

## 25. DISPORUM Salisbury ex D. Don, Prodr. Fl. Nepal. 50. 1825.

万寿竹属 wan shou zhu shu

Liang Songyun (梁松筠 Liang Song-jun); Minoru N. Tamura

*Drapiezia* Blume.

Herbs perennial, often shortly rhizomatous, sometimes long stoloniferous, often glabrous, sometimes scabrous. Roots fleshy. Stem erect, simple or branched in distal part, with 1 to several sheaths proximally. Leaves concentrated in distal part of stem, alternate, often shortly petiolate, sometimes sessile, linear to suborbicular, 3–7-veined. Inflorescences terminal or pseudolateral (terminal on a short, lateral branchlet opposite a leaf), umbellate or with flowers paired or solitary; bract absent. Flowers bisexual, often nodding, sometimes horizontal, tubular-campanulate to opening flat. Tepals 6, free, white, greenish, yellow, pink, dark red, or dark purple, often saccate or spurred at base. Stamens 6, inserted at base of tepals; filaments usually slightly flat; anthers basifixed to innate, extrorse. Ovary 3-loculed; ovules 2–6 per locule. Style filiform, 3-lobed to 3-fid apically with ± recurved lobes. Fruit a berry, dark blue to black, 2(–6)-seeded. Seeds globose or ovoid.

Twenty species: Bhutan, China, India, Japan, Korea, Laos, Malaysia, Myanmar, Nepal, Russia, Sikkim, Thailand, Vietnam; 14 species (eight endemic) in China.

The North American genus *Prosartes* D. Don has often been included in *Disporum*, but recent micromorphological, karyological, phytochemical, and molecular phylogenetic studies indicate that separation of the two genera is appropriate.

- 1a. Inflorescences all or at least partly pseudolateral (terminal on a short, lateral branchlet opposite a leaf).
  - 2a. Tepals long spurred, spurs cylindric, often slightly recurved, 4–5(–8) mm ..... 11. *D. calcaratum*
  - 2b. Tepals shortly spurred, spurs gibbous, 1–3 mm.
    - 3a. Flowers semiopen campanulate, 2.5–3.8 cm, narrowed to base; stamens 2–2.8 cm; tepal spurs ca. 1 mm ..... 5. *D. megalanthum*
    - 3b. Flowers tubular-campanulate to campanulate, 1.5–2.5(–2.8) cm; stamens 0.8–2 cm; tepal spurs 2–3 mm.
      - 4a. Pedicel usually papillose-scabrous; tepals not densely papillose apically ..... 7. *D. cantoniense*
      - 4b. Pedicel subsmooth; tepals densely papillose apically ..... 8. *D. kawakamii*
- 1b. Inflorescences all truly terminal (at apex of a stem or branches).
  - 5a. Tepals minutely puberulent on both surfaces ..... 6. *D. acuminatissimum*
  - 5b. Tepals glabrous or sometimes minutely papillose or pilose near base adaxially.
    - 6a. Leaves rather thick, subleathery, with distinct cross veins ..... 9. *D. trabeculatum*
    - 6b. Leaves thinner, papery or herbaceous, without distinct cross veins.
      - 7a. Tepals slightly saccate at base, long attenuate at apex.
        - 8a. Tepals greenish white, (1.2–)1.5–2 cm, nearly 3 × as long as stamens; filaments equaling or slightly longer than anthers; ovary globose, slightly shorter than or equaling style ..... 1. *D. viridescens*
        - 8b. Tepals white, 1.1–1.3(–1.6) cm, slightly longer than stamens; filaments ca. 2 × as long as anthers; ovary obovoid, ca. 1/2 as long as style ..... 2. *D. smilacinum*
  - 7b. Tepals spurred at base, rounded to subacute at apex.
    - 9a. Stamens and pistil longer than tepals.
      - 10a. Tepals 10–17 mm, subacute at apex ..... 4. *D. longistylum*
      - 10b. Tepals 5–9 mm, rounded at apex ..... 10. *D. hainanense*
    - 9b. Stamens and pistil shorter than or equaling tepals.
      - 11a. Flowers funnelform to broadly obconical, 1–1.2 cm ..... 3. *D. bodinieri*
      - 11b. Flowers tubular-campanulate to open campanulate, 1.5–3 cm.
        - 12a. Tepals white to cream, spotted with violet distally, apex yellowish green ..... 13. *D. nantouense*
        - 12b. Tepals yellow, apex rarely green.
          - 13a. Flowers cylindric-campanulate, 2–3 cm; filaments minutely papillose proximally ..... 12. *D. uniflorum*
          - 13b. Flowers open campanulate, 1.5–2.3 cm; filaments glabrous or sparsely papillose ..... 14. *D. shimadae*

