Studies in the genus *Riccia* (Marchantiales) from southern Africa. 26. A new species in section *Pilifer*, *Riccia radiata*, is described

S.M. PEROLD*

**ABSTRACT**

*Riccia radiata* Perold, a new species endemic to southern Africa, is described. It is referred to section *Pilifer* O.H.Volk, which is characterized by the dorsal epithelium of the thalli consisting of short or long, free-standing, hyaline cell pillars.

**INTRODUCTION**

Including this new species, 18 southern African species of *Riccia* have been referred to section *Pilifer*. The previous 17 species were treated in Perold (1999). As I remarked previously in Perold (1990a), the species assigned to this section, with rare exceptions, have ± rounded, colourless scales and in several the spores have radiating ridges on the distal face. The dorsal cell pillars are composed of two or more hyaline cells: two cells in *R. pulveracea* (Perold 1990b) for example, and up to six cells joined end to end in *R. villosa* (Volk & Perold 1984). Once the thalli have dried out, the cells in the pillars collapse and it is often not possible to reconstitute them, especially if the plants have died. Fortunately, upon keeping some of the thalli of this new species damp in a closed transparent container for two weeks (16 months after collection), the distal parts of the thalli had revived sufficiently and could be studied. The ornamentation on both spore faces proved to be quite distinctive and it was quickly distinguished as a new species, which is described below.

*Riccia radiata* Perold, sp. nov.

Thalli gregarii caespitosi, apicem versus laete viridi, superficies dorsalis columnis cellularum munita mox collabentibus, caespites lanosos formantibus. Squamae hyalinae, arete imbricatae. Sporae unice omatae: superficies distalis cum cristis pluribus densis e centra radiatis (itaque nomen), areolis completis vel incompletis inter cristas; superficies proximalis granulis tenuis, interdum coalescentibus, confertim tecta.

**TYPE.**—Northern Cape, 3219 (Wuppertal): Cederberg, foothills of Bloukop along Luiperdskloof 4x4 route, altitude 1 290 m, on mountain slope, on sandy soil, (-CB), 2002-09-13, M. Koekemoer 2426 (PRE, holo.). Figure 1.

Thalli perennial, in gregarious patches, sometimes overlapping, not forming rosettes, dorsal face apically bright green and glistening, but soon becoming dotted with scattered white tufts of collapsed cell pillars, proxi-
FIGURE 2.—*Riccia radiata*, M. Koekemoer 2426. A, proximal part of thallus and distal branches after bifurcation; B, c/s branch through apical groove; C, c/s proximal part of thallus before bifurcation, tops of collapsed dorsal pillars indicated by broken line; D, c/s dorsal cell pillars and top cells of assimilation tissue cell columns; E, horizontal section through basal cells of cell pillars with air pores dotted; F, scale. Scale bars: A, 2 mm; B, C, 500 μm; D, 100 μm; E, 50 μm; F, 250 μm. Drawn by M. Steyn.

800–950 μm high, 1130–1175 μm across widest part, cells in body of scale mostly elongated, 5- or 6-sided, 92.5–137.5 × 50.0–67.5 μm, decreasing in size toward upper margin, where small and brick-shaped, in 1 or 2 rows; rhizoids arising from following edge.

**Dorsal epithelium** (Figure 2D) consisting of free-standing 3- or 4-celled hyaline pillars, fragile, 135–250 μm long, top cells ± spherical, conical or elongated with rounded apex, very variable in size, 50–150 × 30–75 μm, next cell 50.0–92.5 × 45.0–62.5 μm, basal cell (if 3 cells

FIGURE 3.—SEM micrographs of *Riccia radiata*, M. Koekemoer 2426. A, distal branches of thallus after bifurcation; B, apical part of left branch (in A) with clumps of collapsed dorsal cell pillars; C, apical part of right branch (in A) and scales along sides; D, side view of branch, showing scales; E, F, groove at branch apex, with intact top cells of dorsal pillars on either side. A, × 8.7, B–D, × 16.5, E, × 60.2; F, × 53.8.
in pillar) 37.5–72.5 × 35.0–57.5 μm, (if 4 cells in pillar) 37.5–50.0 × 30.0–32.5 μm; air pores small (Figure 2E), often 4-sided, ± 20 × 20 μm, obscured by cell pillars. Assimilation tissue 250 × 300 μm thick in section, ± \( \frac{1}{3} \) the thickness of thallus and consisting of vertical columns of ± 8 cells, 35–50 × 35–40 μm, enclosing narrow, 4-sided air canals; storage tissue 350–400 μm thick, up to ± \( \frac{1}{3} \) the thickness of thallus, cells crowded together, rounded to slightly angular, ± 45 × 50 μm; rhizoids arising from ventral epidermal cells.

Monoicous? Antheridia not seen; hyaline necks probably obscured by woolly tufts of collapsed dorsal cells of thallus. Archegonia with dark red-brown necks, persistent and prominently projecting from bulging sporangia. Sporangia not very common, mostly single, 800–875 μm wide, rarely up to 3 in close proximity near bifurcation of thallus. Spores 92.5–110.0 μm diam., triangular-globular, polar, fairly dark brown, semitranslucent; wing sprinkled with granules, ± 6 μm wide, gradually widening to 15 μm at notched or perforated marginal angles, margin often minutely crenulate; ornamentation on distal face quite variable (Figure 4A–F), usually with 3–6 heavy ridges, up to 5 μm wide, radiating from centre, in between ridges complete or incomplete areolae, 7.5–15.0 × 7.5–12.5 μm, also thick-walled, sometimes with a central boss; proximal face (Figure 4G–I) with clearly defined triradiate ridge extending to margin, all 3 facets densely covered with fine granules, some coalescing.

This species has only been collected once. It was found growing on sandy soil on a mountain slope in the Northern Cape, at the border with Western Cape. This is a winter rainfall area with vegetation types Northwestern Mountain Renosterveld and Mountain Fynbos (Low & Rebelo 1996). The type locality is in a rather inaccessible place, along a newly opened 4x4 route. It is recognized as a new species mainly by the unique spore ornamentation which is characterized by exceptionally heavy ridges, and is referred to section Pilifer because of the free-standing cell pillars dorsally on the thalli. The specific epithet was chosen because of the radiating ridges on the distal face of many of the spores, quite different from those previously studied.

ACKNOWLEDGEMENTS

I sincerely thank the referees for their kind advice, also Dr M. Koekemoer for collecting the type specimen.
of this new species. Dr H.F. Glen is thanked for suggesting the specific epithet and for translating the diagnosis into Latin. I also extend my gratitude to Mrs M. Steyn for the drawings and to Ms D. Maree for typing the manuscript.

REFERENCES


