Phaeophleospora faureae comb. nov. associated with leaf spots on *Faurea saligna* (*Proteaceae*), with a key to the species of *Phaeophleospora*

Joanne E. Taylor* and Pedro W. Crous

Department of Plant Pathology, University of Stellenbosch, Private Bag X1, Stellenbosch 7602, South Africa; * e-mail: jtaylor@land.sun.ac.za

Taylor, J.E. and Crous, P.W. (1999). *Phaeophleospora faureae* comb. nov. associated with leaf spots on *Faurea saligna* (*Proteaceae*), with a key to the species of *Phaeophleospora*. Fungal Diversity 3: 153-158.

During studies of the fungal pathogens occurring on *Proteaceae* in South Africa, the type specimen of *Stilbospora faureae* was examined. This fungus was found to be a species of *Phaeophleospora*, and is transferred to this genus in the present paper. A key to the species in *Phaeophleospora* is also given.

Key words: pathogen, *Phaeophleospora*, *Proteaceae*, *Stilbospora*

Introduction

Phaeophleospora was considered to be a *nomen dubium* (Sutton, 1977), until Crous *et al.* (1997) resurrected it as an earlier name for the coelomycete genus *Kirramyces* J. Walker, B. Sutton and I. Pascoe. There are currently 11 species in *Phaeophleospora* (Walker *et al.*, 1992; Sutton, 1993; Palm, 1996; Wingfield *et al.*, 1996; Wu *et al.*, 1996; Crous *et al.*, 1997; Crous, 1998; Crous and Palm, 1999) and three of these occur on *Proteaceae* hosts.

Phaeophleospora is associated with leaf spots and is characterised by sub-epidermal, dark-walled pycnidia, which become open and cup-shaped at maturity (Crous *et al.*, 1997). Under conditions of high humidity, these conidiomata exude masses of conidia in a long, brown to black cirrus (Crous *et al.*, 1997). The conidia are brown, euseptate, subcylindrical to obclavate, verruculose to almost smooth, thick walled and one to multiseptate (Crous *et al.*, 1997). Conidia are formed on brown, verruculose, doliiform to cylindrical or ampuliform, pecurrently proliferating conidiogenous cells (Crous *et al.*, 1997). *Phaeophleospora* species are anamorphs of *Mycosphaerella* (Crous, 1998).

During studies of the fungal pathogens of *Proteaceae* in South Africa, the type specimen of *Stilbospora faureae* Syd. and P. Syd., was examined and

found to be representative of a species of *Phaeophleospora*. In the present paper *S. faureae* is disposed to *Phaeophleospora*, as *P. faureae* comb. nov.

Taxonomy

Phaeophleospora faureae (Syd. and P. Syd.) J.E. Taylor and Crous, **comb. nov.** (Figs. 1-10)

≡ *Stilbospora faureae* Syd. and P. Syd., Annales Mycologici 10: 443 (1910).

Leaf spots indistinguishable on type specimen. *Mycelium* internal, forming a stroma surrounding the conidiomata, consisting of host cells and branched, septate, hyaline, smooth fungal hyphae (3-5 µm diam.), only occurring in spongy mesophyll cells in the lower surface (Fig. 3). *Conidiomata* pycnidial, hypophyllous, singular and scattered, or aggregated, black, immersed raising host surface and becoming erumpent, adjacent host tissue sometimes paler, exuding a brown to black cirrus of conidia which collapses on the leaf surface when wet, 180-700 µm diam. (Figs. 1-2); in section globose to irregular, unilocular, or appearing multilocular, subepidermal, non-papillate, with an ostiolar pore, (155-)175-220(-255) µm high × (115-)135-225(-330) µm diam. (Fig. 3). *Peridium* consisting of 1-2 layers of pale brown cells arranged in a *textura angularis*, becoming hyaline outwardly and difficult to distinguish from stroma, (6-)8.5-16(-20) µm diam. (Fig. 3). *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* discrete, ampulliform or doliiform to subcylindrical, medium brown, verruculose, with 1-6 irregular, enteroblastic, percurrent proliferations, (6-)7.5-8.5(-10) × (3.5-)4.5-5(-8) µm (Figs. 4-6). *Conidia* solitary, cylindrical, narrowing slightly to a truncate base with a slight marginal frill, straight or curved to flexuous, apex rounded, medium red-brown, verruculose, not prominently guttulate, (1-)3(-5)-septate, (13-)18.5-20.5(-26) × (4-)5-5.5(-6) µm (Figs. 7-10).