**1. *Disporum viridescens*** (Maximowicz) Nakai, J. Coll. Sci. Imp. Univ. Tokyo 31: 246. 1911.

宝珠草 bao zhu cao

*Uvularia viridescens* Maximowicz, Prim. Fl. Amur. 273. 1859; *Disporum smilacinum* A. Gray var. *viridescens* (Maximo-

wicz) Maximowicz; *Prosartes viridescens* (Maximowicz) Regel.

Rhizome short, usually with long, creeping stolon; roots densely tufted. Stem often branched distally, sometimes simple, 30–80 cm. Petiole very short; leaf blade elliptic to ovate-oblong, 5–12 × 2–5 cm, abaxially slightly scabrous on veins, cross veins indistinct, margin minutely scabrous. Inflorescences ter-

minal, 1- or 2-flowered; pedicels 1.5–2.5 cm. Flowers widely opening. Tepals greenish white, oblong-lanceolate to lanceolate, (1.2–)1.5–2 cm × 3–4 mm, 7-veined, base slightly saccate, apex long attenuate. Stamens 4.5–7 mm, included; filaments slightly dilated proximally, 3–4 mm; anthers 2–3 mm. Ovary globose, 2.5–3.5 mm. Style 3–4 mm. Berries black, globose, ca. 1 cm in diam., 2- or 3-seeded. Seeds red-brown, ca. 4 mm in diam. Fl. May–Jun, fr. Jul–Oct.  $2n = 16$ .

Forests, grassy slopes; near sea level to 600 m. Heilongjiang, Jilin, Liaoning [Japan, Korea, Russia (Far East)].

**2. *Disporum smilacinum*** A. Gray in Perry, Exped. Jap. 2: 321. 1857.

山东万寿竹 shan dong wan shou zhu

*Disporum smilacinum* var. *album* Maximowicz; *D. smilacinum* var. *ramosum* Nakai; *D. smilacinum* var. *rotundatum* Satake; *D. smilacinum* var. *variegatum* Nakai.

Rhizome short, often with long, creeping stolon. Stem usually simple, rarely branched, 15–35 cm. Petiole distinct, 1–2 mm; leaf blade ovate to elliptic, 3–7 × 1.5–3 cm, base subrounded and slightly conduplicate, margin scabrous, apex acute to acuminate. Inflorescences terminal, 1(or 2)-flowered; pedicel 1–1.5(–2.2) cm. Flowers opening. Tepals white, broadly lanceolate to lanceolate, 1.1–1.3(–1.6) cm × 2–4 mm, base slightly saccate, apex long attenuate. Stamens 7–9 mm, included; filaments dilated proximally, 5–6 mm; anthers 2–3 mm. Ovary obovoid, 2–3 mm. Style 5–7 mm. Berries black, globose or broadly ellipsoid, ca. 1 cm in diam. Seeds ovoid, ca. 4 mm. Fl. Apr–May, fr. Sep–Oct.  $2n = 16$ .

Forests; near sea level to 400(–1600) m. NE Shandong (Yantai Shi) [Japan, Korea, Russia (S Kurile Islands, S Sakhalin)].

**3. *Disporum bodinieri*** (H. Léveillé & Vaniot) F. T. Wang & Tang, Contr. Inst. Bot. Natl. Acad. Peiping 6: 20. 1949.

短蕊万寿竹 duan rui wan shou zhu

*Tovaria bodinieri* H. Léveillé & Vaniot, Mem. Pontif. Accad. Romana Nuovi Lincei 23: 360. 1905; *Disporum brachystemon* F. T. Wang & Tang; *D. pullum* Salisbury var. *ovalifolium* H. Léveillé.

