

## GLOEOCARPUS RADLK. (SAPINDACEAE) REVISED

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### SUMMARY

In this article a short discussion is given about the position of the genus *Gloeocarpus* Radlk. (Sapindaceae) within the Cupanieae, as well as a description of the genus and its species *G. patentivalvis* (Radlk.) Radlk.

### INTRODUCTION

Radlkofer described the Philippine species *Cupaniopsis patentivalvis* in 1913. Also from the Philippines he (1914) described the monotypic genus *Gloeocarpus* with *Gloeocarpus crenatus* as type species. When more complete material became available it appeared that *Cupaniopsis patentivalvis* was synonymous with *Gloeocarpus crenatus* and it was consequently moved to *Gloeocarpus* by Radlkofer himself. As the epitheton *patentivalvis* is older than *crenatus* it took priority over *crenatus*.

Elmer (1939) published *Gloeocarpus philippinensis* as a synonym of *Gloeocarpus patentivalvis*.

*Gloeocarpus* closely resembles *Cupaniopsis* as both these Cupanieae are quite nondescript in their characters. Leaf anatomically *Gloeocarpus* does not differ from *Cupaniopsis* (Adema, pers. comm.). The main differences are the size of the petals, the presence or absence of petal scales, and the embryo type. The petals of *Gloeocarpus* are very small and the scales are always lacking; *Cupaniopsis* always possesses larger petals which always show scales. *Gloeocarpus* has cotyledons which are secondarily laterally situated besides each other (cotyledons S-shaped) and the radicle is relatively long (about as long as the cotyledons); while *Cupaniopsis* has cotyledons which are either laterally besides each other (cotyledons straight) or dorsoventrally above each other; the radicle is always relatively short (shorter than the cotyledons). If the *Cupaniopsis* cotyledons are laterally besides each other, the position of the radicle is perpendicular to the cleft between the cotyledons; in both other cases the radicle is parallel to the cleft between the cotyledons.

(For literature references see the literature heading above the species description.)

### GLOEOCARPUS

*Gloeocarpus* Radlk., Philipp. J. Sc. 8, Bot. (1914) 464; Merr., Enum. Philip. Fl. Pl. 2 (1923) 509; Radlk. in Engl., Pflanzenz. 98 (1933) 1208. — Type species: *Gloeocarpus crenatus* Radlk. [= *Gloeocarpus patentivalvis* (Radlk.) Radlk.].

Tree. *Branchlets* terete, sinuous in appearance because of phyllotaxis, smooth, sericeous with simple hairs when young; glandular scales absent. *Leaves* spirally arranged, paripinnate; petiole somewhat pulvinate; rhachis not winged, flattened above with sometimes a raised middle part; petiolule present as pulvinus only. *Leaflets* opposite to alternate, coriaceous, asymmetric, acroscopic side broader, punctate; base attenuate; margin (entire to) crenate (to serrate), (flat to) somewhat recurved; apex (obtuse to) acute to acuminate, very apex rounded, not mucronulate; upper surface smooth, slightly sericeous; lower surface smooth, somewhat sericeous especially near the pockets, few glandular hairs consisting of a few stalk cells and a large apical cell occasionally present, domatia many, pockets; venation above usually flat, below raised; nerves apically marginally looped; veins densely reticulate, indistinct. *Inflorescences* ramiflorous, branching in axil, occasionally along rhachis; cymes cincinnate to mainly dichasial. *Bracts* and *bracteoles* triangular, sericeous. *Pedicels* completely sericeous; abscission zone present. *Flowers* apparently hermaphrodite but presumably functionally male or female. *Sepals* 5, 2 outer ones smaller than 3 inner ones, inside and outside especially basally sericeous, punctate. *Petals* 5, hardly clawed, pilose, punctate; scales absent. *Disc* complete, flat, broad, glabrous. *Stamens* 7 (or 8?); filaments pilose in lower half; anthers basifixed in cleft, laterally lengthwise opening, papillate, pilose, glabrescent. *Pistil*: ovary 3-locular, smooth, especially apically hirsute; ovule one per locule, axillary; stigma almost sessile, pyramidal, longitudinally grooved, elongating in fruit together with style. *Fruit* an obovoid capsule, rather circular in transverse section, hardly stiped, rough, outside and inside glabrous, black when dry, rather woody. *Arilloid* completely covering seed, basally not appendaged, apically open. *Seed* subbasally attached on a funicle-like structure, obovoid, triangular in transverse section; hilum more or less circular. *Embryo* notorrhizal, laterally flattened; cotyledons secondarily laterally besides each other, upper larger, apex of upper elongated, either curved or recurved; radicle slender, inserted in endotesta pocket; plumule inconspicuous.

