

90. GEODORUM Jackson, Bot. Repos. 10: ad t. 626. 1811.

地宝兰属 di bao lan shu

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Cistella Blume; *Ortmannia* Opiz; *Otandra* Salisbury.

Herbs, terrestrial, medium-sized, leafy. Pseudobulbs subterranean, cormlike or tuberous, usually globose, few noded, borne on a short rhizome and usually forming clusters, with several thick roots at nodes. Leaves arising from basal node of pseudobulb, several, uppermost largest, contracted into a long petiole-like stalk at base, plicate; petiole-like stalk usually equitant and forming a pseudostem, articulate. Inflorescence arising from basal node of pseudobulb, terminal, racemose; peduncle erect at base, curved through 180° and drooping toward apex; rachis pendulous but becoming erect in fruit, short, usually densely several to many flowered and appearing capitate. Flowers medium-sized or small, not opening widely, not resupinate but, because peduncle pendulous at apex, lip positioned lowermost. Sepals and petals similar though petals usually slightly broader, free, not spreading; lip unlobed or obscurely 3-lobed, base usually saccate, without a distinct spur; disk usually with a callus composed of ridges or wartlike projections. Column short, with a short column foot; anther terminal, 1-locular or incompletely 2-locular, with cap; pollinia 2, usually cleft, waxy, attached to a broad stipe and a large viscidium.

About ten species: from tropical Asia, as far north as S Japan (Ryukyu Islands), to Australia and the SW Pacific islands; six species (two endemic) in China.

- 1a. Inflorescence usually taller than leaves.
 - 2a. Flowers white 1. *G. densiflorum*
 - 2b. Flowers rose-colored 6. *G. eulophioides*
- 1b. Inflorescence much shorter than or subequal in height to leaves.
 - 3a. Flowers rose-colored; lip 3-lobed 5. *G. esquirolei*
 - 3b. Flowers white; lip unlobed.
 - 4a. Lip with a 2-lobed wartlike callus near base 4. *G. attenuatum*
 - 4b. Lip with a central callus composed of 2–5 longitudinal fleshy ridges.
 - 5a. Leaves well developed at anthesis, (10–)13–21(–31) cm; lip shallowly concave at base; callus on lip composed of 2 or 3 fleshy ridges 2. *G. recurvum*
 - 5b. Leaves not fully developed at anthesis, 7–11 cm; lip conic-saccate at base; callus on lip composed of 3–5 fleshy ridges 3. *G. pulchellum*

1. *Geodorum densiflorum* (Lamarck) Schlechter, Repert. Spec. Nov. Regni Veg. Beih. 4: 259. 1919.

地宝兰 di bao lan

Limodorum densiflorum Lamarck, Encycl. 3: 516. 1792; *Cistella cernua* (Willdenow) Blume; *Cymbidium pictum* R. Brown; *Dendrobium nutans* C. Presl; *Geodorum formosanum* Rolfe; *G. fucatum* Lindley; *G. nutans* (C. Presl) Ames; *G. pacificum* Rolfe; *G. pictum* (R. Brown) Lindley; *G. purpureum* R. Brown; *G. semicristatum* Lindley; *Malaxis cernua* Willdenow; *Ortmannia cernua* (Willdenow) Opiz; *Otandra cernua* (Willdenow) Salisbury; *Tropidia grandis* Hance.

Plants 30–50 cm tall. Pseudobulbs tuberous, irregularly ellipsoid to triangular-ovoid, borne on a very short rhizome and forming dense clusters, 1.5–2 cm in diam., few noded, usually partially covered in fibrous sheaths. Leaves 2 or 3, well developed at anthesis, lustrous, elliptic, narrowly elliptic, or oblong-lanceolate, 15–35 × (2–)3–9 cm, papery, apex acuminate or acute; petiole-like stalk enclosed in several sheaths and forming a pseudostem to ca. 25 cm. Inflorescence (10–)30–40 cm, usually as tall as or taller than leaves; peduncle with 3–5 widely spaced sheaths; sheaths tubular, 4–6.5 cm, membranous; rachis pendulous, 2.5–6 cm, densely (2–)5–15-flowered; floral bracts linear-lanceolate, 5–9 × ca. 2.5 mm, apex acute to acuminate.

