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# New and interesting records of South African fungi. X. New records of *Eucalyptus* leaf fungi

P.W. Crous*, M.J. Wingfield and S.H. Koch

Plant Protection Research Institute, Private Bag X134, Pretoria, 0001 Republic of South Africa; Department of Microbiology and Biochemistry, University of the Orange Free State, P.O. Box 339, Bloemfontein, 9300 Republic of South Africa and Plant Protection Research Institute, Private Bag X5017, Stellenbosch, 7600 Republic of South Africa

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During surveys of fungi occurring on *Eucalyptus*, five leaf-inhabiting fungi, previously unknown in South Africa, were found. These include *Clypeophysalospora latitans* (Sacc.) Swart, *Codinaea septata* Sutton & Hodges, *Cytospora australiae* Speg., *Idiocercus australis* (Cooke) Swart and *Seimatosporium eucalypti* (Mc Alp.) Swart.

In opnames van swammme op *Eucalyptus*-blare, is vyf nuwe rekords vir Suid-Afrika gevind: *Clypeophysalospora latitans* (Sacc.) Swart, *Codinaea septata* Sutton & Hodges, *Cytospora australiae* Speg., *Idiocercus australis* (Cooke) Swart en *Seimatosporium eucalypti* (Mc Alp.) Swart.

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*To whom correspondence should be addressed

## Introduction

Numerous fungi have recently been recorded on *Eucalyptus* leaves in South Africa for the first time (Crous *et al.* 1988, 1989a, b). Most of these are pathogens and of importance to the forestry industry. During subsequent surveys of *Eucalyptus* leaves, five fungi, previously unknown in this country have been collected. In this report the fungi are listed and their morphological characteristics outlined.

**1. Clypeophysalospora latitans** *(Sacc.) Swart*, in Trans. Br. mycol. Soc. 76(1): 93 (1981).

Synonyms *fide* Swart (1981).

*Physalospora latitans* Sacc.: 67 (1893). *Amerostege latitans* (Sacc.) Theiss.: 411 (1916).

*Laestadia eucalypti* Speg.: 248 (1899). *Physosporella eucalypti* (Speg.) v. Höhn.: 56 (1918). *Phyllachora eucalypti* (Speg.) Petrak: 128 (1929).

*Laestadia eucalypti* Roll.: 118 (1901). *Laestadia rollandi* Sacc. & Syd.: 455 (1902). *Physalospora eucalypti* (Roll.) Schrantz: 326 (1960).

Perithecia immersed, mostly single, amphigenous, under a distinct dark clypeus with a periphysate ostiole. Asci unitunicate, paraphysate, cylindrical, with an amyloid apical ring and a pulvillus, 88–160 × 11–20 μm in size. Ascospores uniseriate or irregularly arranged, hyaline with lipid inclusions and muscous outer layer, ellipsoidal, with round to more attenuated apices, 12.5–18 × 5–10 μm (Figure 1).

Perithecia of this fungus occurred mostly on necrotic leaf tissue or leaf litter.

### Specimens examined

—**2727** (Kroonstad): Old Vegkop military base (–CA), collected on leaves of *Eucalyptus* sp., P.W. Crous, Mar. 1989, PREM 50447.

—**3018** Stellenbosch: Stellenbosch mountain (–DD), collected on *E. bicostata* Maid. *et al.* leaves, P.W. Crous, Dec. 1988, PREM 50448; Stellenbosch mountain, (–DD), *E. deanei* Maid. leaves, P.W. Crous, Sept. 1988, PREM 50449; Stellenbosch mountain (–DD), *E. grandis* Hill: Maid. leaves, P.W. Crous, Oct. 1989, PREM 50450; Stellenbosch mountain (–DD), *E. tereticornis* Sm. leaves, P.W. Crous, Sept. 1988, PREM 50451.

**2. Idiocercus australis** *(Cooke) Swart* in Trans. Br. mycol. Soc. 90(2): 283 (1988).

*Phoma australis* Cke.: 17 (1886) (*fide* Swart 1988).

