

Studies in the genus *Riccia* (Marchantiales) from southern Africa. 22. *R. rubricollis*, now validated, typified and described

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ABSTRACT

Riccia rubricollis is a very rare endemic species, only known from a few collections by Duthie at Knysna. Unfortunately she and Garside did not publish anything on it, and Arnell's (1963) description has neither a Latin diagnosis nor was a type specimen cited. These omissions have now been rectified here, following the recent rediscovery of Duthie's collections at BOL.

The species is characterised by conspicuous, mostly dark purple antheridial necks in the male plant and the spores have large, deepset areolae on the distal face. Although the species has some features typical of section *Ricciella* of subgenus *Ricciella*, it is not placed in this section because the sporangia do not bulge ventrally.

UITTREKSEL

Riccia rubricollis is 'n baie skaars endemiese spesie, slegs bekend van 'n paar Duthie-versamelings in Knysna. Ongelukkig het sy en Garside nooit iets daarvoor gepubliseer nie, en Arnell (1963) se beskrywing is sonder 'n Latynse diagnose, en 'n tipe eksemplaar word ook nie aangehaal nie. Dit word nou hier reggestel, nadat Duthie se versamelings onlangs weer by BOL opgespoor is.

Die spesie word gekenmerk deur opvallende donker pers anteridiële nekke in die manlike plant, en die spore het groot, ingesinkte areolas op die distale kant. Alhoewel die spesie enkele kenmerke besit wat tipies is van seksie *Ricciella* van subgenus *Ricciella*, word dit nie onder hierdie seksie geplaas nie aangesien die sporangia nie ventraal uitbult nie.

Riccia rubricollis Garside & Duthie ex Perold

Thallus dioicus, ?perennis, in turmis gregariis, ramis interdum superpositis, usque ad 12 mm longis, 2.8–3.0 mm latis, oblongis vel linearibus, apicem versus angustatis; stramineis, partis senioribus dorsaliter foveatis. Contextus assimilans sectione \pm 12 cavernulis trans latitudinem thalli, lateraliter devexis apicemque versus dilatatis. Squamae parvae, hyalinae, ventrales solum apicem versus. *Antheridia* collis conspicuis, atropurpurea, in plantis masculis in seria media secundum ramos; propter hoc signum species facile distinguenda. *Sporulae* 92–105 μ m diametro, triangulo-globulares, porphyreae, vel (atro)brunneae, alatae; superficiei distali areolis 5 vel 6 diametro transversus, (10–)20–25 μ m latis, parietibus \pm 4 μ m crassis, 6 μ m altis; superficiei proximali nota triradiali distincta, areolis plerumque incompletis. *Chromosomatum numerus* ignotus, quod plantae vivae non suppetentes. Species rarissima, solum e loco vulgo dicto Knysna nota.

TYPE. —Cape, 3423 (Knysna): Knysna, Belvidere, on turf in shady places, not far from lagoon (–AA), Sept./Oct. 1929, *Duthie 5014* (BOL, lecto.; PRE, isolecto.)

Riccia rubricollis is known only from Knysna in the southern Cape, where it was collected on a few occasions by Duthie (Figure 1). It has so far not been found elsewhere in southern Africa. It grows at low altitude, in damp, shady places, with *R. purpurascens* Lehm. & Lindenb., *Fossombronia* sp. and *Pleuridium* sp. The rainfall is 600–800 mm per year and may occur all year round.

Thallus dioicus, ?perennial, in gregarious patches (Figure 3A) sometimes with branches overlying, or scattered, not in rosettes, yellowish green, occasionally with some purple blotches; branches once (Figure 2A) or twice symmetrically or asymmetrically furcate, rarely simple, and then apically bilobed, moderately to widely divergent, up to 12.0 mm long, segments 2.5–6.0 \times 2.8–3.0 mm, 0.7–1.0 mm thick medianly, thinner toward winged margins, in section 2–4 times wider than thick; oblong or somewhat linear as in species of section *Ricciella*, tapered toward apex (Figure 3C); groove deep only at apex, soon shallow and wide; margins subacute, rather irregularly undulating, winged; flanks sloping obliquely to very obliquely, yellowish; ventrally rounded or medianly keeled; when dry, margins not inflexed, somewhat

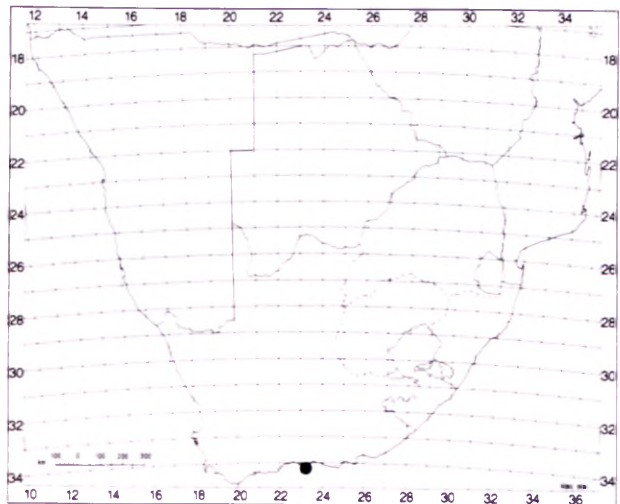


FIGURE 1.—Distribution of *R. rubricollis* in southern Africa.

