
CERATOBASIDIUM SPHAEROSPORUM REDISCOVERED?

Heino Lepp

PO Box 38, Belconnen, ACT 2616.

Abstract

A possible specimen of *Ceratobasidium sphaerosporum* has been collected in South Australia.

H. Lepp (2005). *Ceratobasidium sphaerosporum* rediscovered? *Australasian Mycologist* 24 (1): 20–22.

Introduction

Warcup & Talbot (1971) described *Ceratobasidium sphaerosporum*, obtained as a perfect state from *Rhizoctonia* isolates from north Queensland orchid roots. Roberts (1999) noted that the species was still known only from those north Queensland orchid roots and that the holotype was lost. Field work in a mallee area in South Australia has produced a possible specimen of *C. sphaerosporum*. The specimen has been deposited in the Australian National Herbarium (CANB) at the Centre for Plant Biodiversity Research in Canberra. In this paper I describe that collection and compare its features with those of similar taxa. Measurements and drawings are from material rehydrated in approximately 5% KOH (with a dash of phloxine).

Specimen description

Ceratobasidium cf. sphaerosporum Warcup & P.H.B. Talbot *New Phytol.* 70: 38 (1971). Figure 1.

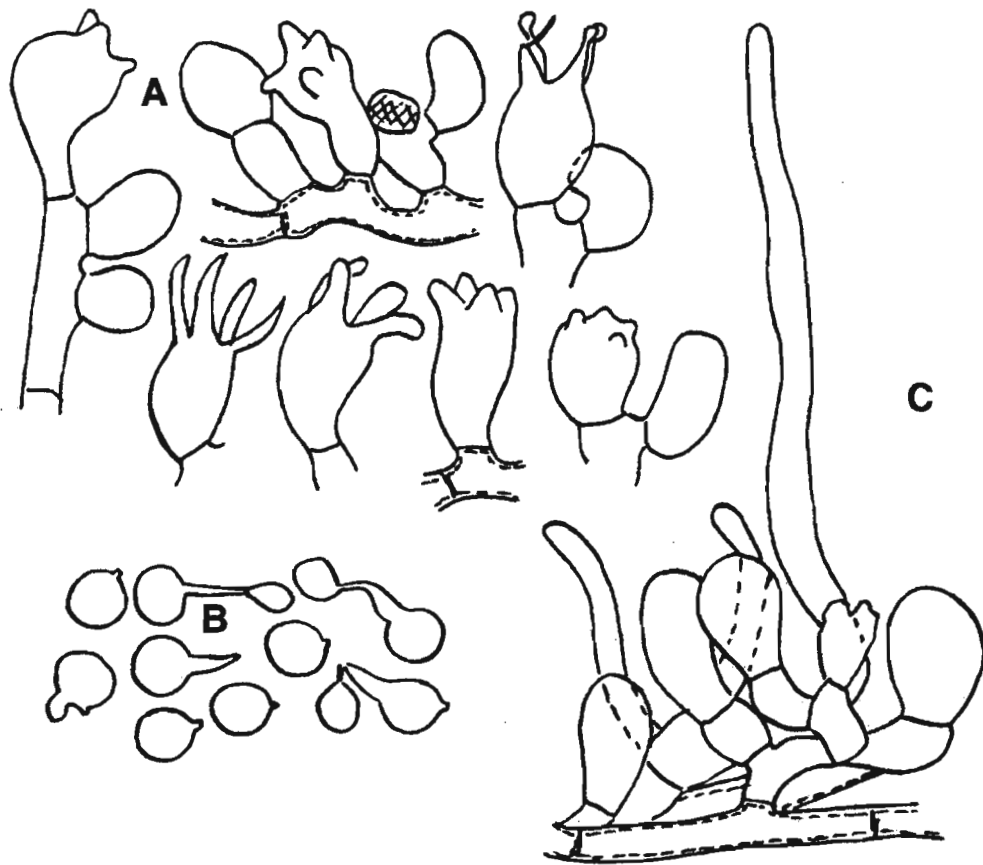
The sporocarp covers about two square centimetres and appears as a pale grey bloom to the naked eye, farinose under a hand lens. *Hyphal system*: monomitic; hyphae hyaline, smooth, unclamped, branching at right-angles and growing as an open weave, thin-walled (except for the basal hyphae, which are up to 0.8 µm thick), 4.0–6.4 µm diameter. *Spores*: globose or subglobose (the length/breadth ratio in the range 1.0–1.1), smooth, thin-walled, inamyloid; 6.4–8.0 µm (excluding the apiculus, up to 0.8 µm long), germinating by repetition. *Basidia*: barrel-shaped to sphaeropedunculate (with the stem lateral in some cases), with 4 sterigmata, 14–17 × 8.8–12 µm. *Cystidia*: three narrow, almost hyphidial-like growths were present, two fairly short (Fig. 1c).

