

LEAF-INHABITING FUNGI OF EUCALYPTS IN NEW ZEALAND. II.

MARGARET DICK

Ministry of Forestry, Forest Research Institute, Private Bag 3020, Rotorua, New Zealand

(Received for publication 12 October 1989; revision 15 May 1990)

ABSTRACT

Elsinoe eucalypti Hansford, *Macrohilum eucalypti* Swart, *Microsphaeropsis conielloides* Sutton, *Pachysacca pusilla* Swart, *Seimatosporium cylindrosporium* Swart, *S. falcatum* (Sutton) Shoemaker, *S. fusisporum* Swart & Griffiths, and *Vermisporium obtusum* Swart & Williamson are reported on *Eucalyptus* spp. leaves for the first time in New Zealand. *Coccomyces globosus* Johnston, which is known on three indigenous hosts, has been found on four species of *Eucalyptus*. Species of *Hendersonia* previously reported on *Eucalyptus* in New Zealand are now placed in the genus *Sonderhenia*. *Mycosphaerella swartii* Park & Keane, the teleomorph of *Sonderhenia eucalyptorum* (Hansford) Swart & J. Walker, is reported for the first time. New host records are listed for six other fungi on *Eucalyptus*.

Keywords: *Coccomyces globosus*; *Elsinoe eucalypti*; *Macrohilum eucalypti*; *Microsphaeropsis conielloides*; *Mycosphaerella swartii*; *Pachysacca pusilla*; *Seimatosporium cylindrosporium*; *Seimatosporium falcatum*; *Seimatosporium fusisporum*; *Sonderhenia eucalypticola*; *Vermisporium obtusum*.

INTRODUCTION

Eleven species of fungi associated with lesions on leaves of *Eucalyptus* spp. in New Zealand are reported here and their fungal characteristics and host symptoms are described. All fungi except *Coccomyces globosus* were initially described in Australia. *Microsphaeropsis conielloides*, *Mycosphaerella swartii*, *Pachysacca pusilla*, and *Sonderhenia eucalypticola* are regarded as primary pathogens although they have not been rigorously tested for pathogenicity and their status as the cause of a diseased condition is based only on their consistent association with distinctive symptoms. The pathogenic status of the other fungi reported is unknown. In addition, 13 new host records of fungi already known on *Eucalyptus* spp. in New Zealand are reported.

Collections of naturally infected material are held in the Forest Research Institute Herbarium (NZFRI) and accession numbers are given in parentheses. Cultures obtained from some collections are retained in the Forest Research Institute Culture Collection (NZFS).

The terms used for the disposition of lesions and fungal structures on leaves follow Pascoe & Sutton (1986).

THE FUNGI

Coccomyces globosus Johnston, *New Zealand Journal of Botany* 24: 99 (1986)
on -

Eucalyptus regnans F. Mueller

Kinleith Forest, Tokoroa, September 1980 (NZFRI 2098M).

Eucalyptus fastigata Deane & Maiden

Kinleith Forest, Tokoroa, August 1987 (NZFRI 3222M).

Eucalyptus nitens (Deane & Maiden) Maiden

Kinleith Forest, Tokoroa, August 1987 (NZFRI 3223M).

Eucalyptus fraxinoides Deane & Maiden

Kaingaroa Forest, August 1988 (NZFRI 3269M).

Eucalyptus sp.

Pouakani North Block, Kinleith Forest, June 1986 (NZFRI 3140M).

Coccomyces globosus has been found only on necrotic leaves, and most frequently on leaves which have already been cast. No attempt has been made to determine whether the fungus has any parasitic ability. Fruiting bodies develop in distinctive creamy-brown to yellow-brown hogenous areas up to 10 mm across. Although these areas occasionally coalesce they often remain discrete with a narrow zone (up to 0.5) of brown tissue maintained between them.

Ascocarps black, amphigenous, intra-epidermal, angularly 3- to 5-sided, up to 1 mm across, opening by several radiate splits. **Asci** cylindrical to sub-clavate, 95–120 × 5–7 µm. **Paraphyses** extending beyond asci, 2 µm diameter, swollen at tips. **Ascospores** hyaline, filiform, aseptate, 50–75 × 1.5–2 µm.