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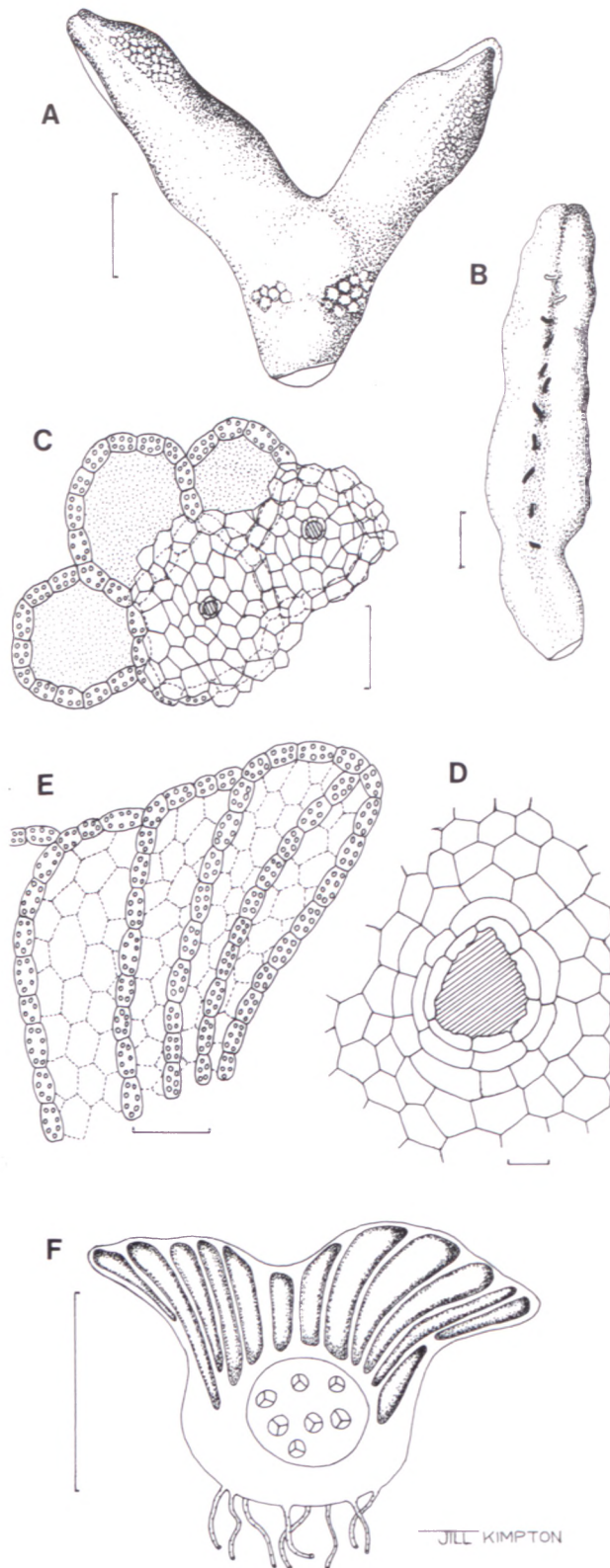


FIGURE 2.—*Riccia rubricollis*. Morphology and anatomy. A, female thallus; B, male thallus; C, epidermal cells and air pores (hatched), overlying air chambers, as seen from above; D, air pore (hatched), with surrounding cells; E, cross section of part of thallus showing air chambers; F, cross section of female thallus. A–F, Duthie 5014. Scale bars on A, B, F = 1 mm; C, E = 100 μm ; D = 50 μm .

raised, straw-coloured to light brown, dorsally pitted in older parts.