Specimen studied: SOUTH AUSTRALIA: Pooginook Conservation Park, 45 km (by road) E of Morgan, on Morgan Road; on fallen, long-dead eucalypt branch in mallee scrub with *Triodia*; 23 May 2003; *H Lepp* 4058 (CANB 649904).

Discussion

Figure 1c shows the only cystidia I found, despite further searching in several areas of the sporocarp. The genus is described as lacking cystidia and, given their general absence, I would take the three as simply some aberrant growths in a specimen that otherwise matches *Ceratobasidium*. The basidia, very much broader than the hyphae, and the lack of much development beyond the basal hyphae would rule out *Thanatephorus*. *Oliveonia* is similar to *Ceratobasidium* and has cystidiate species, but with agglutinated and narrower hyphae. Note that I could not trace the three cystidia back to their sources, so cannot rule out the possibility that they are a contaminant.

Warcup & Talbot (1980) described another spherical-spored species (*C. globisporum*, also based on isolates from North Queensland orchids), with ‘... considerably larger dimensions of all its structures’. *Ceratobasidium globisporum* and *C. sphaerosporum* may simply be the extremes of a single taxon (Roberts 1999). Boidin & Gilles (2000) reported a single collection of *Ceratobasidium cf. globisporum* ‘sur bois très dégradé’ (i.e. on well-rotted wood) from Réunion, in the south-west Indian Ocean.



Scale bar = 10 μ m

Figure 1. *Ceratobasidium cf. sphaerosporum* (HL4058). A, Basidia (hashed area is debris). B, Spores. C, Basal hyphae, basidiolae and cystidia.

Table 1. Comparison of the micro-features of taxa in the *C. sphaerosporum*/*C. globisporum* complex.

	HL4058	<i>C. sphaerosporum</i> Warcup & Talbot (1971)	<i>C. globisporum</i> Warcup & Talbot (1980)	<i>C. cf. globisporum</i> Boidin & Gilles (2000)
Hyphae	4.0–6.4 μ m; hyaline, basal hyphae with walls to 0.8 μ m thick	Up to 6 μ m wide, the basal hyphae lightly coloured and with walls about 0.8 μ m thick	7–9 μ m wide; the walls of the basal hyphae lightly coloured and 1–1.5 μ m thick	Basal hyphae 13–14 μ m wide; walls about 1 μ m thick
Spores	(Sub)globose, 6.4–8.0 μ m (+ apiculus, up to 0.8 μ m long)	Spherical 6.5–9 μ m diameter; with a prominent hilum	Spherical, 10–12 μ m diameter, or sphaeroidal 10–12 (–14) \times 10–12 μ m	Spherical, 8.8–13 or 9–13 \times 8.5–12 μ m
Basidia	Barrel-shaped to sphaeropedunculate, 14–17 \times 8.8–12 μ m; with 4 sterigmata that are up to 13 μ m long	Sphaero- or pyropedunculate, 11–14.5 \times 8–10 μ m; with 4 sterigmata that are up to 6 μ m long	Obovate to subspherical 15–22 \times 13–16 μ m, with 4 sterigmata that are 6–11 (–20) μ m long	Subcylindrical, 19–26 \times 10.5–12.5 μ m; with 2–4 sterigmata that are 12–18 (–24) μ m long

Ceratobasidium globisporum is known only from the north Queensland material and its holotype also could not be found (Roberts 1999). The holotypes of both *C. globisporum* and *C. sphaerosporum* had been deposited at the University of Adelaide herbarium,

the collections of which have since been moved to either the State Herbarium of South Australia (AD) or the Plant Pathology Herbarium of the Orange Agricultural Institute (DAR). Graham Bell (AD, pers. comm.) and Michael Priest (DAR, pers. comm.) have

confirmed that the holotypes have still not been found. The 'Filamentous fungi database' http://www.cbs.knaw.nl/databases/search_filam.htm of the Centraalbureau voor Schimmelcultures (CBS) notes that CBS holds cultures obtained from the original isolates by Warcup & Talbot. A web and literature search yielded just one other *Ceratobasidium* species with globose spores, *C. setariae* (Sawada) Oniki *et al.* However, its spores range from globose to ellipsoid (9–14 [–20] × 7–13 [–18], with a length/breadth ratio from 1.0 to 1.3), its basidia are bi-sterigmate and it is known only as a cereal pathogen (Roberts 1999).

Table 1 compares the micro-features of taxa in the *C. sphaerosporum*/*C. globisporum* complex, with the descriptions taken from the indicated sources. In all cases the spores are hyaline, smooth-walled and inamyloid, and the hyphae are smooth and unclamped.

Acknowledgements

I thank the South Australian Department of Environment and Heritage for allowing collecting in Pooginook Conservation Park, and Graham Bell and Michael Priest for checking for the holotypes noted above.

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