GEITONOPLESIAEACEAE

(Joseph E. Laferrière, Tucson, U.S.A.)¹


Glabrous, hermaphroditic, perennial, much-branched leafy climbers or subshrubs up to 5 m tall. Stems woody below, thin and flexuous above, green, much branched, twining, terete to compressed. Leaves alternate, distichous, with a prominent to obscure midrib, sessile or with a short petiole, sometimes sheathing at the base, lanceolate to ovate or sometimes linear; veins numerous, parallel with few or no cross veins; midrib prominent; spines and stipules lacking; leaves reduced to scales under each branch. Inflorescence an axillary fascicle or a loose terminal cyme or panicle; pedicel articulate immediately under the flower. Flowers small, perfect, actinomorphic, campanulate, hypogynous, often pendulous. Perianth segments 6, oblong, spreading, equal in length, white or greenish to pink or pale violet, free almost to the base or fused, often prolonged at the base into a pericladium, nectariferous at the base, corona absent. Sepals firm, valvate in bud, shortly hood-shaped at apex. Petals flat, obtuse, slightly imbricate, the margins thin and entire. Stamens 6, in two whorls, hypogynous, not exceeding the perianth; filaments free or fused at the base; anthers oblong-linear, bilocular, basifixed, introrse, sagittate at base, erect, yellow, poricidal. Ovary superior, trilocular with axile placentae; ovules few, anatropous or campylotropous, crassinucellate; style filiform; stigma punctate. Fruit a berry or capsule. Seeds several, rounded to angular-crescentic, black, shiny, sometimes strophiolate; endosperm copious, lacking starch; embryo linear.

DISTRIBUTION

Two genera, each with one species, both occurring in Malesia.

TAXONOMY

Dahlgren et al. (1985) placed both genera, plus Luzuriaga, Behnia and Elachanthera, in the Luzuriagaceae, separate from the Philesiaceae, whereas Dahlgren & Clifford (1982) included them in the Philesiaceae. Cronquist (1981) put them in the Smilacaceae. More recent cladistic and phenetic evidence suggests that, while Eustrephus and Geitonoplesium are closely related to each other, they are only distantly related to Luzuriaga and Philesia (Conran 1987a). Their closest relatives appear to be in the Phormiaceae (Conran 1989). The two genera are here treated in the separate family Geitonoplesiaceae. Both species are highly variable. Several synonyms and infraspecific taxa have been proposed, although none is here accepted (Schlittler 1951; Conran 1987b; Laferrière 1995).

¹ With a contribution on palynology by R.W.J.M. van der Ham, Leiden. Drawings by J.G. Conran, Adelaide, reproduced with permission from Flora of Australia 46.

PALYNOLOGY
(R.W.J.M. van der Ham)

Eustrephus and Geitonoplesium have different pollen types (Schulze 1982). Pollen of Eustrephus is monocolpate, elliptic in polar view, and measures 40–(47)–52 × 29–(32)–35 μm. Radulescu (1973) gives larger sizes: 53–62 × 31–41 μm. The colpus ends extend slightly on the proximal side of the pollen grain. Exine thickness is 1–1.5 μm. The sexine, which consists of a tectum and a columnellate infratectal layer, is slightly thicker than the nexine. The ornamentation is microreticulate all-over. The diameter of the lumina (< 1 μm) decreases towards the aperture.

Pollen of Geitonoplesium is trichotomocolpate, obtusely triangular with convex sides in polar view, oblate (P/E = c. 0.67), and measures 23–(26)–33 μm in equatorial diameter. The ends of the three-armed colpus reach the proximal side. Exine thickness is c. 1 μm. The ornamentation is microreticulate (diameter lumina < 1 μm). Along with several trichotomocolpate collections Erdtman (1952) describes a deviating pollen sample from New Caledonia (Franc 627; “determination confirmed by Skottsberg”) as monocolpate, 49 × 36 μm, which reminds much of Eustrephus pollen.

Monocolpate pollen is common in the Asparagales (sensu Dahlgren & Clifford 1982). Trichotomocolpate pollen occurs (see also Schulze 1982) in the Asphodelaceae (subfam. Anthericoideae: 9 genera), Dianellaceae (Dianella: also tetrachotomocolpate; Stypandra), Doryanthaceae (Doryanthes: rarely; Herpolirion) and Phormiaceae (Phormium).


KEY TO THE GENERA

a. Flowers in axillary clusters arising from a globose to oblong cluster of imbricate scales; petals ciliate; filaments broad, flat, fused; roots often tuberous; fruit orange, dehiscent .................................................. Eustrephus (p. 000)

b. Flowers in terminal cymes or panicles; petal margins entire; filaments filiform, separate; roots fibrous; fruit black, indehiscent ............. Geitonoplesium (p. 000)
EUSTREPHUS

*Eustrephus* R. Br. in Ker Gawl., Bot. Mag. 31 (1809) t. 1245. — Type species: *Eustrephus latifolius* R. Br.