Pycnidia flattened-globose, black, submerged, scattered amongst ascocarps, ostiole located beneath a stoma, 90–125 µm diameter. **Conidiogenous cells** hyaline, flask-shaped, 10–18 µm long. **Conidia** hyaline, short-cylindrical, ends obtuse, 4–6 × 1 µm.

Coccomyces globosus is reported only from New Zealand and was previously recorded on fallen leaves of three indigenous hosts—*Metrosideros fulgens* Sol. ex Gaertn., *Nestegis lanceolata* (Hook.f.) L. Johnson, and *Weinmannia racemosa* Linn.f. (Johnston 1986).

Elsinoe eucalypti Hansford, *Proceedings of the Linnean Society of New South Wales* 79: 98 (1954)

on—

Eucalyptus delegatensis R.T. Baker

Tunnel Gully Reserve, Wellington, December 1985 (NZFRI 3230M, IMI 313386).

Lesions are hogenous, pale-brown with a red-brown margin, circular to elongate, and 1–2 mm in diameter. The leaf surface splits irregularly to expose the pale conidial mass.

Conidiomata acervular with a thick basal stroma, intra-epidermal, pale-brown, commonly only one fruiting body per lesion though up to three occasionally seen. **Conidiogenous cells** closely packed, pale-brown,

cylindrical, 16–20 μm long. **Conidia** hyaline, short-cylindrical with obtuse ends, biguttulate, $6\text{--}8.5 \times 2\text{--}2.5 \mu\text{m}$.

The anamorph was considered by Hansford (1954) to be a *Sphaceloma* sp. although he did not assign a specific epithet. The teleomorph has not been observed in New Zealand.

Mycosphaerella swartii Park & Keane, *Transactions of the British Mycological Society* 83: 99 (1984).

Anamorph: *Sonderhenia eucalyptorum* (Hansford) Swart & J. Walker, *Transactions of the British Mycological Society* 90: 640 (1988)

syn. *Hendersonia eucalyptorum* Hansford

Mycosphaerella swartii and *Sonderhenia eucalyptorum*

on—

Eucalyptus delegatensis

Esk Forest, Hawke's Bay, January 1983 (NZFRI 2213M); Ongaroto, Atiamuri, September 1984 (NZFRI 3002M).

Eucalyptus elata Dehnh.

Atiamuri, September 1984 (NZFRI 3003M).

Eucalyptus fastigata

Kinleith Forest, Tokoroa, October 1983 (NZFRI 2551M),

Eucalyptus nitens

Waiouru Military Camp, March 1983 (NZFRI 2214M).

Eucalyptus sp.

Kinleith Forest, Tokoroa, February 1984 (NZFRI 3170M); Waikoau, Hawke's Bay, January 1984 (NZFRI 2212M, NZFSCC 140).

Sonderhenia eucalyptorum

on—

Eucalyptus pauciflora Sprengel ssp. *pauciflora*

Craigieburn, Canterbury, November 1977 (NZFRI 2419M).

Eucalyptus johnstonii Maiden

Karioi Forest, Waiouru, March 1979 (NZFRI 2416M).

Eucalyptus delegatensis

Karioi Forest, Waiouru, February 1980 (NZFRI 2417M); Longwood Forest, Southland, May 1981 (NZFRI 2421M); Mangatu Forest, East Cape, November 1982 (NZFRI 2427M); Eyrewell Forest, Canterbury, February 1985 (NZFRI 3080M).

Eucalyptus fraxinoides

Edendale Nursery, Southland, April 1981 (NZFRI 2420M).

Eucalyptus fastigata

Kinleith Forest, Tokoroa, July 1982 (NZFRI 2424M).

Eucalyptus regnans

Kinleith Forest, Tokoroa, July 1982 (NZFRI 2423M).

Eucalyptus sieberi L. Johnson

Forest Research Institute, Rotorua, October 1982 (NZFRI 2425M).

Eucalyptus sp.

Waimana, Opotiki, August 1981 (NZFRI 2422M); Akatarawa Valley, Wellington, April 1983 (NZFRI 2426M).

