

## The sorediate variety of *Sclerophytomyces circumscriptus*

Laurens B. SPARRIUS, Peter W. JAMES and M. Ann ALLEN

**Abstract:** The sorediate variety of *Sclerophytomyces circumscriptus* (Taylor) Sparrius & P. James (*Roccellaceae*, *Arthoniales*) is described from sheltered, acid rock along Europe's western coasts and the Atlantic islands. This sorediate taxon is reported from the British Isles, Ireland, France, Spain, Portugal, the Azores and the Canary Islands. A description of the morphology, distribution and ecology is provided. The phylogenetic position of the new taxon is discussed, as well as nomenclatural and orthographic issues. The name *Sclerophytomyces* is proposed as an orthographic correction of the published name *Sclerophytonomyces*.

**Key words:** *Arthoniales*, coastal ecology, saxicolous lichens, species pair, underhangs

### Introduction

Lichens on acid, overhanging maritime cliffs have attracted attention for a long time. The second author made an identification key to the British species (James 1970) and described the syntaxon *Sclerophytetum circumscripti* P. James, D. Hawksw. & F. Rose (James *et al.* 1977), an association of dry, shaded, siliceous rock recesses, of which *Sclerophytomyces circumscriptus* (Taylor) Sparrius & P. James was one of the characteristic species. *Sclerophytomyces circumscriptus* var. *circumscriptus* is cosmopolitan, outside Europe known from North America (Egea & Torrente 1995), Africa (Egea & Torrente 1996) and Australia (Archer & Elix 2003). Recently, it has been included in a separate genus after a revision by the first author (Sparrius 2004).

For many years, a similar taxon has been known to occur in the same habitat, differing in the smaller, sorediate, sterile thalli, sharing the typical milk-white colour and black

prothallus. This taxon is described here as a new variety.

### *Sclerophytomyces circumscriptus* var. *sorediatus* Sparrius, P. James & M. A. Allen var. nov.

Sicut *Sclerophytomyces circumscriptus* var. *circumscriptus* (Taylor) Sparrius & P. James, sed thallo parvo, sterile et sorediato.

Typus: Canary Islands, La Palma, Lomo Machín, Barlovento, 250 m alt., 21 September 1979, *Consuelo Hernández Padron* (E 197301—holotypus; TFC 849, BM—isotypi, TLC: psoromic acid), with *Lecanographa grumulosa*.

(Figs 1 & 2)

*Thallus* saxicolous, up to 10 cm diam., finely verrucose, milk-white to grey, 200–300 µm thick, with or without white pruina, soralia 0.5–2.5 mm diam., irregular in shape, often confluent, soredia 20–40 µm diam., bluish grey or whitish. *Photobiont* *Trentepohlia*. *Prothallus* black and conspicuous, up to 2 mm wide. *Cortex* absent, but cortical gel present, 20–30 µm thick. *Medulla* cretaceous, milk-white, densely filled with calcium oxalate crystals of 10–15 µm diam.

*Ascomata* unknown.

*Conidiomata* unknown.

