, 2-leaved. Leaves basal, subopposite, narrowly oblong to oblong-lanceolate, 5–6 × 1–1.5 cm, apex obtuse. Rachis 3–3.5 cm, densely 6–8-flowered; floral bracts herbaceous, narrowly lanceolate, slightly longer than ovary, apex acuminate. Flowers pink; ovary and pedicel 6–7 mm. Sepals connivent and forming a hood; hood 10–11 × ca. 10 mm; dorsal sepal narrowly oblong-lanceolate, concave, 9–10 × 3–3.5 mm, 3-veined, apex subacute; lateral sepals lanceolate-falcate, oblique, 10–11 × 3.5–4 mm, 2-veined, apex acuminate. Petals appressed to dorsal sepal, linear-falcate, 8–9 × 1.4–1.5 mm, inner surfaces papillate, 1-veined, apex obtuse; lip reflexed, obovate, 9–10 × ca. 7 mm, base cuneate, 3-

lobed below middle; lateral lobes obliquely ligulate, ca. 3 mm, apex obtuse; mid-lobe narrowly ligulate, ca. 6 mm, apex obtuse; spur pendulous, slightly curved forward, cylindrical-conic, 6–7 mm, stout, ca. 2.5 mm in diam. at base, apex obtuse. Fl. Aug.

• Alpine meadows; 4000–4100 m. W Sichuan.

3. *Neottianthe secundiflora* Schlechter, Repert. Spec. Nov. Regni Veg. 16: 291. 1919.

侧花兜被兰 ce hua dou bei lan

Habenaria secundiflora J. D. Hooker, Fl. Brit. India 6: 165. 1890, not Barbosa Rodrigues (1881); *Gymnadenia secundiflora* Kraenzlin; *Neottianthe mairei* Schlechter; *Peristylus secundiflorus* Kraenzlin.

Plants 10–35 cm tall. Tubers subglobose to ellipsoid, 8–15 mm. Stem erect, with 1 or 2 tubular sheaths at base, 2-leaved. Leaves cauline, alternate, widely spaced, linear to narrowly oblong, 5–14 × 0.4–1 cm, apex acuminate to subacute. Peduncle with 1–4 sterile bracts, lowest one usually large and herbaceous; rachis 7–9 cm, laxly 8- to densely more than 30-flowered; floral bracts linear-lanceolate, to 25 mm, basal ones exceeding flowers, apex acuminate. Flowers mostly secund, pale to dark purple; ovary and pedicel 6–7 mm. Sepals connivent and forming a hood; hood 5–7 × 3–5 mm; dorsal sepal erect, lanceolate, concave, 5–6 × 1.5–1.8 mm, 1-veined, apex acute; lateral sepals lanceolate-falcate, oblique, 6–7 × 1.8–2.8 mm, 1-veined, apex acute. Petals appressed to dorsal sepal, linear to oblong-lanceolate, 5–5.5 × 0.7–1.2(–1.5) mm, 1-veined, apex acute; lip spreading, slightly reflexed, narrowly oblong, 4.5–6.5 × 2–3 mm, base attenuate, 3-lobed toward apex; lateral lobes oblong-ovate to lanceolate, 0.8–1.8 × 0.5–1 mm, apex obtuse or acute; mid-lobe narrowly oblong-ovate, 1.5–2.2 × 0.8–1.5 mm, apex obtuse or acute; spur pendulous, straight to slightly curved forward, conic, stout, 2.8–4 × 1.5–1.8 mm, apex obtuse. Fl. Aug–Oct.

Forests, grassy slopes; 2700–3800 m. W Sichuan, E and S Xizang, NW Yunnan [Bhutan, India, Myanmar, Nepal].

4. *Neottianthe ovata* K. Y. Lang, Acta Phytotax. Sin. 35: 542. 1997.

卵叶兜被兰 luan ye dou bei lan

Plants 6–10 cm tall. Tubers subglobose, ca. 10 mm. Stem erect, with 1 or 2 tubular sheaths at base, 1-leaved. Leaf basal, ovate or broadly ovate, 1.2–1.6 × 1–1.2 cm, base rounded or broadly cuneate, apex acute. Peduncle with 1 small sterile bract; rachis 2–4 cm, subdensely 4–8-flowered; floral bracts lanceolate, 4–6 mm, apex acuminate, basal one ca. as long as ovary. Flowers secund, pale purple or pink; ovary and pedicel slightly arcuate, 4–6 mm. Sepals connivent and forming a hood; hood ca. 6 × 4 mm; dorsal sepal oblong, concave, ca. 6 × 1.6 mm, 1–3-veined, apex obtuse; lateral sepals oblong, ca. 6 × 1.6 mm, 2-veined, apex obtuse. Petals appressed to dorsal sepal, linear, ca. 5.5 × 0.7 mm, 1-veined, apex subobtusely; lip spreading, oblong-ovate, ca. 6 × 3 mm, base cuneate, 3-lobed near middle; lateral lobes linear-lanceolate, ca. 2.5 × 0.4 mm, 1-veined, apex acuminate; mid-lobe oblong, ca. 3.5 × 1 mm, 3-veined, apex subobtusely or rarely notched; spur pendulous, slightly curved forward,

conic, ca. 3 mm, stout, ca. 1.5 mm in diam. at base, slightly attenuate, apex obtuse. Fl. Sep.

- Alpine *Pinus* forests, shrubby slopes; 2400–3300 m. W Sichuan.

In the protologue, the specimen *Qinghai-Xizang Exped. 13979* (PE) was indicated as “holotype” and *P. C. Li 207* (PE) was indicated as a “type.” The latter is interpreted as a paratype.