**Distribution.** Philippines.

**Note.** Typical for this genus are the leaves with many, mainly crenate leaflets, the ramiflorous inflorescences, the biseriata sepals, the very small petals without scales, and the notorrhizal embryo with the S-shaped cotyledons.

### *Gloeocarpus patentivalvis* (Radlk.) Radlk.

*Gloeocarpus patentivalvis* (Radlk.) Radlk., Bot. Jahrb. 56 (1920) 253; Merr., Enum. Philipp. Fl. Pl. 2 (1923) 509; Radlk. in Engl., Pflanzenr. 98 (1933) 1208. — *Cupaniopsis patentivalvis* Radlk., Leaflet Philipp. Bot. 5 (1913) 1612. — **Type:** *Elmer 9319* (PNH, holo, ♀; iso A, BM, FI, L, M, P), Philippines, Luzon, Tayabas Prov., Lucban.

*Gloeocarpus crenatus* Radlk., Philipp. J. Sc. 8, Bot. (1914) 464. — **Type:** *FB (Curran) 17647* (PNH, holo, ♀; iso K, M, NY, P, US), Philippines, Laguna Prov., San Antonio.

[*Gloeocarpus philippinensis* Elmer, Leaflet Philipp. Bot. 10 (1939) 3808, nom. inval. — Based on *Elmer 15058, 15176*.]

Tree. Flowering *branchlets* 4–21 mm thick. *Leaves* 5–14-jugate; petiole 2.6–8.7 cm long; rhachis 10.2–44 cm long; petiolule 2–4 mm long. *Leaflets* (elliptic to) obovate, 3.7–14.2 by 1.4–3.9 cm. *Inflorescences*: rhachis up to 22.7 cm long,



Fig. 1. *Gloeocarpus patentivalvis* (Radlk.) Radlk. a. Habit,  $\times 0.5$  (Elmer 15058, L); b. inflorescence,  $\times 0.5$  (PNH 37058, L); c. infructescences,  $\times 0.5$  (BS 41558, L); d. petal with infolded margins,  $\times 25$  (PNH 37058, L).

occasional branches up to 2.7 cm long; cymules (2-)3-4-flowered. *Bracts* 0.6-0.7 mm long; bracteoles 0.3-0.4 mm long. *Pedicels* 3-8.5 mm long. *Sepals*: 2 outer ones 1.8-2.3 by 2-2.2 mm; 3 inner ones 2.3-3.5 by 2.5-3.7 mm, margin membranous. *Petals* rhomboid, 0.5-0.8 by 0.3-0.7 mm, lower part of margins sometimes folded inwardly. *Stamens*: filament in male flower 3.8-5 mm long; anther c. 0.8 by 0.4 mm. *Pistil*: ovary in male flower c. 0.4 mm high; style and stigma c. 0.2 mm high. *Fruit* with 1 to usually 3 developed seeds, 1.3-1.5 cm high by 1-1.3 cm broad, stipe 2-3 mm high. *Seed* 7-8.8 by 4.5-6.5 mm; hilum 0.8-1.8 mm in diameter. *Embryo* 5.7-8 by 4-5.5 mm; radicle 3.5-4.7 mm.

**Field notes.** Tree, 8-15 m high, d.b.h. 4-10 cm. Indumentum brown. Ramiflorous on thin and thick branches. Rhachis green. Fruits yellowish brown with sticky sap. *Flowers* c. 5 mm in diameter.

**Distribution.** Philippines (Mindanao, Samar, Leyte, Luzon).

**Ecology.** Found in primary dipterocarp forest, along ridges, along banks; 60-400 m altitude. Flowering: July. Fruiting: February to March, May, December.

**Note.** This species shows a clinal variation in the crenation and more or less in the size of the leaflets. In the South, Mindanao, the crenation is almost absent and the leaflets are large, on Samar the apex is crenate, and on Luzon the leaflets are completely crenate and the size is usually smaller than on Mindanao.

**Specimens examined:**

PHILIPPINES. *Ahern s.n.*, 1901, 514; *BS (Ramos)* 19458, 23442, 23799, 41526, 41558; *Elmer* 7844, 9319, 15058, 15176; *FB (Curran)* 17647, (*Labitag*) 24988; *Jacobs* 7614; *PNH (Edaña)* 11898, (*Lagrimas*) 37058, (*Gutierrez et al.*) 117700; *Ramos* 1321; *Sablaya* 81.

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