

***Mycosphaerella maxii* Crous, sp. nov.**

Mycobank: MB501007.

Etymology: Named after its collector, Max Crous (age 10), who first spotted this interesting disease.

Latin diagnosis: *Mycosphaerellae bellulae* et *M. alistairii* similis, sed ascosporis majoribus, (15–)17–19(–22) × 4–5(–6) µm, differens.

Description: Leaf spots amphigenous, subcircular, 2–7 mm diam, sunken, grey-brown to medium brown with a raised, dark brown border. Ascomata pseudothecial, substomatal, globose, dark brown, up to 200 µm diam, ostiolar channel lined with periphyses; wall consisting of 2–3 layers of brown cells of *textura angularis*. Asci paraphysate, fasciculate, bitunicate, though additional layers are discernable in the ascus wall, obovoid to broadly ellipsoidal, straight to slightly curved, 8-spored, 30–50 × 9–17 µm. Ascospores bi- to tri-seriate, overlapping, hyaline, guttulate, thin-walled, straight to slightly curved, fusoid-ellipsoidal with obtuse ends, widest in the middle of the apical cell, 1-septate, constricted at the septum, tapering towards both ends, but more prominently towards the lower end, (15–)17–19(–22) × 4–5(–6) µm; ascospores seen to turn brown in some over-mature asci. Ascospores germinating from polar ends, germ tubes more or less parallel to the long axis of the spore, becoming slightly distorted, 4–6 µm wide, but remaining hyaline.

Cultural characteristics: Colonies on 2 % potato-dextrose agar¹ (PDA; Difco) reaching 20 mm diam after 5 weeks at 25 °C; erumpent, spreading, with smooth but uneven margins; centre white due to aerial mycelium, ringed by a smoke-grey zone, and then by an outer olivaceous-grey margin; diffuse yellow pigment visible in agar; reverse olivaceous-grey in centre, with the outer margin iron-grey. Colonies have highly characteristic aerial hyphae that are hyaline, thick-walled (two-layered), with numerous septa, producing nodular outgrowths at septa, and with large guttules visible in the cells. With age, colonies produce large orange “balls” among the aerial hyphae, which appear to represent some kind of crystal formation.

Typus: South Africa, Western Cape Province, Bettie’s Bay, Harold Porter Botanical Garden, on leaves of *Protea repens*, 4 Jan. 2006, collected by M. Crous & P.W. Crous, CBS-H 19774, **holotypus**; cultures ex-type CPC 12805 = CBS 120137, CPC 12806–12807; Hermanus, Rotary road on top of mountain, on leaves of *P. repens*, 31 Dec. 2005, collected by P.W. Crous, CPC 12943–12945.

Notes: *Mycosphaerella maxii* is associated with leaf spot symptoms reminiscent of those of *M. bellula* Crous & M.J. Wingf., *M. jonkershoekensis* P.S. van Wyk, Marasas & Knox-Dav.² and *M. alistairii* Crous. It is distinct from *M. bellula* and *M. alistairii* by its larger ascospores, which again closely resemble those of *M. jonkershoekensis* in size. However, it is distinct from *M. jonkershoekensis* as its ascospores do not darken during germination, and it has peculiar, thick-walled, budding aerial mycelium that eventually form clumps of orange crystals. These features have never been observed in *M. jonkershoekensis*, or any other species of *Mycosphaerella*. Phylogenetically *M. maxiae* is closely related to the asexual fungus *Trimmatostroma macowanii* (Sacc.) M.B. Ellis. However, on PDA and oatmeal agar¹ isolates of *M. maxii* remained sterile, and did not produce any anamorph.

BLASTn results of the ITS sequence of *M. maxii* (GenBank DQ885898–DQ885899) had an E-value of 0.0 with the ITS sequence of *Trimmatostroma macowanii* (AY260095; 97 % identical) and *Mycosphaerella fibrillosa* (Syd. & P. Syd.) Joanne E. Taylor & Crous (AY260094; 95 % identical).

Colour illustrations: *Protea repens* bush growing alongside a mountain stream in the Harold Porter Botanical Garden, Bettie’s Bay (P.W. Crous); leaf spot symptoms; orange crystals formed in culture; asci with ascospores; germinating ascospore; budding aerial mycelium in culture (P.W. Crous). Scale bar = 10 µm.

References: ¹Gams W, Hoekstra ES, Aptroot A (eds) (1998). *CBS course of mycology* 4th ed. Centraalbureau voor Schimmelcultures, Baarn, Delft, Netherlands. ²Crous PW, Denman S, Taylor JE, Swart L, Palm ME (2004). Cultivation and diseases of *Proteaceae*: *Leucadendron*, *Leucospermum* and *Protea*. *CBS Biodiversity Series* 2: 1–228.

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