Conidiomata pycnidial, separate, immersed, globose to ellipsoidal, light brown, thin walled, dark brown around the semi-papillate ostiole. Conidiophores small, originating from the inner cells of the conidioma wall. Conidiogenous cells cylindrical to flask-shaped, hyaline, annellidic, not flared, annellations terminal, 7–10 × 1.8–3 mm. Conidia hyaline, smooth, aseptate with a minute basal frill, apex obtuse, base truncate, cylindrical to long clavate or slightly elliptical, 4.3–11 × 1.5–4 μm (Figure 2). Although the dimensions are smaller than those reported for Australian material, this identification was confirmed by Dr H.J. Swart, 136 Waiora Rd., Rosanna, Victoria 3084, Australia.

This fungus was reported to cause a severe infection of young *E. regnans* F. Muell. trees in Australia (Swart 1988). However, Swart (1988) mentions the possibility of the lesions being stress-related. In South Africa, *I. australis* has been found on older leaves of 15-year-old *E. cladocalyx* F. Muell. Swart (1988) suggested that this fungus could be the anamorph of *Clypeophysalospora latitans*. As was found in Australia, both fungi occurred in close association on necrotic leaf tissue in this study, but no teleomorph–anamorph connection was made.

### Specimen examined

—**3018** (Stellenbosch): Stellenbosch Farmers Winery (–DD), collected on *E. cladocalyx* leaves, P.W. Crous, Sept. 1988, PREM 50452.

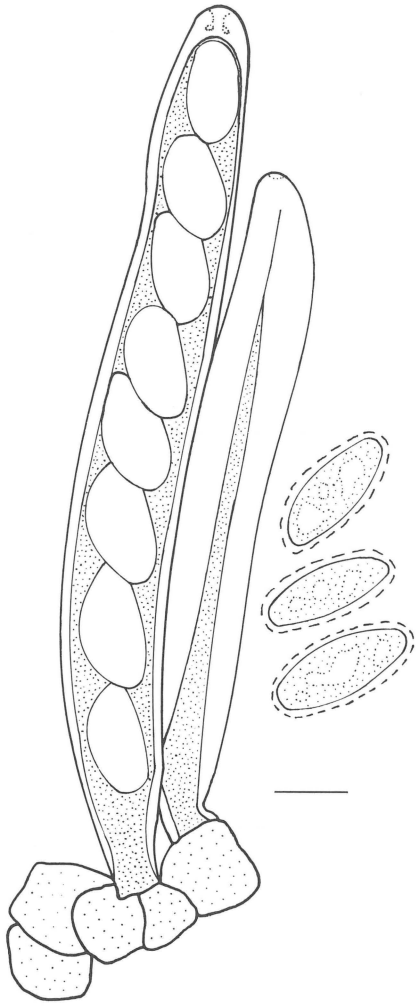

**Figure 1** Asci and ascospores of *Clypeophysalospora latitans* (Sacc.) Swart. Bar = 10 μm.

**3. Cytospora australiae** *Speg.*, in Syll. Fung. 3: 256 (1884).

*Cytospora eucalyptina* Speg.: 319 (1899) (*fide* van der Westhuizen 1965).