Distribution — Only one species; for distribution see there.

*Eustrephus latifolius* R. Br.


Small shrubs or twining climbers, 1–5 m tall. Roots fusiform, sometimes tuberous. *Leaves* non-resupinate, sessile or nearly so, broadly ovate to lanceolate or narrowly linear, 2–20 by 0.2–5 cm, firm, longitudinally striae-nerved, the apex usually acute, with scarcely distinct costa. *Inflorescence* an axillary cymose bundle with 1–6 flowers; pedicels filiform but rigid, persistent, 5–18 mm long, with an ovate bract at the base, these scarious and imbricate. *Perianth* segments oblong, nearly equal, c. 6 mm long. *Sepals* elliptic-oblong, acute, 7–9-nerved, convex, firm, shortly hood-shaped at the apex. *Petals* elliptic, thinner than sepals, flat, obtuse, bearing yellow or pellucid markings, fimbriate. *Stamens*: filaments short, flat, connate at base; pollen monosulcate. *Fruit* a yellow, globular or rarely pyriform fleshy capsule 0.7–2 cm in diam. *Seeds* 8–12, subspherical to obtusely angled, strophiolate. 2n = 18 [Stenar, Acta Horti Berg. 16 (1952) 219–232]. — Fig. 1.

Distribution — East coast of Australia, New Caledonia; *Malesia*: southern New Guinea. Reported from West Java but probably as an escape from cultivation at the Botanical Garden in Bogor.

Habitat & Ecology — Found on riverbanks, lakeshores, roadsides, thickets, grassy savannas, early secondary forest, and other relatively sunny areas, from sea level to 3000 m altitude.

Uses — Tuberous roots and strophiolate arils used as food by native Australians; use as food not recorded from Malesia.

GEITONOPLESIUM

*Geitonoplesium* A. Cunn. ex Hook., Bot. Mag. 59 (1832) t. 3131. — Type species: *Geitonoplesium cymosum* (R. Br.) Hook.


Distribution — Only one species; for distribution see there.
Fig. 1. *Eustrephus latifolius* R. Br. a. Flowering plant; b. flower; c. sepal; d. petal; e. stamen, side and front view, other fused stamens removed; f. pistil; g. ovary, section; h. fruit, closed and open (*Conran 112*). Drawing J.G. Conran.
Fig. 2. *Geitonoplesium cymosum* (R. Br.) Hook. a. Flowering plant; b. flower; c. sepal; d. petal; e. stamen, side and front view; f. pistil; g. ovary, section; h. fruit (*Conran 107*). Drawing J.G. Conran.
Geitonoplesium cymosum (R.Br.) Hook.


*Luzuriaga laxiflora* Hallier f., Nova Guinea 8 (1914) 991. — Type: *von Römer 932* (L), Irian Jaya.

*Luzuriaga aspericaulis* Hallier f., l.c. — Type: *Gjellerup 1078* (L), Irian Jaya.

Twining climber, 1–5 m tall. Roots fibrous. *Leaves* resupinate, with a short twisted petiole, broadly ovate to lanceolate or narrowly linear, 5–20 by 0.5–5 cm, rigid, the apex obtuse, acute or apiculate, with a prominent to obscure midrib. *Inflorescence* a small, loose terminal cyme or panicle of 1–many flowers; pedicel 0.5–3 cm long, with a small bract. *Perianth* segments 6–8 mm long, white, green or pink to purplish, sometimes streaked, oblong, distinctly nerved, equal in length, free almost to the base; pericladium short and subattenuate or absent. *Sepals* firm, shortly hood-shaped at apex. *Petals* flat, obtuse, slightly imbricate, the margins thin and entire. *Stamens*: filaments filiform, separate, geniculate below anther; pollen trichotomosulcate. *Fruit* a blue-black, globular, succulent, indehiscent berry, 8–15 mm in diam. *Seeds* 1–10, black, trigono-ovate. 2n = 20 [Conran, Taxon 34 (1985) 346–347]. — Fig. 2.

Distribution — Eastern Australia and Fiji, north to New Ireland; *Malesia*: Lesser Sunda Islands (from Lombok eastwards), New Guinea.

Habitat & Ecology — Found on riverbanks, lakeshores, roadsides, thickets, grassy savannas, early secondary forest, and other relatively sunny areas, from sea level to 3000 m altitude.

Uses — Stems occasionally used as rope; in Australia young shoots sometimes eaten as a potherb.