Anatomy: dorsal epidermis forming slightly domed to flat covering over large, wide air chambers, from above

cells oblong-hexagonal or 5-sided, 62–80 \times 50 μm , walls up to 10 μm deep; air pores small toward apex (Figure 3D), only \pm 30 μm wide, surrounded by slightly curved, narrow, elongated cells, soon disintegrating, proximally air pores rapidly enlarging (Figure 2D), leaving air chambers exposed; assimilation tissue 400–750 μm thick, occupying more than $\frac{1}{2}$ to most of thickness of thallus, air chambers 5- or 6-sided (Figure 2C), elongated, mostly in one layer, \pm 12 across width of thallus (Figure 2F), sloping laterally and widening toward top, \pm 200–250 μm wide, enclosed by unistratose, chlorophyllose cell plates (Figure 2E); storage tissue \pm 300 μm thick, less than $\frac{1}{2}$ the thickness of thallus, cells transparent, angular, 30–70 μm wide, smaller below; rhizoids arising medianly from ventral epidermal cells, mostly tuberculate, 17–22 μm wide. *Scales* small, hyaline, ventrally situated toward apex only.

Antheridia in a row along midline of male thalli, when mature bulging dorsally, with conspicuous, mostly dark purple necks (Figure 2B), up to 300 \times 25 μm . *Archegonia* 3 or 4 serially arranged toward base, necks purple, thin, hidden. *Sporangia* up to 1100 μm wide, deeply imbedded, not bulging dorsally or ventrally, but eventually opening to upper surface, containing \pm 620 spores each. *Spores* 92–100(–105) μm in diameter, triangular-globular, polar, reddish brown to deep russet-brown, semitransparent to opaque; wing 5 μm wide, wider and perforated at marginal angles (Figure 4E), and often perforated elsewhere too, margin finely crenulate, slightly undulating; ornamentation completely or incompletely reticulate, rather different on 2 spore faces: distal face (Figure 4C, F) with 5 or 6 areolae across diameter, central ones larger, 20–25 μm wide, toward margin smaller, 10 μm wide, walls \pm 4 μm thick and 6 μm deep, shallower laterally (Figure 4D), not raised at nodes (Figure 4E); proximal face with triradiate mark prominent (Figure 4A), widening toward marginal angles at junction with wing (Figure 4B), areolae up to 12 μm wide, mostly incomplete, walls slightly raised at nodes. *Chromosome number*: unknown, as living material not available.

This species is characterized by \pm linear, apically tapering branches, which, in the male plants, bear a single median row of conspicuous, deep purple antheridial necks. Stolons are confined to the thickened perennating tips of some branches (Figure 3B). Although more robust and fleshy, *R. rubricollis* is clearly related to *R. purpurascens* Lehm. & Lindenb., because of its somewhat linear habit, but it is not classified together with it and *R. stricta* (Lindenb.) Perold in section *Ricciella* (subgenus *Ricciella*), as the sporangia do not conspicuously bulge ventrally. Na-Thalang (1980) regards the Australian species *R. collata*, as having the closest affinity to *R. rubricollis*, although the latter plant is larger and on the distal spore face, the areolae are wider.

The specific epithet, *R. rubraosteolata*, in Duthie's handwriting, appears on the labels of her collections, one of which she kept in cultivation for some time at Stellenbosch, but unfortunately she and Garside did not publish a description of this rare, endemic species. Arnell's (1963) illustrations are reported to be after Garside, but the originals have not been traced. Arnell eventually described the species under the name, *R. rubricollis*, but did not give a Latin diagnosis and cited no specimens,

