

**PODOSPORA OBCLAVATA (LASIOSPHAERIACEAE), A NEW SPECIES  
FROM AUSTRALIA**

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**Abstract**

A new species, *Podospora obclavata*, is described from macropod and wombat dung collected in the state of New South Wales, Australia. This species produces a *Cladorrhinum* anamorph in culture.

**Key words:** new species, *Lasiosphaeriaceae*, coprophilous fungi, systematics, Australia.

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**Introduction**

During continued observation of marsupial dung collected from Australia, a further new species of *Podospora* was found. This species, which produces a *Cladorrhinum* anamorph is described below.

**Materials and Methods**

Three dried samples of marsupial dung collected west of Bateman's Bay, SW Nelligen, NSW in October 1997, by Robin Corringham were forwarded to me in New Zealand as part of a large project to study the coprophilous fungi of Australia. At the completion of this project (Bell 2005), surplus dung collections, were kept in a dried state in a refrigerator at approximately 2°C, until such time as they were incubated on moist filter paper in lidded glass dishes. The above collections were finally incubated on 5 November 2004, some seven years after their initial collection. The new species of *Podospora* developed to maturity after approximately one month of incubation on all three samples of dung in the laboratory. Initial microscopic examination of the fungus was made in water mounts and a number of semi-permanent slides were made using

Shear's mounting medium (Bell 2005). The ascospore size was determined by measuring 50 of the ascospores using all three of the collections.

In addition, mature perithecia were surface sterilized in a 3% solution of hydrogen peroxide for 10 minutes, after which they were squashed and their contents spread on to the surface of weak potato carrot agar (PCA). Initially the ascospores failed to germinate, but there was some hyphal growth from tiny portions of the sterilized perithecium. A new fresh mature perithecium was carefully removed from the second sample of kangaroo dung upon which the fungus appeared and placed on a piece of sterile moist filter paper with the base of a sterile agar plate inverted over it. A bright light source was positioned above this arrangement such that the discharged ascospores deposited themselves onto the agar surface. After approximately one month on PCA agar, some of the ascospores germinated, producing an identical anamorph to that produced earlier from the perithecial fragment. Portions of the mycelium were transferred to PCA agar slopes and forwarded to the Centraalbureau voor Schimmelcultures (CBS), Utrecht, in the Netherlands.

### Taxonomy

***Podospora obclavata*** A. Bell *sp. nov.* (Figure 1 A–G)

*Etymology.* *obclavata* = referring to the shape of the pedicel.

Perithecia aggregata, ventre subterraneo, globosa vel piriformis, 0.5–0.75 mm diam. peridium perlucidulus, textura angularis. Collo emergente, laevigata, gracilis. Asci clavati, 8-spore, aqua turgescere, poro germinali apicali praeditae. Ascosporeae biseriatae, deinde aqua multiseriatae, cellula superiore brunnea, symmetrica, late ellipsoideae, basi truncata, 40–48 x 22–26  $\mu\text{m}$ , poro germinali protrudo. Pedicellus hyalinus, obclavati, 30–38 x 13–16  $\mu\text{m}$ , evanescens. Cauda gelatinosa attenuata basilaris, cauda superior canaliculata. Cauda laterale interdum invisibile. Fungus fimicola.

*Holotypus.* New South Wales, Bolaro State Forest, 4 November 1997, R. Corringham (PDD 83068).

*Characteristics on dung.* Perithecia aggregated in clusters of 2 or 3, broadly pyriform with smooth, black, slender necks emerging above the dung surface. Venters approximately 0.5–0.75 mm diam., subglobose, thin-walled, such as the ripe ascospores are easily seen through the wall (Fig. 1A). Pseudoparenchymatous peridial wall of angular texture (= *textura angularis*). Two collections of this species sported tufts of coarse brown hairs irregularly disposed over the venters, and initially this was thought to be part of the fungus. However, the third collection did not show this feature. Moreover, other hitherto known coprophilous ascomycetes, (e.g. *Arnium caballinum*), also occurring on the same dung samples, also sported these coarse hyphal growths on their venters, thus it was assumed that they were of an invading hyphomycete rather than a feature of this new *Podospora* species. *Centrum* contents consisting of interascal tissue of filaments consisting of variously inflated cells. Mature asci clavate, long stalked, 8-spored, noticeably swelling in water mounts (Fig. 1B & D). No visible ring to ascus tips. Ascospores irregularly biseriate becoming multiseriate in water mounts (Fig. 1B). Immature ascospores dumb bell-shaped at first (Fig. 1C), upper end