Rhizome creeping, rather thick. Stem usually branched distally, 30–70(–100) cm. Petiole 5–10 mm; leaf blade elliptic to ovate-lanceolate, 5–15 × 2–6 cm, often scabrous at margin and on veins abaxially. Inflorescences terminal, umbellate, 2–6-flowered; pedicels 1.5–2.5 cm, usually papillose. Flowers funnelform to broadly obconical. Tepals white or yellowish green, rarely purple, obovate-ob lanceolate to elliptic-lanceolate, 1–1.2 cm × 3–5 mm, base gibbous-spurred; spurs ca. 1 mm. Stamens 6–11 mm, included or equaling tepals; filaments 3–5 mm; anthers ca. 3 mm. Ovary 2–3 mm. Style 4–7 mm. Berries subglobose, 5–10 mm in diam., 3–6-seeded. Fl. May–Jun, fr. Aug–Oct.  $2n = 16^*$ .

• Forests, thickets, rocky places; 1200–3000 m. Guizhou, Hunan, Sichuan, Xizang, Yunnan.

Hara (Bull. Univ. Mus. Univ. Tokyo 31: 180. 1988) reported *Disporum leucanthum* H. Hara from China based on specimens from

Sichuan (*Hsieh 40064*; *Xiong & Li 90719*) and Yunnan (*Ward 215*), but these specimens seem to be *D. bodinieri*. Further studies are needed in order to ascertain whether or not the two taxa are conspecific.

**4. *Disporum longistylum*** (H. Léveillé & Vaniot) H. Hara, J. Jap. Bot. 59: 40. 1984.

长蕊万寿竹 chang rui wan shou zhu

*Tovaria longistyla* H. Léveillé & Vaniot, Mem. Pontif. Accad. Romana Nuovi Lincei 23: 361. 1905; *Disporum cavaleriei* H. Léveillé.

Rhizome without creeping stolon. Stem usually branched distally, 30–90 cm. Petiole 3–10 mm; leaf blade lanceolate to elliptic, 3–15 × 1–4(–6) cm, base subrounded, apex usually long acuminate. Inflorescences terminal, umbellate, 2–8-flowered; pedicels 0.7–2.4 cm. Tepals green or greenish yellow, rarely purplish, spatulate-ob lanceolate to obovate, 1–1.7 cm × 2–4(–8) mm, base gibbous-spurred, apex subacute; spurs 1–1.5 mm. Stamens 1.2–1.9 cm, exerted; filaments filiform, 1–1.6 cm, very minutely scabrous-puberulent proximally; anthers 2.5–4.5 mm. Ovary 2–3 mm. Style 0.8–1.7 cm, exerted. Berries black, subglobose, 6–9 mm in diam. Fl. Mar–Jun, fr. Sep–Dec.  $2n = 16^*$ .

• Forests, rocky places; 400–1800 m. Gansu, Guizhou, Hubei, Shaanxi, Sichuan, Xizang, Yunnan.

**5. *Disporum megalanthum*** F. T. Wang & Tang, Fl. Reipubl. Popularis Sin. 15: 250. 1978.

大花万寿竹 da hua wan shou zhu

Rhizome short, with fleshy roots 2–3 mm thick. Stem often slightly branched distally, 30–60 cm. Petiole, 2–4 mm; leaf blade elliptic to broadly lanceolate, 6–12 × 2–5(–8) cm, base subrounded and slightly conduplicate, margin papillose-scabrous, apex acuminate. Inflorescences terminal and pseudolateral, (2–)4–8-flowered; peduncle often distinct; pedicels 1–2 cm, ridged. Flowers semiopening, narrowed to base. Tepals white or cream, obovate-ob lanceolate, 2.5–3.8 cm × 5–8 mm, base shortly gibbous-spurred; spurs ca. 1 mm. Stamens 2–2.8 cm, included; filaments 1.4–2.2 cm; anthers 4–6 mm. Ovary 2–3 mm. Style 1.2–1.8 cm. Berries 0.6–1.5 cm in diam., 4–6-seeded. Fl. May–Jul, fr. Aug–Oct.  $2n = 16^*$ .

• Forests, forest margins, grassy slopes; 1600–2500 m. Gansu, Hubei, Shaanxi, Sichuan.