Although the earliest record in the NZFRI herbarium of the anamorph is dated 1977, the first collection of the teleomorph was not made until 1980. Park & Keane (1984) reported from Australia that *Sonderhenia eucalyptorum* (as *Hendersonia eucalyptorum*) had been found on diseased leaves of 17 *Eucalyptus* spp. whereas the teleomorph *M. swartii* was found on only five of these species. Pathogenicity was demonstrated by Park & Keane (1982). Records of the disease in New Zealand add another seven species to the list of hosts. Lesions are hologenous, small (0.5–3 mm diameter), roughly circular, usually discrete but sometimes confluent. Necrotic tissue is surrounded by a purple margin and sometimes raised, giving the leaves a slightly roughened texture and appearance.

Perithecia amphigenous, black, globose to subglobose, submerged with an ostiole located beneath a stoma, wall dark-brown, 2–4 cells thick, 75–120 μm diameter. **Asci** bitunicate, ovoid to obclavate, straight or slightly curved, 50–60 \times 13–17 μm . **Ascospores** hyaline, straight or slightly curved, 1-septate, tapering slightly to base, 22–25 \times 4–5.5 μm . Frequently only one ascocarp is present in each lesion though up to three may occur. They are occasionally associated with pycnidia of *S. eucalyptorum*.

Pycnidia amphigenous, subepidermal, black, globose, up to 120 μm in diameter, ostiolate. **Conidiogenous cells** formed from the inner cells of the pycnidial wall. **Conidia** pale olivaceous to brown, cylindrical, straight or slightly curved, base truncate, apex obtuse, transversely 3-septate, 25–44 \times 5–10 μm . Dark brown conidial masses exuded on to the leaf surface.

Although the genus *Hendersonia* Berkeley is a nomen rejiciendum (Sutton 1977) in favour of *Stagonospora* (Sacc.) Sacc., the name has continued to be used for those dark-spored species which do not fit the generic concept of *Stagonospora*. Swart & Walker (1988) re-examined the seven species of *Hendersonia* described on *Eucalyptus* since 1881 and erected a new genus, *Sonderhenia*, to accommodate the two species that could not be disposed in alternative existing genera, *H. eucalyptorum* Hansford and *H. fraseriae* Hansford.

Both these species are found in New Zealand. When discussing *Hendersonia* in New Zealand, Dick (1982) indicated that it would not be possible to determine which species were present in the country until further revision of the genus had been carried out. This statement was made in view of two Australian studies on *Hendersonia* collections from New South Wales. The first by Fripp & Forrester (1981) examined variation in conidial dimensions of collections from eight hosts and concluded that there were at least three host-specific races of *Hendersonia* occurring in their region of study. In the second study Burdon *et al.* (1982), using the same material, analysed proteins using gel electrophoresis and suggested that there were at least four host-specific races. However, these hypotheses were not substantiated by cross-inoculation studies. Subsequently Park & Keane (1984) have shown that these collections consisted of two species, *H. eucalyptorum* and *H. eucalypticola* (= *H. fraseriae* (Swart & Walker 1988)), which can be reliably distinguished by differences in conidial morphology. They also demonstrated by cross-inoculation tests that, whilst the species are not host-specific, they each show greater infectivity on the species with which they are normally associated in the field.

Macrohilum eucalypti Swart, *Transactions of the British Mycological Society* 90: 288 (1988)

on—

Eucalyptus delegatensis

Rukumoana, Hawke's Bay, September 1983 (NZFRI 3267M); Rotoaira Forest, Taupo, December 1986 (NZFSCC 179).

Lesions are hogenous and roughly circular, 1–4 mm in diameter. The tissue is pale-brown with a dark-brown margin up to 5 mm wide. The pathogenic status is unknown.

Pycnidia amphigenous, pale to dark brown, sub-epidermal, flattened, up to 210 μm diameter, ostiolate. **Conidiogenous cells** hyaline, cylindrical or flask-shaped, annellidic, 8–16 μm long. **Conidia** pale to dark brown, 1-septate, thick-walled, apex broadly rounded, base flattened with a protruding hilum, 16–20.5 \times 10–14 μm .

Microsphaeropsis conielloides Sutton, *Nova Hedwigia* 25: 168 (1974)

on—

Eucalyptus viminalis Labill. ssp. *viminalis*

Palmerston North, November 1978 (NZFRI 3159M).

Eucalyptus obliqua L'Herit

Victoria Park, Christchurch, April 1981 (NZFRI 3162M).