Pycnidia black on stems but concolorous on leaves, slightly

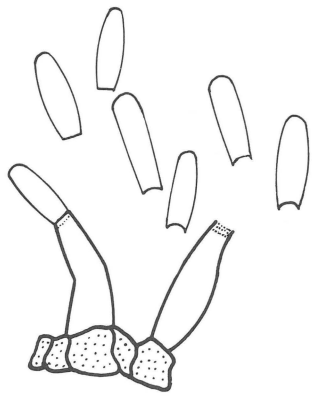

**Figure 2** Conidia and conidiophores of *Idiocercus australis* (Cooke) Swart. Bar = 10 μm.

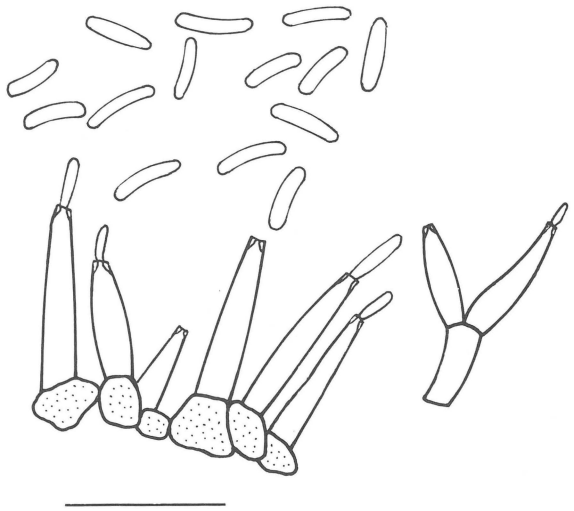

**Figure 3** Conidia and simple and branched conidiophores of *Cytospora australiae* Speg. Bar = 10 μm.

submerged to protruding, with short to elongated necks. Conidiophores hyaline, simple or branched above. Conidiogenous cells enteroblastic, phialidic, cylindrical, hyaline, channel and collarette minute. Conidia hyaline, smooth, allantoid, curved with rounded ends, 3.5–6.0 × 0.7–1.5 μm (Figure 3), consistent with the degree of variation accepted by Saccardo (1884) for this species. Van der Westhuizen (1965) found records of two closely related *Cytospora* spp., *C. australiae* and *C. eucalyptina* Speg., occurring on *Eucalyptus*. An examination of the type material proved these two species to be identical (van der Westhuizen 1965). Moreover, the name *C. australiae* (1884) has precedence over *C. eucalyptina* (1899).

Gutner (1953) reported a new variety, *C. australiae* var. *foliorum* Gutner from leaves of a *Eucalyptus* sp. in the U.S.S.R. The fungus found on leaves in this study, however, did not differ from isolations made from *Eucalyptus* stems, and no differences were found between conidial, conidiophore or cultural characteristics. We, therefore, believe that *C. australiae* is the appropriate name for this fungus. The latter fungus is chiefly distinguished from *C. eucalypticola* van der Westhuizen by its larger conidial dimensions (Saccardo 1884; van der Westhuizen 1965).

Van der Westhuizen (1965) speculated about the influence of environmental conditions on the morphology of pycnidia of *C. eucalypticola*. This variation was also present in *C. australiae*, where pycnidia were found to be far more protruding on some collections of *E. nitens* (Deane et Maid.) Maid. stems than on others, collected from the same area but at different times of the year. This variation was less obvious when pycnidia occurred on leaves. Pycnidia of this fungus were always found in association with other pathogens, or on lesions apparently resulting from stress or wind-damage.

## Specimens examined

**—2531** (Barberton): Berlin Forest Station (–CC), collected on *E. grandis* leaves, P.W. Crous, Apr. 1988, PREM 50453; Jessievale State Forest (–CC), on *E. nitens* stems, P.W. Crous, Dec. 1988, PREM 50454.

**4. Codinaea septata** *Sutton & Hodges,* in Nova Hedwigia 26: 520 (1975).

Conidiophores single, or in groups of up to 7 from knots of hyphal cells; 34–90 μm long × 3–5 μm wide, unbranched, medium to pale brown, smooth, 1–3 septate. Conidiogenous cells 10–36 μm long, phialidic, with a single terminal aperture, but occasionally polyphialidic with lateral apertures, collarettes large and flared, up to 2 mm deep × 2.5–4 μm wide. Conidia 13–19 × 1.5–3 μm, enteroblastic, hyaline, falcate, 1–2 septate, with an unbranched setula at each end, 4–10 μm long (Figure 4).

This species can be distinguished from the more commonly occurring *C. eucalypti* Sutton & Hodges by the presence of terminal conidiogenous cells, more prominent collarettes and larger conidia (Sutton & Hodges 1975). Of the four *Codinaea* spp. recorded on *Eucalyptus, C. septata* is the least common and has previously been found only in Brazil (Sutton & Hodges 1975). Although it has been reported only from leaves (Sutton & Hodges 1975), local collections have shown it to occur on stems and petioles of young *E. grandis* cuttings, where it was frequently found in association with the pathogen *Cylindrocladium scoparium* Morgan.

### Specimen examined

**—2532** (Sabie): Frankfort nursery (–AD), collected on *E. grandis* leaves and petioles, S.H. Koch, Nov. 1988, PREM 50455.

**5. Seimatosporium eucalypti** *(Mc Alp.) Swart,* in Trans. Br. mycol. Soc. 78(2): 268 (1982).

*Cylindrosporium eucalypti* Mc Alp.: 97 (1903) (*fide* Swart 1982).

Acervuli light brown to orange, becoming black with age. Conidiophores absent. Conidiogenous cells hyaline, flask-shaped, unbranched, annellidic, up to 16 μm long. Conidia falcate, the apical cell tapering to a point and lacking an appendage, basal cell having a short, conical appendage. Conidia 32–55 × 2.5–5.5 μm, with the basal appendage 2–7 μm long (Figure 5).