**6. *Disporum acuminatissimum*** W.L. Sha, Guihaia 5: 13. 1985.

尖被万寿竹 jian bei wan shou zhu

Rhizome short. Stem branched distally, to 80 cm. Petiole 3–5 mm; leaf blade elliptic to ovate-oblong, 5–9.5 × 1.5–5 cm. Inflorescences terminal, umbellate, 3- or 4-flowered; pedicels 1.1–2.2 cm. Flowers semiopening. Tepals white, lanceolate or narrowly rhomboidal-lanceolate, 2–3.5 cm × 3–6 mm, minutely puberulent on both surfaces, papillose at margin proximally and at base adaxially, apex long acuminate, base shortly spurred; spurs ca. 1 mm. Stamens 1.5–2 cm, included; filaments 1.1–1.5 cm, puberulent-scabrous; anthers 4–6 mm. Ovary 3–4 mm. Style ca. 1.5 cm, puberulent. Fl. Apr–May.

• C Guangxi (Du'an Yao Zu Zizhixian).

**7. *Disporum cantoniense*** (Loureiro) Merrill, Philipp. J. Sci. 15: 229. 1919.

万寿竹 wan shou zhu

*Fritillaria cantoniensis* Loureiro, Fl. Cochinch. 1: 206. 1790; *Disporum cantoniense* var. *brunneum* (C. H. Wright) Handel-Mazzetti; *D. cantoniense* f. *brunneum* (C. H. Wright) H. Hara; *D. chinense* (Ker Gawler) Kuntze; *D. pullum* Salisbury ex J. D. Hooker; *D. pullum* var. *brunneum* C. H. Wright; *Streptopus chinensis* (Ker Gawler) Smith; *Uvularia chinensis* Ker Gawler.

Rhizome creeping, thick, without stolon. Stem usually branched distally, 50–100(–150) cm. Petiole 2–4 mm; leaves lanceolate to narrowly oblong-lanceolate, 5–12 × 1–5 cm. Inflorescences terminal and pseudolateral, (2 or)3–10-flowered; peduncle usually distinct; pedicels 1–4 cm, usually papillose-scabrous. Flowers slightly opening. Tepals purplish, oblanceolate, 1.5–2.5(–2.8) cm × 4–5 mm, base gibbous-spurred, apex subacute and without dense papillae; spurs 2–3 mm. Stamens 0.8–1.5 cm, included; filaments 8–11 mm; anthers 3–4 mm. Ovary ca. 3 mm. Style 0.7–1.5 cm. Berries 8–10 mm in diam., 2- or 3(–5)-seeded. Fl. May–Jul, fr. Aug–Oct.  $2n = 14, 16$ .

Forests, thickets; 700–3000 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Shaanxi, Sichuan, Taiwan, Xizang, Yunnan [Bhutan, India, Laos, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

**8. *Disporum kawakamii*** Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30: 365. 1911.

台湾万寿竹 tai wan wan shou zhu

*Disporum cantoniense* (Loureiro) Merrill var. *kawakamii* (Hayata) H. Hara; *D. taiwanense* S. S. Ying.

Herbs rhizomatous. Stem branched distally, 50–120 cm. Petiole 3–4 mm; leaf blade lanceolate to ovate, 10–17 × 1–5 cm, base broadly cuneate to rounded, margin slightly scabrous, apex acuminate. Inflorescences terminal and pseudolateral, 2–5-flowered; peduncle occasionally distinct; pedicels 2–4 cm, sub-smooth. Flowers tubular-campanulate. Tepals cream or greenish tinged with purple near both ends, oblanceolate, 1.8–2.2 cm × 4–6 mm, somewhat pubescent abaxially, densely papillose apically, base gibbous-spurred; spurs ca. 2 mm. Stamens 1–2 cm, included; filaments 0.8–1.2 cm; anthers 3–4 mm. Ovary ca. 3 mm. Style 0.8–1.4 cm. Fl. Mar–May.  $2n = 16^*$ .

• Evergreen forests; 300–1700 m. Taiwan.

**9. *Disporum trabeculatum*** Gagnepain, Bull. Soc. Bot. France 81: 286. 1934.

横脉万寿竹 heng mai wan shou zhu

*Disporum austrosinense* H. Hara; *Tovaria esquirolii* H. Léveillé.