Teleomorph: Unknown.

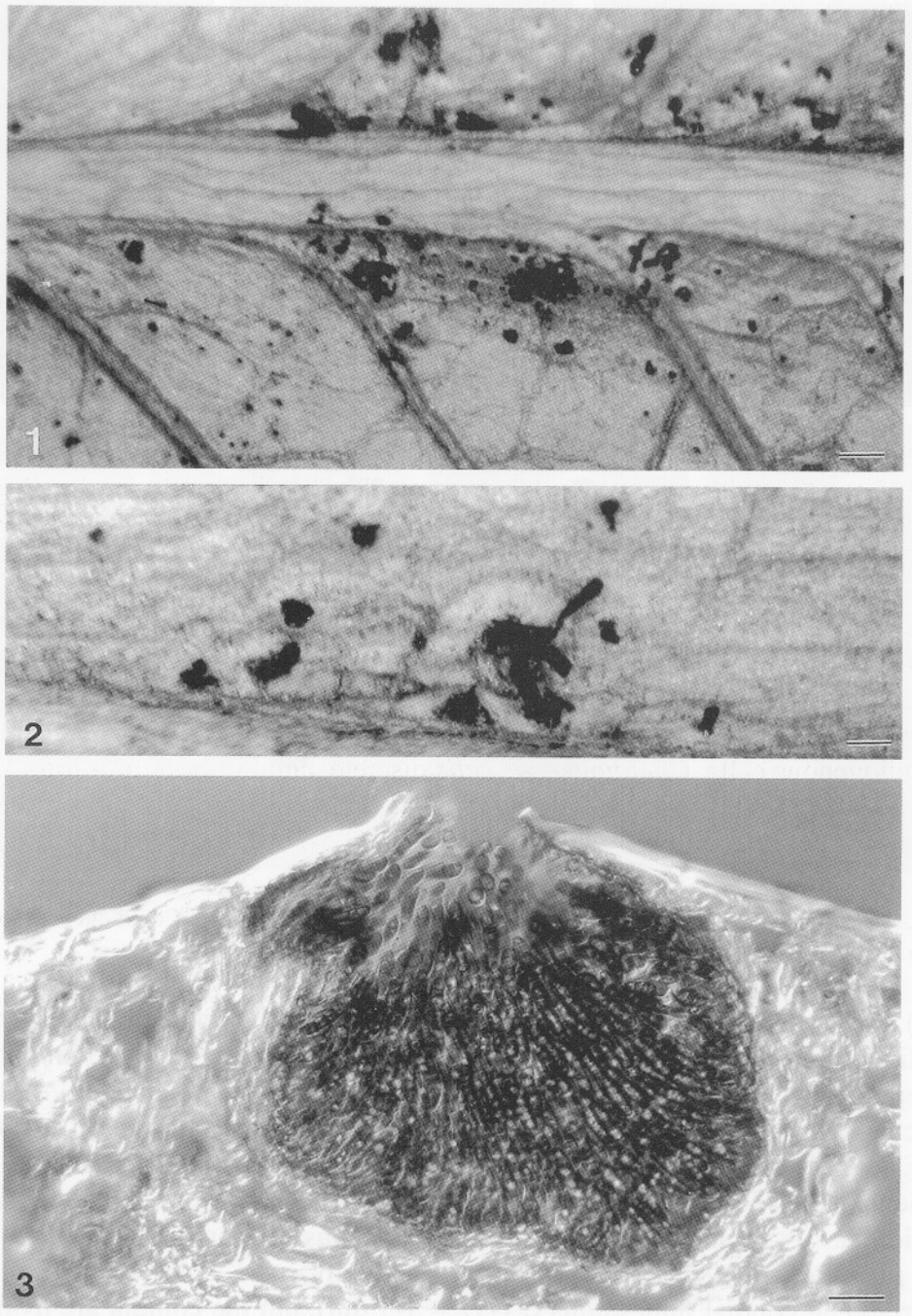
Host: *Faurea saligna* Harv. (*Proteaceae*).

Known distribution: South Africa.