Eucalyptus regnans

Opoho, Dunedin, May 1985 (NZFRI 3166M); Kaweka Forest, Westland, February 1983 (NZFRI 3163M).

Eucalyptus delegatensis

Kaweka Forest, Westland, February 1985 (NZFRI 3165M, IMI 296095, NZFSCC 175).

Eucalyptus sp.

Pakuratahi, Hutt Valley, April 1981 (NZFRI 3161M).

Leaf lesions are hogenous, light to dark brown, 1–4 mm diameter, roughly circular to angular, and frequently with a well-defined dark-brown or purple raised margin. Leaves at the base of the tree are most commonly affected but, although the fungus is probably weakly parasitic, infection levels are usually too low to cause significant harm.

Pycnidia amphigenous, sub-epidermal, globose to sub-globose, 30–90 μm diam. Pycnidial wall dark brown, two to four cells thick. Ostiole central, slightly papillate but not protruding, formed beneath stomata. **Conidiogenous cells** phialidic, occasionally annellidic, doliform to short cylindrical, pale brown with a dark-brown region around aperture, 4.5–6.5 \times 2.5–3 μm . **Conidia** exuded in a dark-brown mass on to the leaf surface, elliptical to oval, aseptate, pale to medium brown, thin-walled, 6–10 \times 3–4 μm . On 3% malt agar at about 22 °C, the fungus is dark olive-green in colour and very slow-growing. Conidia are formed holoblastically directly from hyphal cells in mucoid aggregations.

Although the identification of this fungus was confirmed by the C.A.B. International Mycological Institute in London, it differs from the type description of a *M. conielloides* in the consistently smaller pycnidia (described as up to 250 μm

diameter, wall up to seven cells thick) and in the slightly larger conidia (described as $5.5\text{--}7.5 \times 3\text{--}3.5 \mu\text{m}$).

Pachysacca pusilla Swart, *Transactions of the British Mycological Society* 79: 261 (1982)

on—

Eucalyptus botryoides Smith

Lake Mangamahoe, Taranaki, December 1982 (NZFRI 3169M).

Eucalyptus viminalis ssp. *viminalis*

Egmont National Park, Taranaki, December 1985 (NZFRI 3085M).

Eucalyptus fastigata

Esk Forest, Hawke's Bay, December 1986 (NZFRI 3179M).

Eucalyptus obliqua

Fairfield Cemetery, Nelson, November 1982 (no specimen retained).

Lesions are small and numerous, up to 2 mm in diameter and roughly circular. The tissue is pale brown with a pale purple margin. The interior of the lesion is largely filled with from one to many black stroma, each of which elevates the leaf surface giving a distinctly roughened appearance to the lamina. There is also a meristematic reaction in the mesophyll tissue around and beneath the stromata which contributes to the bumpy effect. Lesions are commonly amphigenous but some are hologenous with a reduced size on one of the surfaces. Three species of *Pachysacca* have been recorded on *Eucalyptus* spp. by Swart (1982b) and he described them all as biotrophs. Symptoms of *P. pusilla* infection are distinctive but the disease has negligible impact on tree health in this country.

Perithecia subepidermal, globose or slightly flattened, ostiolate, formed either singly or in small groups, up to 90 μm diameter. Wall consisting of only a few layers of dark-brown thick-walled cells, except above the stroma where a thick mass of cells forms a clypeus-like structure. **Stromata** amphigenous though predominantly occurring on the upper leaf surface on both *E. fastigata* and *E. viminalis* ssp. *viminalis*. **Asci** pear-shaped though also narrowing at the base, bitunicate, $70\text{--}85 \times 25\text{--}35 \mu\text{m}$. **Ascospores** hyaline, 3-septate sometimes slightly constricted at the septa, cylindrical with a gelatinous coat, $30\text{--}45 \times 4\text{--}5 \mu\text{m}$.

Seimatosporium cylindrosporum Swart, *Transactions of the British Mycological Society* 78: 267 (1982)

on—

Eucalyptus radiata de Candolle ssp. *radiata*

Kinleith Forest, Tokoroa, October 1986 (NZFRI 3167M).

Eucalyptus regnans

Maraetai Block, Kinleith Forest, July 1985 (NZFRI 3156M).