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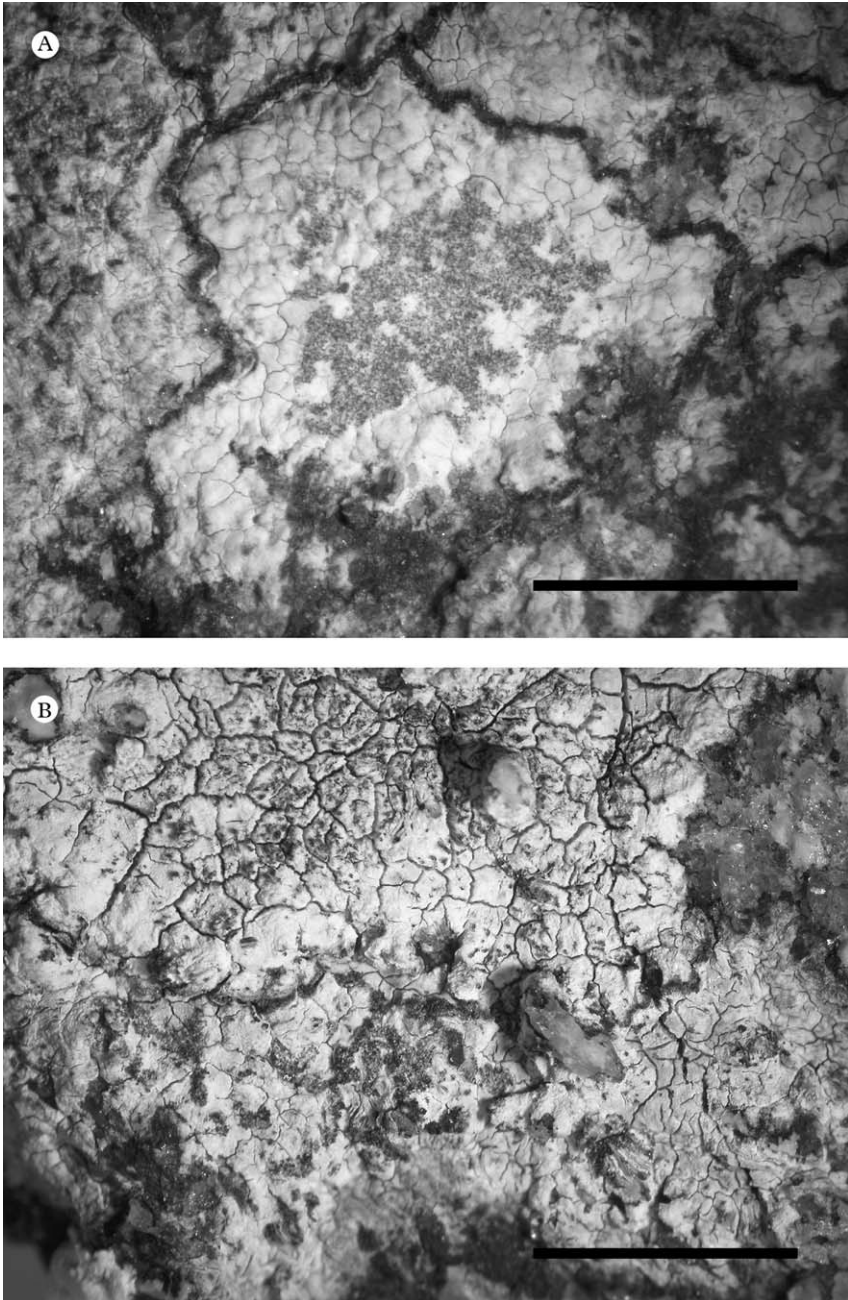


FIG. 1. *Sclerophyomyces circumscriptus*. A, var. *sorediatus* covered by soredia in the central part (Coppins & O'Dare 15171); B, the two varieties growing in close contact, var. *circumscriptus* (Brand 7546) (top) var. *sorediatus*, bottom. Scales: A & B=5 mm.

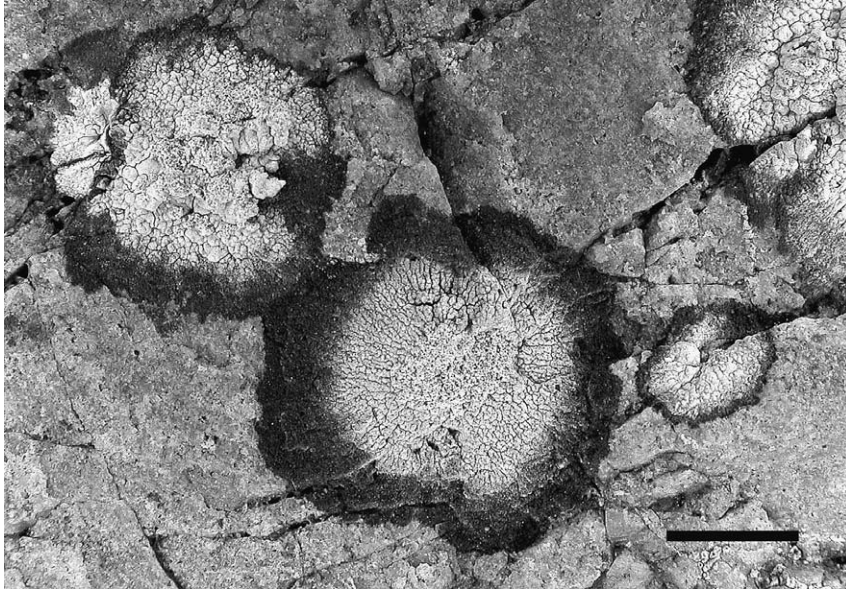


FIG. 2. Typical growth of *Sclerophytomyces circumscriptus* var. *sorediatus* growing on hard, igneous rock, with small thalli and a wide prothallus; photographed in the field on Sark at the site where specimen *Allen* S04-06-1 was collected. Scale=5 mm.