Rhizome hard. Stem simple or branched distally, sometimes tufted, 20–80 cm. Petiole 3–10 mm; leaf blade ovate-lanceolate to elliptic, 6–14 × 2–5.5 cm, subleathery, cross veins distinct, base rounded to broadly cuneate, apex acute to acuminate. Inflorescences terminal, umbellate, 2–5-flowered; pedicels 1–3 cm. Tepals whitish, yellowish, or purplish, spatulate-ob-

lanceolate, 1–2 cm × 3–7 mm, minutely pilose at margin and near base adaxially. Stamens slightly shorter than or equaling tepals; filaments 5–9 mm, minutely papillose proximally; anthers 3–5 mm. Ovary 2–2.5 mm. Style 5–14 mm. Fl. Mar–Jun.

Forests; 900–2000 m. Guangdong, Guangxi, Guizhou, Yunnan [Vietnam].

**10. *Disporum hainanense*** Merrill, Philipp. J. Sci. 21: 338. 1922.

海南万寿竹 hai nan wan shou zhu

*Disporum senpomonticolum* Yamamoto.

Stem simple or branched distally, 15–100 cm. Petiole 7–10 mm; leaf blade elliptic to broadly lanceolate, 6–13 × 2–5.5 cm, cross veins indistinct, base obtuse to cuneate, apex acuminate. Inflorescences terminal, umbellate, 3–5-flowered; pedicels 0.5–2.2 cm. Flowers semiopening, fragrant. Tepals white, rose, or yellow, obovate-oblanceolate, 5–9 × 2–4 mm, base saccate, apex rounded. Stamens 6–9(–10) mm, slightly exerted; filaments 4–8 mm; anthers 3–4 mm. Ovary 2–2.5 mm. Style 3–7 mm, usually slightly exerted. Berries black, subglobose, 6–9 mm in diam. Fl. Dec–May, fr. Aug–Oct.

• Forests along ravines; 500–1000 m. Hainan.

**11. *Disporum calcaratum*** D. Don, Proc. Linn. Soc. London 1: 45. 1839.

距花万寿竹 ju hua wan shou zhu

*Disporum calcaratum* var. *hamiltonianum* (D. Don) Baker; *D. hamiltonianum* D. Don; *D. jiangchengense* Y. Y. Qian; *D. latipetalum* Collett & Hemsley; *D. pedunculatum* H. Li & J. L. Huang.

Rhizome creeping, slightly flexuous. Stem usually branched distally, 30–100 cm. Petiole 3–5 mm; leaf blade elliptic to ovate-lanceolate, 5–8 × 2–5 cm. Inflorescences pseudolateral, umbellate, 3–10-flowered; peduncle sometimes distinct; pedicels 1–2 cm, ridged, usually minutely papillose on ridges. Flowers campanulate. Tepals often purple, sometimes pink to dark red, oblanceolate, 1.2–2 cm × 3–5 mm, base long spurred; spurs straight or sometimes slightly recurved, cylindrical, 4–5(–8) mm. Stamens 1.1–1.8 cm, nearly included; filaments 0.7–1.3 cm; anthers 4–5 mm. Ovary 2.5–3 mm. Style 5–9 mm. Berries subglobose, ca. 1.1 cm in diam. Fl. Jun–Jul, fr. Aug–Nov.  $2n = 14, 16$ .

Forests; 1200–2400 m. S Yunnan [Bhutan, India, Myanmar, Nepal, Sikkim, Thailand, Vietnam].

**12. *Disporum uniflorum*** Baker ex S. Moore, J. Bot. 13: 230. 1875.

少花万寿竹 shao hua wan shou zhu

*Disporum flavens* Kitagawa; *D. sessile* D. Don ex Schultes subsp. *flavens* (Kitagawa) Kitagawa; *D. sessile* var. *pachyrhizum* Handel-Mazzetti.