Eucalyptus saligna Smith

Jackson Block, Kinleith Forest, Tokoroa, May 1988 (NZFRI 3259M).

Eucalyptus sp.

Kinleith Forest, Tokoroa, November 1982 (NZFRI 3155M).

Lesions are hologenous and roughly circular to irregular in outline. The necrotic tissue is usually pale-brown to dark-brown but sometimes purplish-brown. Where

lesions have pale-coloured necrotic tissue there is usually a distinct dark brown or purple margin. The pathogenic status of the fungus is unknown.

Conidiomata acervular, submerged, amphigenous, up to 400 μm diameter.

Conidiogenous cells hyaline, annellidic, cylindrical to ampulliform, up to 11 μm long. **Conidia** straw-coloured or pale brown, 3-septate, thick-walled, $34\text{--}50 \times 3\text{--}5 \mu\text{m}$, the four cells roughly equal in length. Apical cell terminates in a tapering appendage up to 6 μm long, exogenous basal appendage hyaline and 2–7 μm long.

Seimatosporium falcatum (Sutton) Shoemaker, *Canadian Journal of Botany* 42: 416 (1964)

on—

Eucalyptus delegatensis

Hochstetter Forest, Westland, December 1981 (NZFRI 3158M); Mawhero Forest, Westland, 1985 (NZFRI 3209M).

Eucalyptus regnans

Kinleith Forest, Tokoroa, September 1982 (NZFRI 3153M).

Lesions are hologenous, roughly circular, up to 1 cm in diameter, with a distinct dark-brown margin up to 1 mm wide. The pathogenic status of the fungus is unknown.

Conidiomata acervular, submerged, amphigenous. Conidial mass black and conspicuous when exposed by rupture of the epidermis. **Conidiophores** hyaline, up to 10 μm long. **Conidia** 3-septate, $23\text{--}34 \times 6\text{--}8 \mu\text{m}$, median two cells mid-brown and thick-walled, 13–21 μm long; the other cells becoming paler in colour and less thick-walled towards the ends. Basal cell with a hyaline exogenous appendage, 7–12 μm long; apical cell hyaline and with an appendage 7–12 μm long.

Seimatosporium fusisporum Swart & Griffiths, *Transactions of the British Mycological Society* 62: 360 (1974)

on—

Eucalyptus delegatensis

Waihaha Block, Kinleith Forest, Tokoroa, January 1980 (NZFRI 3168M).

Lesions are hologenous, irregular in outline, pale-brown and developing a darker, raised, corky margin. The lesions are variable in size and may coalesce. Only mature leaves at the base of the crown appear to be affected. The pathogenic status of the fungus is unknown.

Acervuli amphigenous but more abundant on the upper leaf surface, subepidermal, up to 400 μm diameter. **Conidiophores** slender, hyaline, up to 26 μm long. Black spore masses exposed by rupture of the epidermis. **Conidia** 3-septate, $16\text{--}21 \times 6\text{--}8.5 \mu\text{m}$, with the two median cells 12–16 μm long, dark brown, and thick-walled. The two end cells are much lighter in colour and the wall narrows towards the ends. Apical cell abruptly narrowing into a hyaline apical appendage, 12–25 μm long. Basal cell with an exogenous, hyaline appendage 12–35 μm long.

The three species of *Seimatosporium* reported here show a gradation in conidial length, in intensity of pigmentation, and in length of appendages. Swart (1979) discussed *Seimatosporium* species on non-myrtaceous hosts and pointed out that appendage length

and conidial width varied between *in vivo* and *in vitro* material. Types of cultural media used also influenced these measurements. His study gave an indication of the variation that is possible within a species, and suggests that when similar levels of variation are found between specimens on different hosts they may be host-induced. When comparing two species, *S. brevilatum* and *S. fusisporum* on *Eucalyptus* spp., Swart (1982a) commented that they are closely related and that, if additional collections bring to light intermediate forms, these two species may have to be united. This comment may apply equally to other groups of species within this genus. It is sometimes difficult to determine which species name to allot to a particular collection; forms which are intermediate between the described species are extremely common.