of which enlarges (Fig. 1F). Mature ascospores comprised of two cells. Dark cells smooth, symmetrical, broadly ellipsoidal with somewhat truncate bases, 40–48 x 22–26  $\mu\text{m}$ , each with a subapical slightly protruding germ pore (Fig. 1E). Hyaline pedicel obclavate, delicate, soon collapsing, 30–38 x 13–16  $\mu\text{m}$  (Fig. 1E). Caudae present but evanescent. Upper cauda single and striate, lower cauda single, lash-like without striations, lateral supernumerary caudae attached to pedicel are not always visible (Fig. 1E).

*Holotype.* On wombat dung (*Vombatus ursinus*), amongst *Eucalyptus* vegetation with creek community shrub and some drier rainforest plants, at Bolaro State Forest, west of Bateman's Bay, NSW, Australia, lat. 35° 40' 32", long. 150° 04' 30", collected 4th Nov. 1997, by R. Corringham (PDD 83068).

*Other specimens.* On wallaby dung (*Wallabia bicolor*), amongst tall open forest of mixed *Eucalyptus* species dominated by *E. maculata*, at Bolaro State Forest, west of Bateman's Bay, NSW, Australia, lat. 35° 40' 32", long. 150° 04' 30", collected 4th Nov. 1997, by R. Corringham (PDD 83672).

On kangaroo dung (*Macropus giganteus*), in open forest including *Eucalyptus seiberi*, *E. cypellocarpa* and *E. longifolia* (subjected to fire in 1994), west of Bateman's Bay, SW Nelligen, NSW, Australia, lat. 35° 42', long. 150° 03', collected 28th Oct. 1997, by R. Corringham (PDD 82118).

*Characteristics in culture.* Cultures obtained from specimens growing on wallaby dung (*Wallabia bicolor*, PDD 83672). Colony growth was resultant from germinating ascospores discharged from perithecia treated with 3% hydrogen peroxide bleach for 10 mins. Mycelial growth slow, submerged within the agar with scant aerial hyphae, hyaline, with dark grey sectoring. Anamorph only produced (Fig. 1G), comprised of clusters of branched cells subtending obclavate phialides with prominent collarettes. Large collections of conidia very pale brown in mass, but individually hyaline, approx. 2–3  $\mu\text{m}$  in diam. each with a prominent guttule and truncate base. No teleomorph produced, although knots of hyphae resembling ascogonial coils produced after approximately five weeks, by which time the agar was ready to dry out. Homothallic or