Rhizome shortly creeping, 4–7 mm thick, with stolon 1–5 cm × 3–6 mm. Stem simple or branched distally, 20–80 cm. Petiole 5–10 mm; leaf blade broadly elliptic to oblong-ovate, 4–9 × 1–6.5 cm, glabrous, base subrounded to broadly cuneate,

apex shortly acuminate to acute; Inflorescences terminal, 1–3-flowered; pedicels 3–5 mm. Flowers cylindrical-campanulate. Tepals yellow, spatulate-oblongate to obovate, 2–3 cm × 5–10 mm, base gibbous-spurred; spurs 1–2 mm. Stamens 1.8–2.8 cm, nearly included; filaments 1.5–2 cm, minutely papillose proximally; anthers 4–8 mm. Ovary 4–5 mm. Style 1.5–2.3 cm. Berries blue-black, subglobose, 8–10 mm in diam. Fl. Mar–Jun, fr. Jul–Nov.  $2n = 16^*$ .

Forests; 100–2500 m. Anhui, Hebei, Hubei, Jiangsu, Jiangxi, Liaoning, Shaanxi, Shandong, Sichuan [Korea].

**13. *Disporum nantouense*** S. S. Ying, Mem. Coll. Agric. Natl. Taiwan Univ. 30: 59. 1990.

南投万寿竹 *nan tou wan shou zhu*

*Disporum sessile* D. Don ex Schultes var. *shimadae* (Hayata) H. Hara f. *intermedium* H. Hara; *D. taipingense* M. N. Tamura & Kawano.

Herbs stoloniferous. Stem simple or 1–5-branched distally, 15–60 cm. Petiole 0.3–2.5 mm; leaf blade lanceolate to ovate, 5.5–8.5 × 0.9–3.0 cm, 3 longitudinal veins prominent, base rounded, apex attenuate-acuminate. Inflorescences terminal, 1–3-flowered; pedicels 0.9–2.1 cm. Flowers tubular-campanulate. Tepals white to cream, spotted with violet distally, yellowish green apically, spatulate, 1.5–2.2 cm × 2.5–8 mm, densely papillose proximally adaxially, base gibbous-spurred, apex acute; spurs 1.2–1.5 mm. Stamens 1.0–1.7 cm, included; filaments minutely papillose proximally; anthers innate, 2.0–3.5 mm. Ovary 2.0–3.5 mm. Style 1.0–1.6 cm. Berries globose, 7.8–9.2 mm in diam. Seeds brown, ca. 3 mm. Fl. Apr–May.  $2n = 16^*$ .

• Coniferous or mixed forests; 1200–2700 m. C Taiwan.

This taxon is quite similar, both morphologically and karyologically, to *Disporum sessile* D. Don ex Schultes, which is distributed in Japan, Korea (Cheju and Ullung Islands), and Russia (S Kurile Islands and S Sakhalin); see Tamura et al. (Pl. Spec. Biol. 7: 103–120. 1992). A molecular phylogeny by Shinwari et al. (Pl. Spec. Biol. 9: 11–18. 1994) suggests a relationship of the two taxa. Further studies are needed in order to clarify whether *D. nantouense* is conspecific with *D. sessile* or not. *Disporum sessile*, as circumscribed in FRPS, corresponds mainly to *D. uniflorum* in the present account, but also to *D. hainanense* and *D. shimadae*.

**14. *Disporum shimadae*** Hayata, J. Coll. Sci. Imp. Univ. Tokyo 30: 367. 1911.

山万寿竹 *shan wan shou zhu*

*Disporum sessile* D. Don ex Schultes var. *shimadae* (Hayata) H. Hara.

Rhizome short. Stem simple or branched distally, 15–50 cm. Petiole absent to 2 mm; leaf blade linear-lanceolate to oblong-lanceolate, 4–7 × 1–1.5 cm, base cuneate to rounded, apex acute. Inflorescences terminal, (1 or)2–5-flowered; pedicels 0.7–1.8 cm. Flowers open campanulate. Tepals yellow, rarely green apically, ovate-oblong to ovate-spatulate, 1.5–2.3 cm × 4–6 mm, very minutely papillose at margin proximally and at base adaxially, base spurred; spurs ca. 2 mm. Stamens 1.2–1.7 cm, included; filaments 0.9–1.4 cm, glabrous or sparsely papillose; anthers 2–3 mm. Ovary 2.5–3 mm. Style 1.1–1.7 cm. Fl. Mar–Apr.  $2n = 14^*$ .

• Grasslands; 500–1100 m. N Taiwan.