A number of *Seimatosporium* spp. have been recorded on *Eucalyptus* in Australia (Marks *et al.* 1982). They are reported to cause sporadic defoliation of *E. nitens* and *E. regnans* and to damage juvenile foliage of certain *E. globulus* Labill. subspecies. Symptoms occur on the leaf lamina and range from angular to confluent spots which can kill large parts of the leaves (Marks *et al.* 1982). Although they occur in association with *Mycosphaerella* spp., *Harknessia* spp. and *Aulographina eucalypti* (Cke. & Mass.) von Arx & Müller, these fungi are considered to be pathogenic (Marks *et al.* 1982; Swart 1982).

### Specimens examined

— ? (Natal): Collected by a forester on *E. maidenii* F. Muell. leaves, Feb. 1931, PREM 26119; Natal, collected by a forester on *E. maculata* Hook. leaves, Apr. 1931, PREM 26121.

**—2531** (Barberton): Jessievale state forest (–CC), collected on *E. nitens* leaves, P.W. Crous, Nov. 1988, PREM 50456.

**—2532** (Sabie): Sabie Forest Station (–AD), collected on *E. smithii* R.T. Bak. leaves, P.W. Crous, Sept. 1989, PREM 50457.

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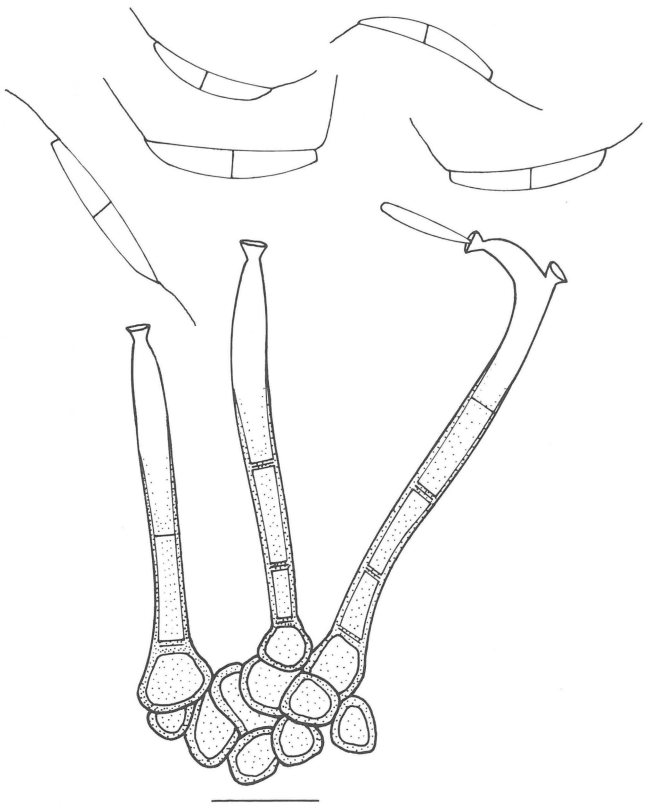

**Figure 4** Setulate conidia and conidiophores of *Codinaea septata* Sutton & Hodges. Bar = 10 μm.

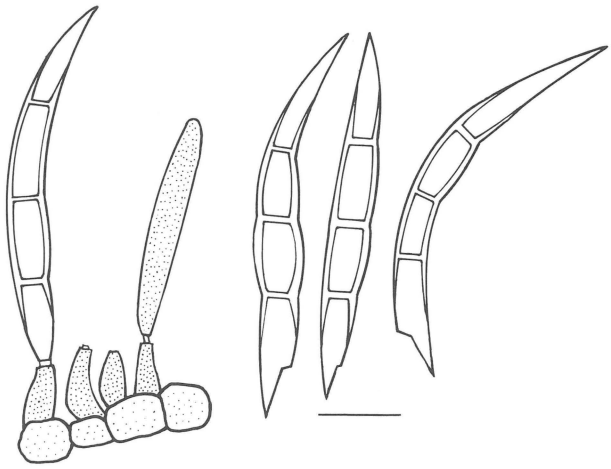

**Figure 5** Appendaged conidia and conidiogenous cells of *Seimatosporium eucalypti* (Mc Alp.) Swart. Bar = 10 μm.

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