Flowers not opening widely, white to pinkish, lip with a central yellow callus and crimson-purple venation and streaks; pedicel and ovary 7–8 mm. Sepals oblong, 10–12 × 3–4 mm, apex acute; lateral sepals somewhat oblique. Petals subobovate-oblong, 10–12 × 4–5 mm, apex acute or mucronate; lip broadly ovate-oblong, 10–11 × 9–10 mm, shallowly saccate at base, unlobed, lateral margins erect, apex subtruncate and slightly emarginate or retuse; disk with a central callus composed of a cluster of irregular, fleshy wartlike projections or a pair of short, fleshy longitudinal ridges. Column 3–5 mm, with a short column foot. Capsule oblong, 3.5–5 × ca. 1.5 cm. Fl. Jun–Jul. $2n = 36, 52, 54$.

Forests, streamsides, grassy slopes; 300–2400 m. Guangdong, Guangxi, Guizhou, Hainan, SW Sichuan, Taiwan, Yunnan [Cambodia, India, Indonesia, Japan (Ryukyu Islands), Laos, Malaysia, Myanmar, New Guinea, Sri Lanka, Thailand, Vietnam; Australia].

The recent use of the name *Geodorum terrestre* (Linnaeus) Garay for this species (see Garay, Harvard Pap. Bot. 291: 47. 1997) cannot be justified. The specimen referred to by Garay as the type is *G. citrinum* Jackson, rather than *G. densiflorum* (P. Ormerod, pers. comm.).

2. *Geodorum recurvum* (Roxburgh) Alston in H. Trimen, Handb. Fl. Ceylon 6: 276. 1931.

多花地宝兰 duo hua di bao lan

Limodorum recurvum Roxburgh, Pl. Coromandel 1: 33. 1795; *Geodorum dilatatum* R. Brown.

Plants 14–28 cm tall. Pseudobulbs tuberous, ovoid, borne on a short rhizome and sometimes forming clusters, 1.5–2.5 cm in diam., few noded, usually partially covered in fibrous sheaths. Leaves 2 or 3, well developed at anthesis, elliptic-oblong to elliptic, (10–)13–21(–31) × (3–)5–7(–11) cm, apex acute or shortly acuminate; petiole-like stalk enclosed in several sheaths and forming a pseudostem 8–18 cm. Inflorescence (8–)15–18 cm, much shorter than leaves; peduncle with 2 or 3 tubular, membranous sheaths; rachis pendulous, 3–4 cm, densely 10- or more flowered; floral bracts linear-lanceolate, 6–12 mm, membranous, apex acute. Flowers not opening widely, white, lip with purplish streaks and a yellowish callus at center; pedicel and ovary 5–6 mm. Sepals narrowly oblong, 10–12 × 2–2.5 mm, apex acuminate; lateral sepals slightly wider than dorsal sepal. Petals obovate-oblong, 9–11 × ca. 3.5 mm, apex obtuse or acute; lip broadly oblong-ovate, ca. 8 × 5 mm, shallowly concave at base, unlobed, lateral margins erect, apical margins slightly crisped, apex obtuse and usually slightly emarginate; disk with a central callus composed of 2 or 3 fleshy, crestlike longitudinal ridges extending from midway along lip almost to apex. Column 3–3.5 mm, with a short column foot. Fl. Apr–Jun.

Forests, thickets, forest margins; 500–900 m. S Guangdong, Hainan, S and SE Yunnan [Cambodia, India, Myanmar, Thailand, Vietnam].

3. *Geodorum pulchellum* Ridley, J. Straits Branch Roy. Asiat. Soc. 50: 138. 1908.

美丽地宝兰 mei li di bao lan

Plants 11–20 cm tall. Pseudobulbs tuberous, globose to ovoid, borne on a very short rhizome and forming dense clusters, ca. 1.5 cm in diam., usually partially covered in fibrous sheaths. Leaves 2 or 3, not fully developed at anthesis, broadly ovate-elliptic, 7–11 × 2.5–3 cm in flowering individuals, apex acute; petiole-like stalk enclosed in several sheaths and forming a pseudostem 4–7 cm. Inflorescence 6–13 cm, shorter than or subequal in height to leaves; peduncle with 2 or 3 tubular sheaths ca. 2 cm; rachis pendulous, 1.5–2.5 cm, densely more than 10-flowered; floral bracts linear-lanceolate, 6–7 × 2–3 mm, membranous, apex acute. Flowers not opening widely, white, lip with a yellow disk and purple venation, sweetly scented; pedicel and ovary 6–8 mm. Dorsal sepal oblong-lanceolate, 8–9 × ca. 2 mm, apex obtuse or acute; lateral sepals elliptic-oblong, slightly oblique, 9–10 × ca. 2.5 mm, apex acute and usually slightly twisted. Petals subovate or oblong-ovate, 7–8 × ca. 2.5 mm, apex acuminate and slightly twisted; lip subovate, 6–7 × ca. 4 mm, slightly contracted near middle, conic-saccate at base, unlobed, apical margin slightly crisped, apex obtuse-rounded; disk with a central callus composed of 3–5 longitudinal, fleshy and irregular crestlike ridges. Column 3–3.5 mm, with a short column foot. Fl. Apr–May.