5. *Neottianthe oblonga* K. Y. Lang, *Acta Phytotax. Sin.* 35: 544. 1997.

长圆叶兜被兰 chang yuan ye dou bei lan

Plants 9.5–14 cm tall. Tubers ovoid, ca. 10 mm. Stem erect, with 1 or 2 tubular sheaths at base, 1-leaved. Leaf basal, oblong, 4–6 × 1.2–1.8 cm, apex subobtuse or subacute. Peduncle ebracteate; rachis 4–5 cm, subdensely 5–9-flowered; floral bracts lanceolate, 6–8 mm, shorter than ovary, apex acuminate. Flowers secund, pale purple; ovary and pedicel slightly arcuate, 8–10 mm. Sepals connivent and forming a hood; hood 7–8 × ca. 5 mm; dorsal sepal linear-lanceolate, 6–7.5 × 1.4–1.6 mm, 1-veined, apex acuminate; lateral sepals lanceolate, oblique, 7–8.5 × 2–2.2 mm, 1-veined, apex acuminate. Petals appressed to dorsal sepal, linear, 5–6.5 × 0.8–1 mm, 1-veined, apex acuminate; lip spreading, narrowly oblong-ovate, 8–9 × ca. 4 mm, 3-lobed near middle; lateral lobes linear-lanceolate, 3–3.5 × 0.5–0.7 mm, 1-veined, apex obtuse; mid-lobe lanceolate, 4–4.5 × 1.3–1.5 mm, 3-veined, apex obtuse; spur pendulous, ± straight to slightly curved forward, conic, 5–6 mm, stout, 1.8–2 mm in diam. at base, slightly attenuate, apex obtuse. Fl. Aug.

- *Quercus* forests; ca. 3100 m. NW Yunnan.

6. *Neottianthe luteola* K. Y. Lang & S. C. Chen, *Acta Phytotax. Sin.* 35: 545. 1997.

淡黄花兜被兰 dan huang hua dou bei lan

Plants 13–17 cm tall. Tubers subglobose, 10–15 mm. Stem erect or ascending, with 1 or 2 tubular sheaths at base, 1-leaved. Leaf subbasal, erect-spreading, linear to linear-lanceolate, 9–10 × 0.4–0.6 cm, apex acuminate. Peduncle with 1 small sterile bract above middle; rachis 4–6 cm, densely 9–13-flowered; floral bracts lanceolate, apex acuminate, basal ones exceeding flowers. Flowers not secund, pale yellow to yellowish green, small; ovary and pedicel 5–6 mm. Sepals connivent and forming a hood; hood ca. 4.5 × 4 mm; dorsal sepal erect, oblong, concave, ca. 4.5 × 1.5 mm, 1-veined, apex obtuse; lateral sepals oblong, oblique, ca. 4.5 × 1.5 mm, 1-veined, apex obtuse. Petals appressed to dorsal sepal, oblong, slightly oblique, ca. 4 × 1.4 mm, 1-veined, apex obtuse; lip spreading, obovate, ca. 4 × 2.8 mm, base cuneate, 3-lobed near middle; lateral lobes oblong, ca. 1.5 × 0.7 mm, apical margin irregularly 2- or 3-denticulate, apex obliquely truncate; mid-lobe oblong, ca. 2 × 1 mm, apex notched and forming 2 small teeth; spur pendulous, straight, cylindrical-conic, ca. 2.5 mm, stout, ca. 1.2 mm in diam. at base, apex obtuse. Fl. Sep–Oct.

- Humid grassy slopes; ca. 3000 m. NW Yunnan.

7. *Neottianthe camptoceras* (Rolfe) Schlechter, *Repert. Spec. Nov. Regni Veg.* 16: 292. 1919.

大花兜被兰 da hua dou bei lan

Habenaria camptoceras Rolfe, *J. Linn. Soc., Bot.* 29: 319. 1892; *Amitostigma potaninii* K. V. Ivanova; *A. potaninii* f. *macranthum* K. V. Ivanova; *Galearis constricta* (L. O. Williams) P. F. Hunt; *Galeorchis constricta* (L. O. Williams) Soó; *Gymnadenia camptoceras* (Rolfe) Schlechter; *Orchis constricta* L. O. Williams.

Plants 4.5–10 cm tall. Tubers subglobose, ca. 10 mm. Stem erect, 2-leaved. Leaves basal, subopposite, elliptic to ovate-lanceolate, 2.5–3 × 0.5–1 cm, apex acute. Rachis 1- or rarely 2-flowered; floral bract lanceolate, slightly shorter than ovary, apex acuminate. Flower deep purple, large; ovary and pedicel 12–13 mm. Sepals connivent and forming hood; hood ca. 9 × 8 mm; dorsal sepal narrowly oblong-ovate, concave, ca. 8 × 2.2 mm, 3-veined, apex obtuse; lateral sepals lanceolate-falcate, oblique, ca. 9 × 4 mm, 3-veined, apex obtuse. Petals appressed to dorsal sepal, linear-lanceolate, ca. 7.5 × 1.2 mm, 1- or 2-veined, apex obtuse; lip spreading, broadly oblong-ovate, 12–13 × 12–13 mm, 3-lobed near base; disk with a few white spots; lateral lobes oblong-ligulate, ca. 5 × 2 mm, apex obtuse; mid-lobe ovate-rhombic, ca. 10 × 8 mm, apex rounded-obtuse; spur pendulous, curved forward or hooked near apex, cylindrical, dilated toward apex, 15–20 mm, conspicuously longer than ovary, apex obtuse. Fl. May–Jun.

- Forests, grassy slopes; 2700–3100 m. SW and W Sichuan.

