

## 72. EPIPOGIUM J. G. Gmelin ex Borkhausen, Tent. Disp. Pl. German. 139. 1792.

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*Ceratopsis* Lindley; *Galera* Blume; *Podanthera* Wight.

Herbs, terrestrial, holomycotrophic. Rhizome tuberous or coralloid, fleshy. Stem erect, fleshy, with short, scalelike sheathing bracts at nodes, white or pale yellowish white, leafless, glabrous. Inflorescence terminal, racemose, several to many flowered, ephemeral; floral bracts ovate-lanceolate, membranous. Flowers usually pendulous, resupinate or not, yellowish white with violet or reddish brown markings; pedicel slender, often elongate; ovary dilated. Sepals and petals similar, connivent or spreading, free, lanceolate; lip broadly ovate when flattened, fleshy, concave, spurred at base, entire or 3-lobed; disk papillate and with longitudinal ridges or lamellae; spur broad, shortly saccate to elongate, straight or slightly curved, apex obtuse. Column short, fleshy, lacking a column foot; anther incumbent or suberect; pollinia 2, each deeply cleft, clavate, loosely granular-farinaceous, each with a slender caudicle and attached to a viscidium; stigma placed at base of column; rostellum broad, sometimes reduced and obscure, usually distant from stigma. Capsule ellipsoid or ovoid, usually maturing rapidly.

Three species: tropical Africa, temperate and tropical Asia, NE Australia, Europe, SW Pacific islands; three species in China.

The genus name is based on the pre-Linnaean name "*Epipogum*" (J. G. Gmelin, Fl. Sibir. 1: 11. 1747).

- 1a. Rhizome coralloid; flowers not resupinate; lip distinctly 3-lobed near base ..... 3. *E. aphyllum*
- 1b. Rhizome tuberous; flowers resupinate; lip entire or obscurely 3-lobed.
  - 2a. Peduncle and flowers white with faint purple spots on lip; sepals and petals linear-lanceolate, 2–3 mm wide; spur projecting backward, nearly parallel to ovary ..... 1. *E. roseum*
  - 2b. Peduncle and flowers brown with pink to maroon spots and striations on sepals, petals, and lip; sepals and petals ovate-lanceolate, 3–6 mm wide; spur pendulous, curving forward away from ovary ..... 2. *E. japonicum*

**1. *Epipogium roseum*** (D. Don) Lindley, J. Proc. Linn. Soc., Bot. 1: 177. 1857.

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*Limodorum roseum* D. Don, Prodr. Fl. Nepal. 30. 1825; *Ceratopsis rosea* (D. Don) Lindley; *Epipogium africanum* Schlechter; *E. dentilabellum* Ohtani & S. Suzuki; *E. guilfoylia* F. Mueller; *E. indicum* H. J. Chowdhery, G. D. Pal & G. S. Giri; *E. kassnerianum* Kraenzlin; *E. kusukusense* (Hayata) Schlechter; *E. makinoanum* Schlechter; *E. nutans* (Blume) H. G. Reichenbach; *E. poneranthum* Fukuyama; *E. rolfei* (Hayata) Schlechter; *E. sessanum* S. N. Hegde & A. N. Rao; *E. sinicum* C. L. Tso; *E. tuberosum* Duthie; *Galera kusukusensis* Hayata; *G. nutans* Blume; *G. rolfei* Hayata; *G. rosea* (D. Don) Blume; *Gastrodia schinziana* Kraenzlin; *Podanthera pallida* Wight; *Stereosandra schinziana* (Kraenzlin) Garay.

Plants 10–45 cm tall. Rhizome tuberous, narrowly fusiform to ovoid, 1–5 cm, 0.5–2 cm in diam., many noded. Stem with 1–8 scattered sheaths, white, sometimes tinged pale pink; sheaths amplexicaul, white, 7–13 mm, membranous. Rachis laxly to subdensely 2–16-flowered, sometimes pendulous toward apex; floral bracts ovate-lanceolate, 7–12 × 4–7 mm. Flowers resupinate, pendulous, opening widely or not, white with faint purple spots on lip; pedicel 3–7 mm; ovary 5–7 mm. Sepals weakly spreading, linear-lanceolate, 8–11 × 2–3 mm, 3-veined, margin undulate, apex subacute. Petals similar to sepals, weakly spreading, often slightly shorter and wider than sepals, slightly oblique, 7–10 × 2–3 mm, apex acute to acuminate; lip elliptic-ovate when flattened, concave, 8–12 × 6–7 mm, spurred at base, entire, margins erose-denticulate; disk with 2 longitudinal densely papillose ridges, and occasionally with a shorter central ridge, or ridges sometimes reduced and inconspicuous; spur projecting backward, nearly parallel to ovary, cylindrical, 3–

5 × 1.5–2.5 mm, shorter than ovary, apex obtuse. Column 2.5–4.5 mm; anther subglobose. Capsule broadly ovoid-ellipsoid, 5–7 × ca. 5 mm. Fl. and fr. Apr–Sep.  $2n = 68$ .