Sonderhenia eucalypticola (A.R. Davis) Swart & J. Walker, *Transactions of the British Mycological Society* 90: 640 (1988)

syn. *Hendersonia eucalypticola* A.R. Davis

syn. *Hendersonia fraseriae* Hansford (as *H. fraseri*)

on—

Eucalyptus globulus Labill.

Lyttleton Harbour, March 1979 (NZFRI 2415M); Waihaha Block, Kinleith Forest, Tokoroa, December 1984 (NZFRI 2992M); Queenstown, March 1986 (NZFRI 3108M).

Eucalyptus nitens

Waihaha Block, Kinleith Forest, Tokoroa, April 1988 (NZFRI 3256M).

Lesions are hogenous, rounded, 2–4 mm diameter, and on average larger than those of *H. eucalyptorum*. The necrotic tissue is pale-brown and surrounded by a dark-red to purplish border. The pathogenicity of *H. eucalypticola* (as *H. fraseriae*) was demonstrated by Park & Keane in 1984.

Although no teleomorph has been observed on collections made in New Zealand, Park & Keane (1984) reported a *Mycosphaerella* sp. in association with *H. fraseriae* on *E. globulus* in Australia. Single ascospore cultures produced conidia of *H. fraseriae*. The teleomorph *M. walkeri* Park & Deane is morphologically identical to *M. swartii*.

Pycnidia amphigenous but occurring much more frequently on the lower leaf surface, subepidermal, globose to subglobose, ostiolate, 82–110 µm diameter. **Conidiogenous cells** formed from the inner cells of the pycnidial wall. **Conidia** brown, 3-septate, apex obtuse, base truncate, clavate, some with a small basal frill, 22–26 × 8–11 µm. Dark-brown conidial masses exuded on to the leaf surface.

Vermisporium obtusum Swart & Williamson, *Transactions of the British Mycological Society* 81: 499 (1984)

on—

Eucalyptus delegatensis

Mawhero Forest, Westland, 1985 (NZFRI 3210M).

Eucalyptus fraxinoides

Western Hutt Valley, Wellington. June 1986 (NZFRI 3154M).

Eucalyptus regnans

Kinleith Forest, Tokoroa, November 1986 (NZFRI 3183M, NZFSCC 87).

Leaf lesions are straw-coloured to pale brown, hologenous, variable in shape and size, up to 7 mm in diameter, and frequently coalescing. Disease levels are generally low and of insignificant impact to tree health.

Conidiomata amphigenous, acervular, intra-epidermal, 150–250 μm diameter, basal wall a few layers of light-brown pseudoparenchymatous cells. Spores exposed by the disruption of the leaf surface. **Conidiogenous cells** holoblastic, hyaline, cylindrical or flask-shaped with a narrow neck, arising directly from the inner wall of the conidioma, 4–10 \times 2–3 μm . **Conidia** hyaline, thin-walled, slightly curved to flexuous, 3-septate, slightly constricted at the central septum, 45–80 \times 3–6 μm . The apical cell is longest and the basal cell is shorter than each of the two central cells. Apex obtuse, and basal cell with a short appendage 3–5 μm long.

ADDITIONAL HOST RECORDS

Cercospora eucalypti Cooke & Masee, *Grevillia* 18: 7 (1888)

on—

Eucalyptus obliqua

Rotoehu Forest, Bay of Plenty, July 1982 (NZFRI 2355M).

Eucalyptus oreades R.T. Baker

Rotoehu Forest, Bay of Plenty, July 1982 (NZFRI 2537M).

Eucalyptus stenostoma L. Johnson & Blaxell

Kaingaroa Forest, January 1988 (NZFRI 3237M).

Fairmaniella leprosa (Fairman) Petrak & Sydow, *Report Spec. Nov. Regni. Veg. Baihi.* 42: 481 (1927)

on—

Eucalyptus delegatensis

Wellington, November 1982 (NZFRI 3151M); Forest Research Institute Nursery, Rotorua, February 1983 (NZFRI 3150M); Crohane Forest, Hawke's Bay, September 1983 (NZFRI 3149M); Lismore Forest, Manawatu, February 1987 (NZFRI 3235M).

Eucalyptus fastigata

Forest Research Institute, Rotorua, October 1986 (NZFRI 3176M).

Eucalyptus globulus

Pouakani Block, Kinleith Forest, Tokoroa, June 1985 (NZFRI 3125M).

