

*Condwanamyces wingfieldii*





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***Gondwanamyces wingfieldii* Roets & Dreyer, sp. nov.**

*Etymology.* Named after Professor M.J. Wingfield, who spearheaded research on *Gondwanamyces* from *Proteaceae*.

*Ascomata* produced superficially on host tissue; bases black, globose, ornamented, (71.5–)88.6–120.8(–172.4)  $\mu\text{m}$  diam, necks black, smooth-walled, (58.4–)89.7–132.1(–191.5)  $\mu\text{m}$  long, (17.1–)18.3–31.3(–32.2)  $\mu\text{m}$  wide at the base, (9.5–)11.0–12.3(–13.1)  $\mu\text{m}$  wide at the apex, with ornamental hyphae. *Asci* evanescent. *Ascospores* 1-celled, hyaline, fusiform with a hyaline gelatinous sheath giving a falcate appearance, accumulating in a hyaline droplet at the neck apex, (9.4–)10.2–11.4(–12.9)  $\times$  (1.5–)1.8–2.2(–2.4)  $\mu\text{m}$ . *Conidiophores* macro-nematous, mononematous, brown, septate, arising from well-developed rhizoids; stipe erect, simple, inflated at the apex, (49.8–)58.8–90.9(–108.2)  $\times$  (3.85–)4.4–5.5(–6.2)  $\mu\text{m}$ . *Conidiogenous cells* (phialides) produced terminally on conidiophores, discrete, ovoid, brown, producing conidia at the apex, (4.7–)5.1–6.3(–7.0)  $\times$  (2.3–)2.6–3.8(–4.7)  $\mu\text{m}$ . *Conidia* holoblastic, hyaline, aseptate, smooth-walled, cylindrical to allantoid, rounded at the apex and truncate at the base, produced in mucoid masses at the apex of conidiophores, (3.2–)3.37–4.4(–5.7)  $\times$  (2.0–)2.2–2.7(–3.2)  $\mu\text{m}$ .

*Culture characteristics* — Colonies reach c. 40 mm diam on 2 % malt extract agar (MEA, Biolab, Midrand, South Africa) after 8 d at 25 °C; aerial mycelium sparse, hyaline at first, becoming olivaceous buff with age; margins regular; colonies fertile.

*Typus.* SOUTH AFRICA, KwaZulu-Natal Province, Boston, Good Hope Farm (29°40S, 29°58E), within infructescences of *Protea caffra*, Jan. 2011, F. Roets, holotype PREM 60728; cultures ex-type CFR 150 = CBS 132470; paratypes PREM 60729–60730; cultures CFR 151–152; ITS sequence of CFR 150 GenBank JQ844903 and LSU sequence of CFR 150 GenBank JQ844902, MycoBank MB800003.

*Colour illustrations.* *Protea* sp. from the KwaZulu-Natal Province highlands; ascomata; ascomatal tip with oozing ascospores; ascospores; anamorph with conidiogenous cells; conidia. Scale bars = 10  $\mu\text{m}$ .

*Notes* — *Gondwanamyces wingfieldii* is the first species of the genus collected from the infructescences of a species of *Protea* from outside the boundaries of the Cape Floral Kingdom of South Africa. Its host plant species has one of the widest distributions of all *Protea* spp. and extends from the KwaZulu-Natal Drakensberg in South Africa northwards into tropical Africa. It is possible that the distribution range of *G. wingfieldii* follows that of its host.

The ascomata of *G. wingfieldii* are morphologically similar to those of *G. capensis*, *G. proteae*, and *G. scolytodis* except that the perithecial bases are always strongly ornamented. Ascospores of *G. wingfieldii* are similar to those of *G. proteae* and *G. scolytodis* in that they are covered by a lunate sheath (Kolarik & Hulcr 2009). This character differentiates these species from *G. capensis* (Wingfield & van Wyk 1993). *Gondwanamyces proteae* has divergent ostiolar hyphae at the tip of the ascomatal neck unlike *G. capensis*, *G. scolytodis*, and *G. wingfieldii*. *Gondwanamyces wingfieldii* and *G. scolytodis* can be distinguished by the much larger ascospores produced by the latter (11–20  $\mu\text{m}$ ) and different anamorphic stages. The anamorph produced by *G. wingfieldii* is *Custingophora*-like, similar to the other *Protea*-associated species, *G. capensis* and *G. proteae*, whilst the conidiophores of *G. scolytodis* are hyaline with an indeterminate origin (Kolarik & Hulcr 2009). The teleomorphs of two non-*Protea* associated species from South Africa, *G. serotecta* and *G. ubusi*, are unknown, but these share anamorph characteristics with *G. wingfieldii* (van der Linde et al. 2011). The conidia of the former two are, however, more than double the length of those produced by *G. wingfieldii*.

A megablast search in GenBank using ITS sequence data retrieved *G. capensis* (GenBank EU552135.1; Identities = 623/629 (99 %), Gaps = 3/629 (0 %)) as closest sister. *Gondwanamyces proteae* (GenBank AY372072.1; Identities = 610/630 (97 %), Gaps = 10/630 (2 %)) was retrieved as sister to *G. capensis* and *G. wingfieldii*. The ITS sequences of the *Euphorbia*-associated *G. serotecta* (GenBank JF947182.1; Identities = 529/608 (87 %), Gaps = 39/608 (6 %)) and *G. ubusi* (GenBank JF947186.1; Identities = 532/612 (87 %), Gaps = 43/612 (7 %)) were retrieved as sister to all *Protea*-associated species. *Gondwanamyces scolytodis* (GenBank AM267268.1) was retrieved with Identities = 486/581 (84 %) and Gaps = 44/581 (8 %).

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