Moist broad-leaved forests, shady places along valleys; 500–1600 m. Guangdong, Hainan, C and S Taiwan, SE Xizang, S Yunnan [India, Indonesia, Japan, Kashmir, Laos, Malaysia, Nepal, Philippines, Sri Lanka, Thailand, Vietnam; tropical Africa, Pacific islands].

**2. *Epipogium japonicum*** Makino, Bot. Mag. (Tokyo) 18: 131. 1904.

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*Galera japonica* (Makino) Makino.

Plants 10–30 cm tall. Rhizome tuberous, narrowly ovoid, 1–3 cm, 0.4–1.5 cm in diam., many noded. Stem with 1–6 scattered sheaths, pale yellowish brown with purple spots and streaks; sheaths amplexicaul, pale yellowish brown, ca. 10 mm, membranous. Rachis laxly 3–10-flowered, sometimes slightly curved toward apex; floral bracts ovate-lanceolate, ca. 10 × 4 mm, apex acute to acuminate. Flowers resupinate, porrect to pendulous, usually opening widely, brown with pink to maroon spots and striations on sepals, petals, and lip; pedicel and ovary ca. 12 mm. Sepals weakly or widely spreading, ovate-lanceolate, 8–11 × 3–5 mm, 3-veined, margin undulate, apex acute to acuminate. Petals similar to sepals, weakly spreading, slightly oblique, 8–10 × 5–6 mm, apex acute to acuminate; lip cordate-ovate when flattened, concave, 8–12 × 9–10 mm, spurred at base, entire, lateral margins incurved; disk densely papillose; spur pendulous and curving forward away from ovary, elongate cylindrical, 6–9 × 2–4 mm, longer than ovary, apex shallowly 2-lobed. Column ca. 8 mm, arcuate; anther ovoid. Fl. Sep.

*Picea* forests, moist broad-leaved forests; 2200–3000 m. SW Sichuan, C Taiwan [Japan].

**3. *Epipogium aphyllum* Swartz, Summa Veg. Scand. 32. 1814.**

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*Orchis aphylla* F. W. Schmidt in J. Mayer, Samml. Phys. Aufsätze Böhm. Naturgesch. 1: 240. 1791, not Forskål (1775); *Epipactis epipogium* (Linnaeus) Allioni; *Epipogium aphyllum* f. *albiflorum* Y. N. Lee & K. S. Lee; *E. aphyllum* var. *stenochilum* Handel-Mazzetti; *E. gmelinii* Richard; *Limodorum epipogium* (Linnaeus) Swartz; *Satyrium epipogium* Linnaeus; *Serapias epipogium* (Linnaeus) Steudel.

Plants 10–30 cm tall. Rhizome coralloid, 1.5–2.5 × 1–1.8 cm, branching. Stem pale brown, with a few membranous sheaths; sheaths amplexicaul, pale brown, 5–9 mm, membranous. Rachis laxly 2–6-flowered; floral bracts narrowly ovate, 6–9 × 2.8–4 mm. Flowers not resupinate, usually pendulous, weakly spreading to widely spreading, yellow, tinged with pink or pale purple; pedicel 3–5 mm; ovary 3–5 mm. Sepals spreading, lanceolate to oblong-lanceolate, 12–18 × 2–3 mm, apex obtuse or acute. Petals similar to sepals, spreading, often slightly wider than sepals, apex acute; lip cordate-ovate when flattened, concave, 6–10 × 6–12 mm, 3-lobed near base; lateral lobes erect, ovate-triangular, 3–3.5 × ca. 3 mm; mid-lobe reflexed, ovate-elliptic, concave, 8–10 × 6–7 mm, lateral mar-

gins nearly slightly erose and involute, apex acute; disk with 4–6 longitudinal, purplish red, papillose ridges; spur large and thick, 5–8 × 4–5 mm, apex obtuse. Column 6–7 mm. Fl. Aug–Sep.  $2n = 68$ .

Forests, crevices, mossy places; 1200–3600 m. S Gansu, Heilongjiang, Jilin, Liaoning, Nei Mongol, Shanxi, NW Sichuan, Taiwan, Xinjiang, SE Xizang, NW Yunnan [Bhutan, India, Japan, Kashmir, Korea, Nepal, Russia; Europe].