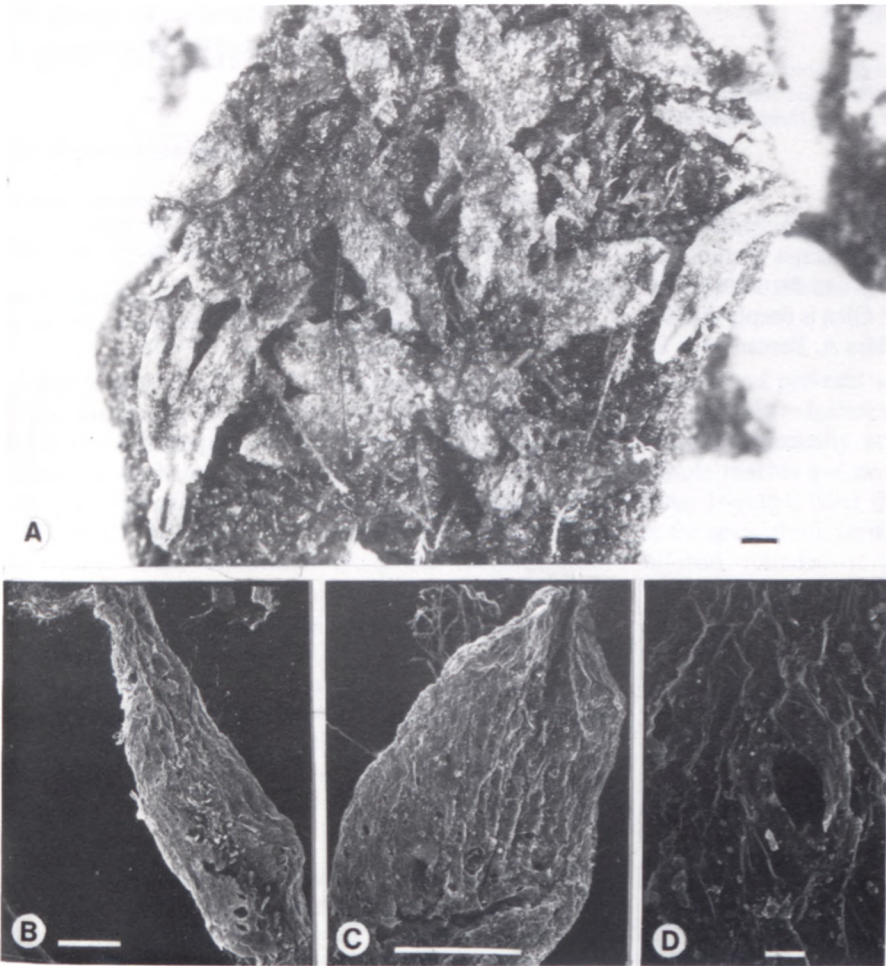


FIGURE 3.—*Riccia rubricollis*. Morphology of the thallus. A, crowded thalli; B, thallus with apical stolon; C, thallus, showing tapering apex and groove; D, air pores. A–D, *Duthie 5014* A, by A. Romanowski; B–D, SEM micrographs by S.M. Perold. Scale bars on A–C = 1 mm; D = 50 μ m.

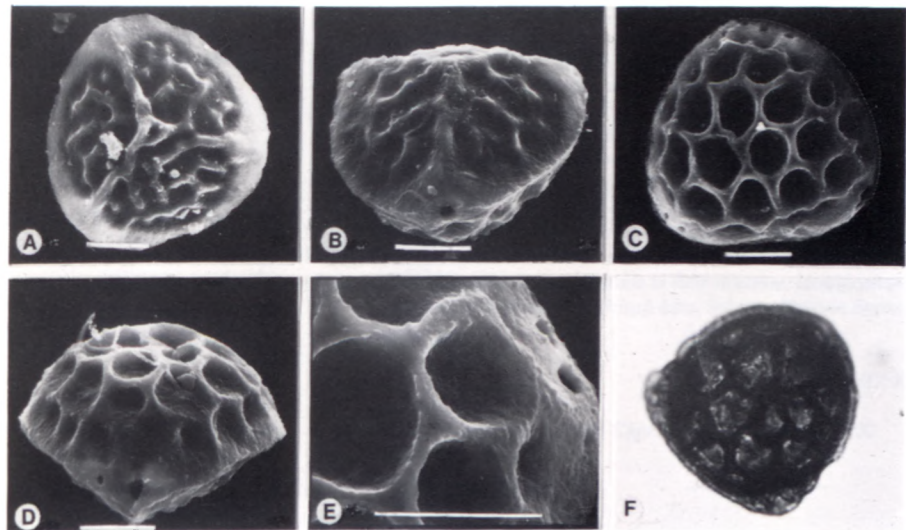


FIGURE 4.—*Riccia rubricollis*. Spores. A, proximal face; B, proximal face, side view; C, F, distal face; D, distal face, side view; E, much enlarged areolae and perforations on distal face. A–F, *Duthie 5014*. A–E, SEM micrographs; F, LM photograph by S.M. Perold. Scale bars on A–E = 50 μ m; diameter of spore on F, \pm 100 μ m.

omissions which render it invalidly published under Articles 36.1 and 37.3 respectively, of the ICBN (Greuter *et al.* 1988). Arnell must, however, have examined the specimens, to have written the descriptions. Duthie's collections have only recently become available to me for study, although I had previously specifically asked about their whereabouts in a letter to the late Prof. E.A. Schelpe. He had, however, assured me that there were no such specimens held at BOL. In my study (Perold 1989) of the

spore wall ornamentation as an aid in identifying southern African species of *Riccia*, I therefore mistakenly stated that there are no examples of *R. rubricollis*.

The largest collection of this species, *Duthie 5014*, consists of two packets; one of them is selected here as the lectotype and is held at BOL; the duplicate specimen, the isolectotype, is held at PRE.

SPECIMENS EXAMINED

CAPE. — 3423 (Knysna): Knysna, Belvidere, on turf in shady places, not far from lagoon (—AA), Sept./Oct. 1929, *Duthie 5014* (BOL, lecto.; PRE, isolecto.); Knysna, Eastford Tower (—AA), *Duthie 5406* (BOL).

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