

# ZYGOPHYLLACEAE (C. G. G. J. van Steenis, Buitenzorg)

## 1. TRIBULUS

LINNÉ, Sp.Pl. (1753) 386; STEEN. Bull. J.B.B. III, 13 (1933) 104; BACKER, Bekn. Fl. Java 4a (1942) no 66.

Prostrate hairy herbs. *Leaves* opposite, paripinnate, mostly anisophyllous; stipules present. *Flowers* actinomorphic, 5-merous, bisexual, solitary on pseudo-axillary peduncles, white or yellow. *Sepals* 5, free, imbricate, persistent or caducous. *Petals* 5, free, patent, imbricate, fugacious. *Disk* present. *Stamens* 10, subequal or unequal; anthers dorsifixed. *Ovary* superior, sessile, hairy, 5-12-lobed, 5-12-celled; style short and thick, with 5-12 decurrent stigmas; cells with 3 or more ovules. *Fruit* 5-angled or 5-12-winged; cocci partly abortive, spinous or tuberculate, indehiscent with 3-5 superposed seeds separated by septa.

*Distr. & Ecol.* *Ca* 20 spp. difficult to delimit, specially developed in the dry regions of Africa and Australia. In S. Africa the spinous fruits adhere to the wool and feet of sheep ('hoof-burs') and are a nuisance. The family has about 26 genera, of which 12 monotypic, and *ca* 250 spp., mostly of warm dry countries. In Malaysia one genus and one species.

1. *Tribulus cistoides* LINNÉ, *l.c.*; CHAM. *Linnaea* 5 (1830) 4; STEEN. *l.c.* p. 105; DE VOOGD, *Trop. Nat.* 26 (1937) 162; MERR. & PERRY, *J. Agr. Arb.* 21 (1940) 511.—? *T. terrestris* (non L.) THUNB. *Flor. Jav.* pt 2, *cur.* WIDMARK (1825) 13.—*T. terrestris*

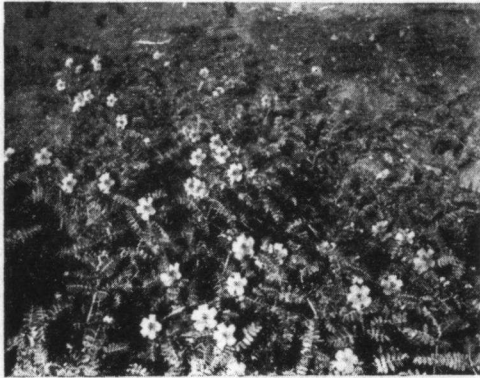


Fig. 1. *Tribulus cistoides* L., on the beach of Nusa Penida, near Bali. (DE VOOGD)

*var. moluccensis* Bl. *Bijdr. l.c.*; MIQ. *l.c.* 682; FORBES, *Wand.* (1885) 501.—*T. moluccanus* DECNE, *Herb. Tim. Descr.* (1835) 118.—*T. lanuginosa* (non L.) THUNB. *l.c.*; BLANCO, *Fl. Filip.* (1837) 350.—*T. macranthus* HASSK. *Flora* 48 (1865) 403.—Fig. 1, 2.

Perennial herb, branches decumbent, apex ascending, 30-145 cm long; tap-root very long. *Leaves* of each pair: one 6-7- the other 4-5-jugate, 2-7½ cm long, midrib ending into a small mucro ½-2 mm long. *Leaflets* subsessile, base obliquely rounded-cordate, apex blunt to subacute, 6-22 by 2½-9 mm, both surfaces silky. *Stipules* falcate, acuminate, erect, 3-6 mm long. *Flowers* inserted laterally of the axil of the smallest leaves, bright yellow, 2½-4 cm diam.; pedicels hairy, 2-4 cm.

*Sepals* narrow-lanceolate, acute, appressed-hairy, 7-11 mm long, caducous. *Petals* obovate-cuneate, apex broadly rounded-truncate, 1-2 by 1-1½ cm. *Stamens* subequal; anthers ± 1 mm long. *Disk* represented by 5 small erect scales appressed to the hirsute ovary, alternating with its lobes. *Cocci* 4-5 with sharp stout spines, two lateral largest; pericarp rather thick, corky.

*Distr.* Circumtropically ubiquitous, in *Malaysia*: confined to the E. part (fig. 2), avoiding the everwet Sunda Land; in some places, near harbours, probably an alien.

*Ecol.* In Malaysia exclusively indigenous along sand beaches and coastal dunes, locally often gregarious, fl. March-July.

*Notes.* Closely allied to *T. terrestris* L., an annual or biennial with much smaller flowers.

### Excluded

*Fagonia montana* MIQ. *olim in sched. Herb. Metz*, MIQ. *Fl. Ind. Bat.* 1, 2 (1859) 596, *in syn.*; CLARKE, in *HOOK. Fl. Br. Ind.* 3 (1882) 620; BOERL. *Handl.* 1 (1890) 147 = *Azima sarmentosum*. Though MIQUEL mentioned the name in his *Flora*, the specimen on which it was based is extra-Malaysian.

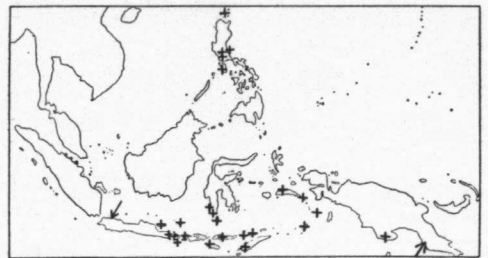


Fig. 2. Localities of *Tribulus cistoides* L. in Malaysia; an arrow indicates a presumably introduced occurrence.