Rocky substrates near rivers, grasslands; 400–1400 m. NW and SE Yunnan [Thailand, Vietnam].

4. *Geodorum attenuatum* Griffith, Calcutta J. Nat. Hist. 5:

358. 1844.

大花地宝兰 da hua di bao lan

Geodorum cochinchinense Gagnepain; *G. laoticum* Guillaumin; *G. regneri* Gagnepain.

Plants 15–30 cm tall. Pseudobulbs tuberous, subellipsoid, 2–3 × 1–1.5 cm. Leaves 3 or 4, well developed at anthesis, oblanceolate-oblong, 9–22 × 2.5–4.2 cm, apex acuminate; petiole-like stalk enclosed in several sheaths and forming a pseudostem 4–9 cm. Inflorescence arising from base of pseudobulb, 6–12 cm, much shorter than leaves; peduncle with 2 or 3 tubular sheaths; rachis pendulous, very short, densely 2–4-flowered; floral bracts lanceolate, 8–12 mm, membranous, apex acute. Flowers not opening widely, white, lip yellow above middle; pedicel and ovary 7–9 mm. Sepals oblong or ovate-oblong, 12–15 × 4–6 mm, apex shortly acuminate or subacute; lateral sepals somewhat oblique. Petals ovate-elliptic, 11–13 × 7–8 mm, apex subacute; lip broadly ovate, 12–14 × ca. 6 mm, concave to shallowly saccate at base, unlobed, lateral margins erect, apex truncate and sometimes emarginate; disk with a brown, 2-lobed wartlike callus near base. Column stout, 2.5–3.5 × ca. 2.5 mm, with a short column foot. Fl. May–Jun.

Forest margins; 200–1400 m. Hainan, S Yunnan [Laos, Myanmar, Thailand, Vietnam].

5. *Geodorum esquirelei* Schlechter, Repert. Spec. Nov. Regni Veg. 17: 69. 1921.

西南地宝兰 xi nan di bao lan

Plants ca. 23 cm tall. Pseudobulbs tuberous, rotund, ca. 1.5 cm in diam. Leaves 2, not fully developed at anthesis, narrowly elliptic, ca. 20 × 4 cm, sheathing at base, apex acuminate. Inflorescence erect, shorter than or subequal in height to leaves; pe-

duncle with 3 scattered sheaths; rachis pendent, short, densely 7–10-flowered; floral bracts lanceolate, lower ones slightly exceeding flowers, upper ones shorter, apex acuminate. Flowers rose-colored; pedicel and ovary cylindric, ca. 8 mm. Sepals oblong, ca. 15 mm, shortly or long acuminate; lateral sepals oblique. Petals ovate, oblique, ca. 14 mm, wider than sepals, apex apiculate; lip orbicular-ovate, ca. 13×8.5 mm, shallowly saccate at base, 3-lobed, apex obtuse or retuse; disk with a callus composed of 3 short, fleshy, longitudinal ridges near base, middle ridge somewhat rugulose toward apex. Column short, ca. 5 mm. Fl. Jun.

- Grasslands; ca. 800 m. Guizhou.

6. *Geodorum euphroides* Schlechter, Repert. Spec. Nov. Regni Veg. 17: 70. 1921.

贵州地宝兰 *gui zhou di bao lan*

Plants ca. 32 cm tall. Pseudobulbs tuberous, irregularly cylindric, ca. 2 cm in diam. Leaves 2, well developed at anthesis; petiole-like stalk enclosed in several sheaths. Inflorescence ca. 32 cm, taller than leaves; peduncle with 2 or 3 tubular sheaths; rachis pendulous, ca. 4.5 cm, densely many flowered; floral bracts narrowly lanceolate, lower ones ca. as long as flowers. Flowers rose-colored; pedicel and ovary ca. 10 mm. Sepals narrowly ligulate-oblong, $13\text{--}15 \times 2\text{--}3$ mm, apex apiculate; lateral sepals somewhat longer than dorsal sepal, slightly oblique. Petals suboblong, slightly oblique, $13\text{--}15 \times 4.5\text{--}5$ mm, apex apiculate; lip ovate, ca. 12×8 mm, concave to shallowly saccate at base, unlobed, margin undulate, apex subtruncate; disk papillate and thickened above middle. Column ca. 4.5 mm. Fl. Dec.

- Along valleys; ca. 600 m. S Guizhou (Luodian).

This species remains imperfectly known.