**Chemistry.** Spot test C – or weakly yellowish, K+ weakly yellowish, Pd+ yellow, UV – or UV+ pale cream, I –; TLC: psoromic acid. The type material and all specimens in herbarium Brand contain psoromic acid only, whereas *S. circumscriptus* var. *circumscriptus* usually contains conpsoromic as a minor additional substance.

**Distribution and ecology.** It is widespread on sheltered overhangs of acid maritime rock faces in Europe (Fig. 3) and often growing with *Sclerophytomyces circumscriptus* var. *circumscriptus* and *Dirina massiliensis* f. *sorediata* in north-west Europe and with *Diploicia canescens*, *Lecanographa grumulosa*, *Rocella fuciformis*, *R. phycopsis* and *Syncesia myrticola* in the southern part of the distribution area. Known from the British Isles, Ireland, and western France, northern Spain, Portugal, the Azores and the Canary Islands. The new variety has a more limited and southerly distribution than the typical variety.

Thalli are often small, several growing close together and confined to shaded rock crevices and sheltered rock faces in the

northern part of the distribution area (British Isles and France), whereas in the southern part (Iberia, Azores and the Canary Islands) the thalli become more robust and occur on more exposed sites. In the Azores, the second author observed *S. circumscriptus* var. *sorediatus* being locally abundant on all islands.

The new variety has been mentioned as *Sclerophyton* sp. in recent publications on the lichens of the Channel Islands (British Isles) by James *et al.* (Sark: 1999, Alderney: 2001 and Herm: 2003) and Davey (Jersey: 2001).

**Recognition in the field.** This new taxon differs in having soralia and no ascomata. Occasionally, the ascomata of *S. circumscriptus* var. *circumscriptus* may look like soredia in the field, especially when the thallus is strongly pruinose. No thalli having both soralia and ascomata ('intermediates') have been observed. Both varieties of *Sclerophytomyces* occur in a habitat dominated by *Trentepohlia*-lichens. The similar sorediate lichens *Dirina massiliensis* f. *sorediata* and *Arthonia endlicheri* are separated by the C+

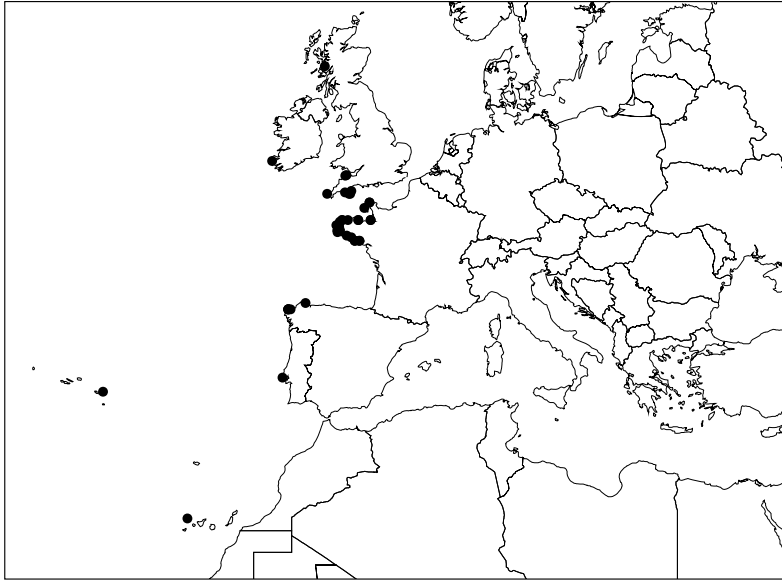


FIG. 3. The distribution of *Sclerophytonomyces circumscriptus* var. *sorediatus* based on 56 herbarium specimens.

pink-red reaction (erythrin and/or lecanoric acid) and the more pink colour of the thallus.