Mycosphaerella cryptica (Cooke) Hansford, *Proceedings of the Linnean Society of New South Wales* 81: 35 (1956)

on—

Eucalyptus dalrympleana Maiden

Karioi Forest, Waiouru, June 1974 (NZFRI 2201).

Eucalyptus gunnii Hook. f.

Collingwood, Golden Bay, March 1982 (NZFRI 2205M).

Eucalyptus dendromorpha (Blakely) L. Johnson & Blaxell

Kaingaroa Forest, November 1986 (NZFRI 3138M).

Septoria pulcherrima Gadgil & Dick, *New Zealand Journal of Botany* 21: 50 (1983)

on—

Eucalyptus cinerea Benth.

Ohakuri Rd., Atiamuri, January 1985 (NZFRI 3011M).

Eucalyptus perrineana Rodway

Lake Ohakuri Reserve, Atiamuri, February 1986 (NZFRI 3117M).

Trimmatostroma bifarium Gadgil & Dick, *New Zealand Journal of Botany* 21: 50 (1983)

on—

Eucalyptus obliqua

Rotoehu Forest, Bay of Plenty, November 1983 (NZFRI 2543M).

Trimmatostroma excentricum Sutton & Ganapathi, *New Zealand Journal of Botany* 16: 531 (1978)

on—

Eucalyptus pauciflora Sprengel ssp. *niphophila* (Maiden & Blakely) L. Johnston & Blaxell

Golden Downs Forest, Golden Bay, November 1983 (NZFRI 2547M).

ACKNOWLEDGMENTS

Dr P.D. Gadgil, Dr I.G. Pascoe, and Dr E. McKenzie are gratefully acknowledged for their critical evaluation of the manuscript and many helpful suggestions.

REFERENCES

- BURDON, J.J.; SEVIOUR, R.J.; FRIPP, Y.J. 1982: Electrophoretic patterns of soluble proteins of *Hendersonia* spp. *Transactions of the British Mycological Society* 78: 551-3.
- DICK, M. 1982: Leaf-inhabiting fungi of eucalypts in New Zealand. *New Zealand Journal of Forestry Science* 12: 525-37.
- FRIPP, Y.J.; FORRESTER, R.I. 1981: Variation in size of *Hendersonia* conidia on *Eucalyptus* species. *Transactions of the British Mycological Society* 76: 169-72.
- HANSFORD, G.C. 1954: Australian fungi. II. New records and revisions. *Proceedings of the Linnean Society of New South Wales* 79: 97-141.
- JOHNSTON, P.R. 1986: Rhytismataceae in New Zealand. I. Some foliicolous species of *Coccomyces* de Notaris and *Propolis* (Fries) Corda. *New Zealand Journal of Botany* 24: 89-124.
- PARK, R.F.; KEANE, P.J. 1982: Fungi associated with leafspots of *Eucalyptus* in Victoria. *Australasian Plant Pathology* 11: 33-35.
- 1984: Further *Mycosphaerella* species causing leaf diseases of *Eucalyptus*. *Transactions of the British Mycological Society* 83: 93-105.
- PASCOE, I.G.; SUTTON, B.C. 1986: Terms for the disposition of lesions and fungal structures on laminar leaves and phyllodes. *Australasian Plant Pathology* 15: 78-80.
- SUTTON, B.C. 1977: Coelomycetes. VI. Nomenclature of generic names proposed for coelomycetes. *Mycological Papers* 141: 1-253.
- SWART, H.J. 1979: Australian leaf-inhabiting fungi. IX. Species of *Seimatosporium* on non-myrtaceous hosts. *Transactions of the British Mycological Society* 72: 403-9.
- 1982a: Australian leaf-inhabiting fungi. XIII. *Seimatosporium* species on eucalypts. *Transactions of the British Mycological Society* 78: 265-9.
- 1982b: Australian leaf-inhabiting fungi. XIV. The genus *Pachysacca*. *Transactions of the British Mycological Society* 79: 261-9.
- SWART, H.J.; WALKER, J. 1988: Australian leaf-inhabiting fungi. XXVIII. *Hendersonia* on *Eucalyptus*. *Transactions of the British Mycological Society* 90: 633-41.