

## EQUISETACEAE

(J.E. Laferrière, Providence, USA)

*Equisetaceae* A.P. DC. in Lam. & DC., Fl. Franç., ed. 3, 2 (1805) 580.

Terrestrial *herbs*, usually of wet places, sometimes as agricultural weeds. *Stems* elongate, articulate, usually hollow, originating from a subterranean rhizome, monomorphic or dimorphic; branches absent, solitary, opposite or in whorls, ribbed or striate, usually with hollow internodes, originating from base of foliar sheath. *Leaves* small, whorled, laterally connected into a toothed, tubular to funnel-form sheath. *Sporangiophores* pelate, scale-like, forming terminal strobili, these borne on vegetative stems or on achlorophyllous fertile stems (not in Malesia), each sporangiophore bearing 6–9 sporangia in a single row along the underside of the margin. *Spores* homosporous, globose, bearing 4 long, filiform, cruciately arranged, apically clavate hygroscopic appendages (elaters).

One genus with 15 species. Relict group with long fossil history. Cosmopolitan except Australia, New Zealand, and Antarctica.

## EQUISETUM

*Equisetum* L., Sp. Pl. (1753) 1061; Gen. Pl., ed. 5 (1754) 484; Hauke in Kubitzki (ed.), Fam. & Gen. Vasc. Pl. 1 (1990) 46. — Type species: *Equisetum arvense* L.

*Hippochaete* Milde, Bot. Zeit. 23 (1865) 297. — Type species: *Hippochaete hyemalis* (L.) Börner [= *Equisetum hyemale* L.].

Characters of the family. One subspecies in *Malesia*.

### *Equisetum ramosissimum* Desf. subsp. *debile* (Vauch.) Hauke

*Equisetum ramosissimum* Desf. subsp. *debile* (Roxb. ex Vauch.) Hauke, Am. Fern J. 52 (1962) 33; DeVol in Fl. Taiwan 1 (1975) 56. — *Equisetum debile* Roxb. ex Vauch., Mém. Soc. Phys. Hist. Nat. Genève (Mon. Prêles) 1 (1822) 387; Tagawa & K. Iwats. in Fl. Thailand 3 (1979) 34. — *Hippochaete debilis* (Roxb. ex Vauch.) Holub, Preslia 44 (1972) 128. — Type: *Roxburgh s.n.* (n.v.).

*Rhizomes* subterranean, somewhat rough, dark brown to black, 6–8-sectored, vascular bundles each surrounded by an endodermis. *Stems* monomorphic, smooth, irregularly branched, evergreen, solitary to caespitose, 45–300(–900) cm tall, 2–5 mm in diam., with 10–32 ridges; branches solitary or in groups of 2–3(–5), up to 60 cm long, straight or sinuous, simple or occasionally secondarily branched. *Sheaths* green, cylindrical to slightly funnel-shaped, 4.5–13 mm long, 2–12 mm wide; segments smooth, the midrib prominently vaulted and ridged basally, sometimes becoming flattened apically, with two distinct lateral ridges; teeth with central brown band and broad, white or colourless margins, often deciduous. *Branches* 6–10-angled, with sheaths like those of the stem, or with persistent teeth. *Strobilus* yellow to black, nearly obtuse to apiculate, up to 25 mm long, 7 mm wide, with the apiculum up to 1 mm long. — **Fig. 1.**

Chromosome number:  $n = 108$  [Ninan, J. Ind. Bot. Soc. 34 (1955) 112–114].

Distribution — India and southern China, throughout *Malesia* to New Caledonia and Fiji. Subsp. *ramosissimum* is known from southern and eastern Africa, southern and central Europe, and most of Asia except *Malesia*.

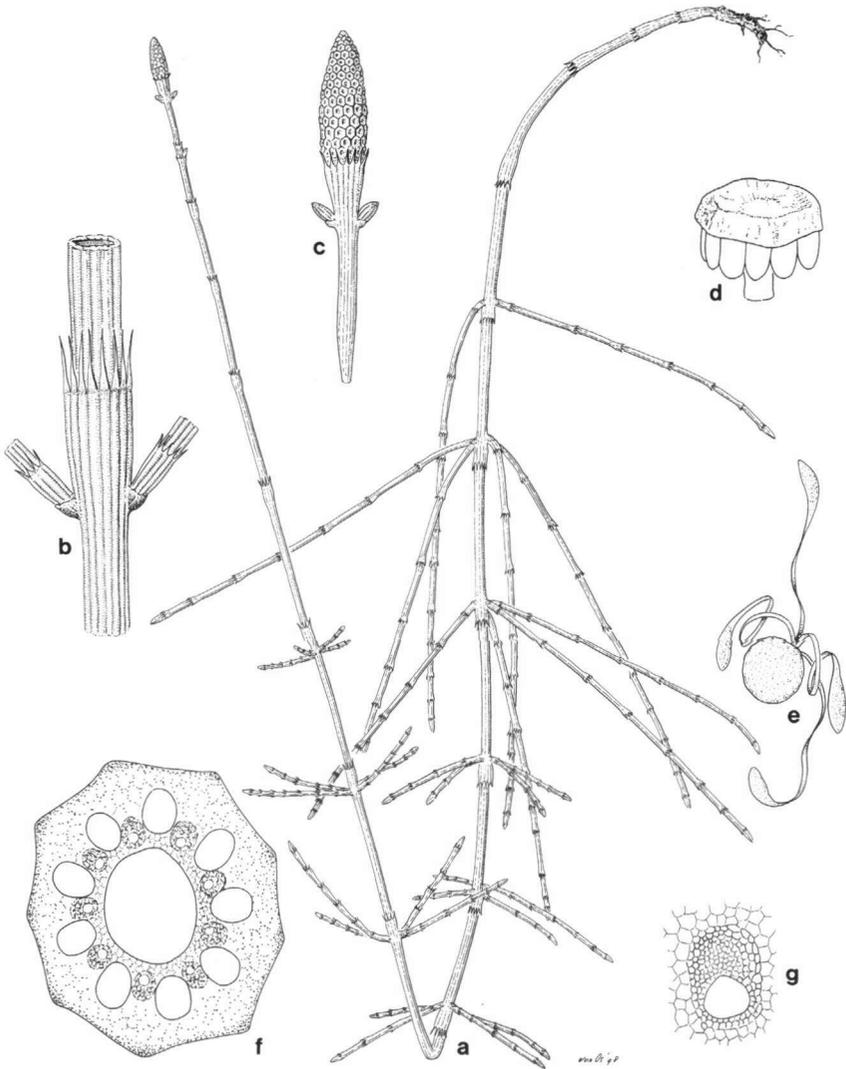


Fig. 1. *Equisetum ramosissimum* Desf. subsp. *debile* (Vauch.) Hauke. a. Habit,  $\times 0.5$ ; b. aerial stem; c. strobilus; d. sporangiophore; e. spore; f. cross section of internode; g. endodermis surrounding vascular bundle and carinal canal.

**Habitat** — Wet places, riverbanks, and open sites, to over 3500 m altitude.

**Taxonomy** — This taxon is here treated as a subspecies of *Equisetum ramosissimum* rather than as a distinct species because of extensive intergradation in the area of overlap between the two subspecies (Hauke 1963). Intermediate forms are reported from S China, India, and Ryukyu Islands [Hauke, *Beih. Nova Hedwigia* 8 (1963) 1–123].

**Uses** — Used externally in Indonesia and Malaysia to treat bruises, wounds, fractures, arthritis. Also used internally to treat dysentery and hemorrhoids.