*Phylogenetic issues and ranks.* The very similar ecology, morphology and chemistry suggest that both varieties of *Sclerophytonomyces* are closely related, yet distinct. They may either represent a species pair, with a sexual (primary) and an asexual (secondary) taxon, or there may be two distinct species which evolved into independent genetic lines. Tehler (1983), who dealt with this problem in the related genera *Dirina* and *Roccellina* suggested that in the former case sorediate taxa should be ranked at the level of a forma (Tehler 1982), however in more recent papers, for example on *Roccella* (Tehler *et al.* 2004), this idea has not been supported. We decided to describe the new taxon at varietal level.

*Orthographic issues.* The validity of the name *Sclerophytonomyces* Cif. & Tomas. is discussed by Sparrius (2004). However, orthographic change is required by the Code (ICBN art. 60; Greuter *et al.* 2000) in the case of errors made in compounding forms.

Considering the name *Sclerophyton*, the stem *Sclerophyt-* should be used, followed by a connecting vowel *-o-* followed by *-myces*. Hence, *Sclerophytonomyces*, as used by Ciferri & Tomaselli (1953, 1954) and Sparrius (2004) should be changed to *Sclerophytonomyces*. This practice was also followed by James *et al.* (1977) when describing the association *Sclerophytetum circumscripti* [published as *Sclerophytetum circumscriptae*].

*Additional selected specimens examined:* **Azores:** São Miguel: Nordeste, Sua da Nazare, on sheltered boulders, 10 iv 1977, James (BM).— **British Isles:** *England:* V.C.113, Channel Islands, Sark, Gouliot Headland at foot of Gouliot path above the Gouliot Caves, grid. ref. WV453 758, NE facing cliff, on igneous rock, 2004, Allen S04-06-1 (hb. Allen), with *Dirina massiliensis* f. *sorediata*; Sark, Port du Moulin, WV458 768, on igneous rock, near bottom of cliff path, near stream, 1999, James S99-90-1 (BM), with both forms of *Dirina massiliensis*. *England:* V.C. 1, East Cornwall: 9 km S of Penzance, Zennor Head, overhanging rockface on N slope high above the sea, on acid schist, 1996, Brand 35077 (hb. Brand); V.C. 3, *South Devon:* Highveer Point, on coastal rocks, 21/6549, 26 ix 1990, O'Dare (E 197306); 1.5 km SW of Noss Mayo, Yealm Estate, coastline between Hilsea Point and Blackstone Point, 20/534456, on sheltered rock overhang, 1992, Coppins & O'Dare 15171 (E 097301). *Scotland:* V.C. 97, Westernness: Moidart, S coast of Loch Moidart near Sgriobaid Dubh, shaded overhang

of cliff, on shale, NM667727, 10–25 m, 2004, *Sparrius* 8485 (hb. Sparrius), with var. *circumscriptus*. **Ireland:** V.C. H1, South Kerry: Dingle peninsula, Smerwick, Three Sisters, W side of An Bhinn Mheanach, on conglomerate rock of NW facing overhang, 2000, *Brand* 40379 (hb. Brand).—**France:** Côte d'Armor: 19 km NNW of St Briec, Tréveneuc, Pommerio, on vertical N facing granite outcrop in scrub, 1996, *Brand* 34105 (hb. Brand). *Finistère:* Crozon, Pointe de Penhir, on quartzite in overhang of E facing slope, 1978, *Brand* 7546 (hb. Brand), with var. *circumscriptus*, *Dirina masilensis* and *Roccella phycopsis*. *Ille et Villaine:* 14 km ENE of St Malo, Pointe du Grouin, N point, 10 m above the sea, 1996, *Brand* 34035 (hb. Brand). *Manche:* Cotentin, E of Cap de la Hague, Rocher Jalletin, on isolated granite rock in flat land near coast, 1997, *Brand* 36200 (hb. Brand). *Morbihan:* Quiberon, E side of Pointe de Trévignon, on coarse granite of overhang of mushroom-shaped rock on exposed coast, 1999, *Brand* 38281 (hb. Brand).—**Spain:** *Coruña:* 34 km W of A Coruña, Cabo San Adrian, on granite of steep rockface near the coast, 2003, *Brand* 49174 (hb. Brand). *Lugo:* Faro de Roncadoro, on granite of steep rockface near the coast high above the sea, 2003, *Brand* 49102 (hb. Brand).—**Portugal:** *Lisboa:* Cabo da Roca, S side of cape, on gabbro of vertical SW facing slope, 2003, *Brand* 49748 (hb. Brand).

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