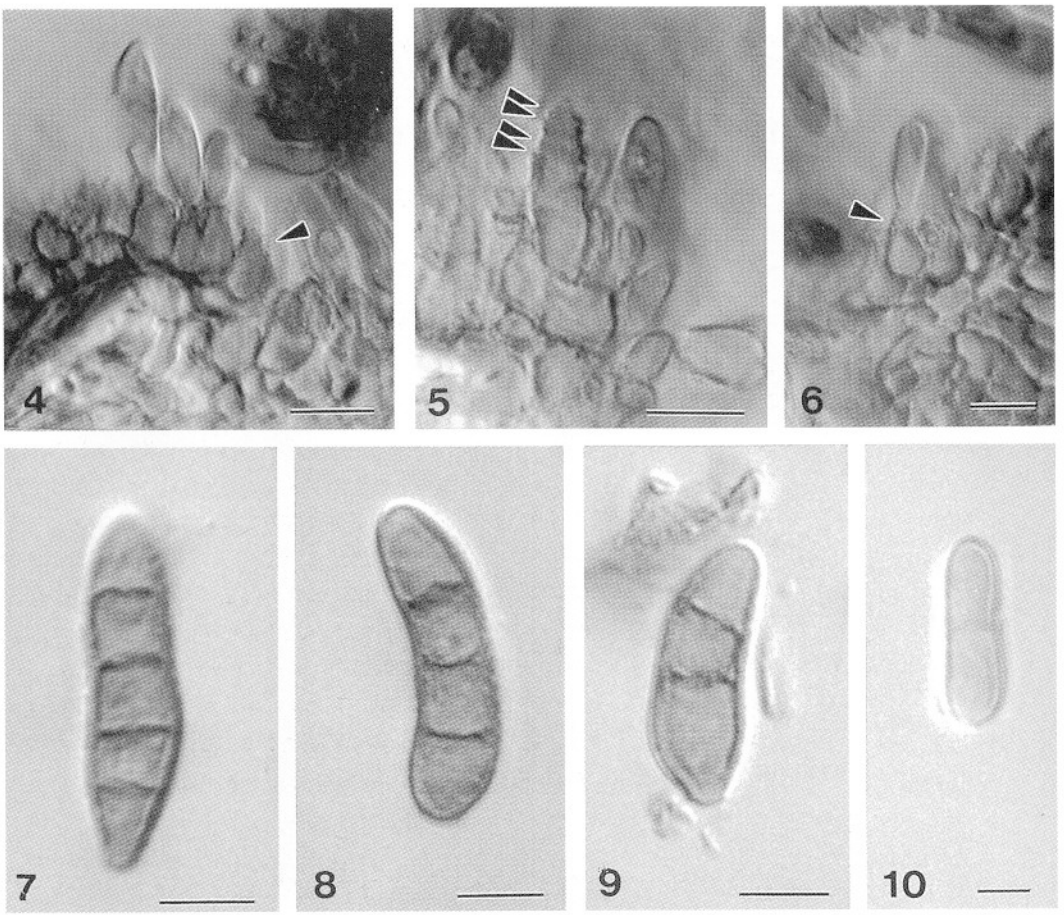
Material examined: SOUTH AFRICA, Mpumalanga, Barberton, on a living leaf of *Faurea saligna*, Sep. 1912, P.A. Van der Byl (PREM 1872, holotype); *ibid.*, 22 Aug. 1912 (PREM 5139); *ibid.*, 25 Oct. 1912 (PREM 5621).

Phaeophleospora faureae represents a typical species of *Phaeophleospora* and it has been compared to all of the other species described in this genus (Walker *et al.*, 1992; Sutton, 1993; Palm, 1996; Wingfield *et al.*, 1996; Wu *et al.*, 1996; Crous *et al.*, 1997; Crous, 1998; Crous and Palm, 1999). It does not correspond to any previously described species.

Phaeophleospora congestum (Syd.) Crous and M.E. Palm, most closely resembles *P. faureae* in the dimensions of its conidia ((12-22(-25) × 3-4(-4.5)



Figs. 1-3. *Phaeophleospora faureae* (from holotype PREM 1872). **1, 2.** Conidiomata on leaf surface. Note brown to black cirri. **3.** Vertical section through a conidioma. Bars: 1 = 400 µm, 2 = 100 µm, 3 = 20 µm.



Figs. 4-10. *Phaeophleospora faureae* (from holotype PREM 1872). **4-6.** Conidiogenous cells. Note the annellations (arrowed). **7-10.** Conidia. Bars: 4-6 = 10 µm, 7-10 = 5 µm.