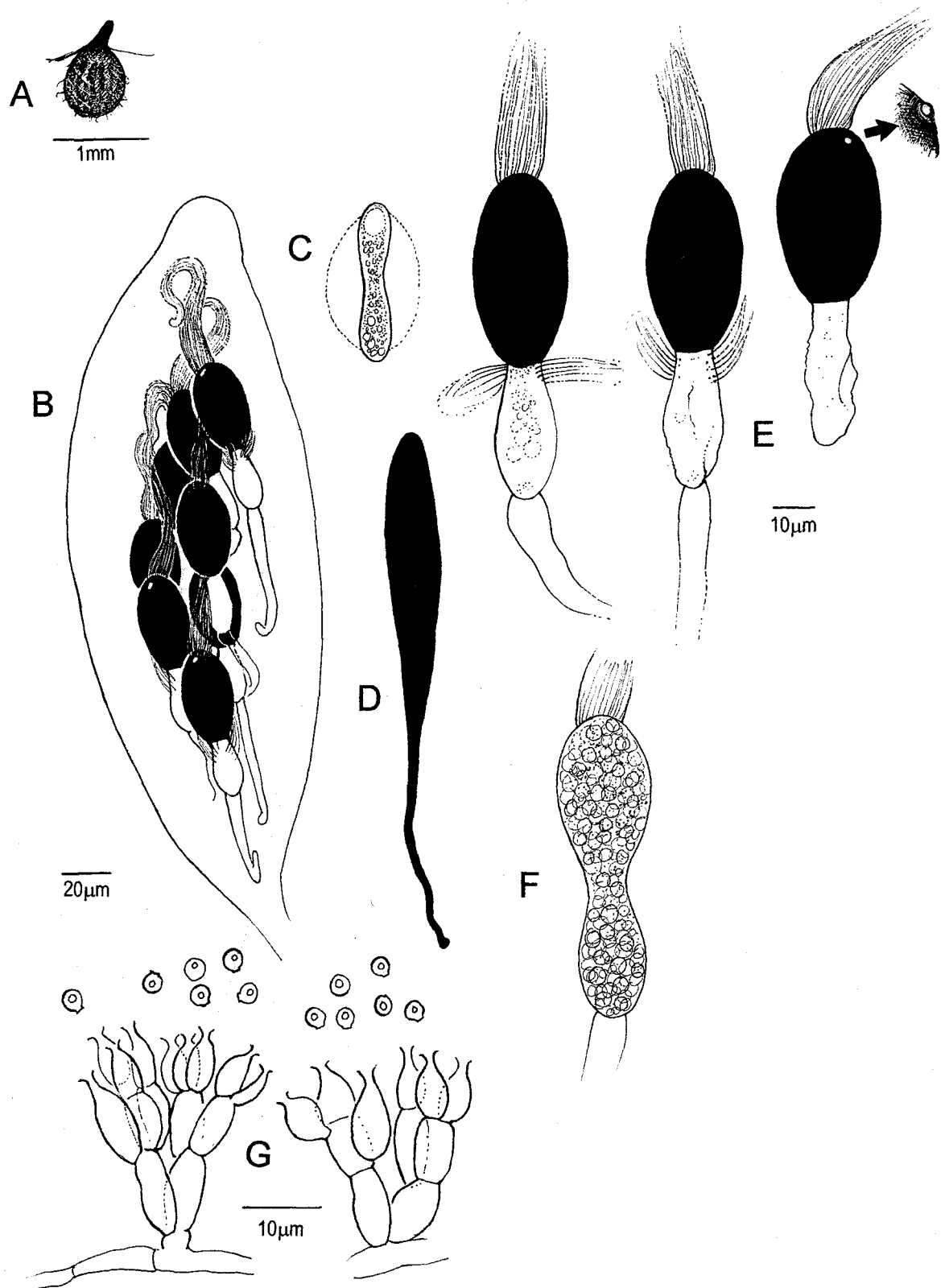


Figure 1. *Podospora obclavata* A Perithecium. B Ascus showing ascospores. C & F Immature ascospore D Silhouette of mature ascus. E Mature ascospores. G *Cladorrhinum* anamorph.

heterothallic status unknown at present. Culture deposited at Centraalbureau voor Schimmelcultures (CBS 119127).

### Discussion

*Podospora* is a large, mainly coprophilous genus comprising approximately 84 species (Kirk *et al.* 2001). The combination of morphological characters found in *P. obclavata* differ from those of known described species. Earlier studies of Australian coprophilous ascomycetes to date have yielded an additional six new species of *Podospora* (Bell 1999, 2004, 2005). Considering vast areas of the world remain unexplored insofar as their fungal flora is concerned, it is highly likely that there are more species of this genus yet to be discovered. It is impossible based on our present knowledge, to have any idea as to which, (if any), of the already described species, *Podospora obclavata* is related to. At such future time when more *Podospora* species are obtained in culture and these cultures sequenced, it may be possible to place this current one next to its closest relatives

after the manner in which Cai *et al.* elucidated for *Schizothecium* (Cai, Jeewon & Hyde 2005).

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