

## ARCHIDIACEAE

(Theo Arts)

A monotypic family comprising a natural group of species which share a unique development of the sporophyte. Usually placed in a separate order Archidiales in the subclass Bryidae, but by some authors in a separate subclass, Archidiidae (e.g. Brown & Lemmon, 1985). The Archidiaceae have formerly been placed in the Dicranales, because gametophytically, it exhibits features associated with the cleistocarpous genus *Pleuridium* (Ditrichaceae).

### **Archidium** Brid. (Fig. XX)

A genus of 34 species, rather widely distributed. The greatest diversity is found in Africa with 13 accepted species, mostly from Southern Africa. Ten species are endemic to Africa and four species to the South African Cape.

**Plants** small, in loose or dense tufts, occasionally gregarious, green to yellowish-green. **Stems** usually erect, simple or branched, fertile stems or branches short, leaves crowded; sterile branches elongate with distantly placed leaves, both developed by innovations, old sterile innovations frequently prostrate and stoloniferous. **Leaves** erect-spreading to spreading, to 1.7 mm long, ovate, oblong-ovate to linear-lanceolate, apex acuminate to subulate or obtuse-rounded, base clasping; margins entire to weakly serrulate above; costa single, strong, subpercurrent to strongly excurrent; laminal cells thin- to thick-walled, smooth, median cells varying from irregularly quadrate or rectangular to rhomboidal; basal cells rectangular; alar region differentiated by a few rows of quadrate cells; marginal cells along base short rectangular, frequently hyaline.

**Asexual reproduction** by large, moniliform, hyaline to yellowish rhizoidal tubers when present. **Autoicous, paroicous** or **synoicous**. **Perichaetia** lateral, subsessile to sessile in axil of stem leaves, or terminal on short fertile stems; perichaetial leaves often differentiated, smaller or larger than stem leaves, concave at the base, often distally serrulate, median cells linear-rhomboidal, basal cells firm to lax, thin-walled. **Seta** absent. **Capsule** immersed, sessile, globose, 0.20-0.75 mm in diameter, walls yellowish, semi-transparent, irregularly rupturing at maturity; stomata and annulus absent.

**Operculum** and peristome absent. **Calyptra** only slightly differentiated as a thin membrane attached to the vaginula. **Spores** few ca. 8-30 per capsule, sphaerical to polyhedral, large, 110-310  $\mu\text{m}$  in diameter, smooth to granulose or densely papillose.

**HABITAT.** Terrestrial plants from sandy or loamy soils in exposed sites, often amongst grass.

**DISCUSSION.** Mostly perennial species, mainly reproducing by subsequent innovations and disintegration of the older stem parts; the innovations form rhizoids at the stem base or in the leaf axils when buried by soil. The plants often show seasonal growth and regenerate from old stems or rhizoidal tubers. Sterile plants may be difficult to name even to genus: the narrow leaved species are likely to be confused with various genera in the Ditrichaceae, the broad leaved species are difficult to distinguish from sterile Bryaceae. However, the presence of sessile sporophytes with few, but exceedingly large, spores are diagnostic and the occurrence of characteristic rhizoidal tubers may facilitate identification of sterile plants.

**LITERATURE.** **Arts, T. 1998.** A contribution to the moss flora of the Cape Provinces (South Africa). *Journal of Bryology* 20: 429-447 [rhizoidal tubers]. **Brown R.C. & Lemmon, B.E. 1985.** Phylogenetic aspects of sporogenesis in *Archidium*. *Monographs in Systematic Botany from the Missouri Botanical Garden* 11: 25-40. **Magill, R.E. 1981.** - see General refs. [keys, illustrations]. **Snider, J. A. 1975.** A revision of the genus *Archidium* (Musci). *Journal of the Hattori Botanical Laboratory* 39: 105-201 [keys, illustrations].