µm) and conidiogenous cells (5-10 × 3-6 µm), and in the number of percurrent proliferations (1-5). The conidia of *P. congestum* however, are predominantly 1-septate, while those of *P. faureae* are predominantly 3-septate. Another species associated with a *Proteaceae* host, *P. abyssinicae* (Ciccar.) Crous and M.E. Palm, also has predominantly 3-septate conidia, which overlap in dimensions, (17-)22-32(-38) × (2.5-)3-3.5 µm, with those of *P. faureae*. The conidia however, are pale brown and conidiogenous cells are smaller (2.5-3.5 × 2-3 µm). *Phaeophleospora delegatensis* (R.F. Park and Keane) Crous also has overlapping condial dimensions (21-51 × 3-5 µm), but the conidia are hyaline to olivaceous and smooth.

Another feature, which differentiates *P. faureae* from other species of *Phaeophleospora*, is the extensive stroma, consisting of hyaline hyphae and

hosts cells, in which the conidiomata are embedded.

Key to Phaeophleospora *species*

1. Conidia predominantly 1-septate 2
1. Conidia predominantly multiseptate 4

2. Conidia hyaline to olivaceous, 21-51 × 3-5 µm, 1-septate ..... *P. delegatensis*
2. Conidia brown, 1(-3)-septate 3

3. Conidia up to 25 µm long, medium brown ..... *P. congestum*
3. Conidia more than 25 µm long, pale brown ..... *P. eucalypti*

4. Conidia up to 3-septate 5
4. Conidia more than 3-septate 7

5. Conidia medium brown, up to 42 µm long ..... *P. hebes*
5. Conidia pale brown 6

6. Conidia (17-)22-32(-38) µm long ..... *P. abyssinicae*
6. Conidia (30-)50-65(-70) µm long ..... *P. destructans*

7. Conidia up to 7-septate 8
7. Conidia more than 7-septate ..... *P. eugeniae*

8. Conidia up to 4 µm wide, mainly 3-4-septate ..... *P. phormii*
8. Conidia more than 4 µm wide 9

9. Conidia up to 26 µm long, (1-)3(-5)-septate ..... *P. faureae*
9. Conidia greater than 26 µm long 10

10. Conidia up to 4-septate ..... *P. lilaniae*
10. Conidia predominantly more than 4-septate 11

11. Conidia up to 50 µm long, up to 7 µm wide ..... *P. protearum*
11. Conidia up to 65 µm long, up to 5 µm wide ..... *P. epicccoides*

Acknowledgements

The authors thank the FRD for funding, and the USDA-FAS-ICD-RSED for grant 98IARA6578. Sarie Velthuisen is thanked for supplying the specimen from PREM.

References

Crous, P.W. (1998). *Mycosphaerella* spp. and their anamorphs associated with leaf spot diseases of *Eucalyptus*. Mycologia Memoir 21: 1-170.

Crous, P.W., Ferreira, F.A. and Sutton, B.C. (1997). A comparison of the fungal genera *Phaeophleospora* and *Kirramyces* (coelomycetes). South African Journal of Botany 63: 111-115.

Crous, P.W. and Palm, M.E. (1999). Systematics of selected foliicolous fungi associated with leaf spots of Proteaceae. Mycological Research 103: (In press).

Palm, M.E. (1996). *Kirramyces phormii* comb. nov. from leaves of *Phormium*. Mycological Research 100: 373-376.

Sutton, B.C. (1977). Coelomycetes VI. Nomenclature of generic names proposed for Coelomycetes. Mycological Papers 141: 1-253.

Sutton, B.C. (1993). Mitosporic fungi from Malawi. Mycological Papers 167: 1-93.

Walker, J., Sutton, B.C. and Pascoe, I.G. (1992). *Phaeoseptoria eucalypti* and similar fungi on *Eucalyptus,* with description of *Kirramyces* gen. nov. (coelomycetes). Mycological Research 96: 911-924.

Wingfield, M.J., Crous, P.W. and Boden, D. (1996). *Kirramyces destructans* sp. nov., a serious leaf pathogen of *Eucalyptus* in Indonesia. South African Journal of Botany 62: 325-327.

Wu, W., Sutton, B.C. and Gange, A.C. (1996). Revision of *Septoria* species on *Hebe* and *Veronica* and description of *Kirramyces hebes* sp. nov. Mycological Research 100: 1207-1217.