

CHAPTER 4

**FIRST REPORT OF AN *ENDOTHIELLA* SPECIES ON *TIBOUCHINA URVILLEANA*
IN AUSTRALIA**

ABSTRACT

Tibouchina spp. (family: Melastomataceae) are native to South America, but have been planted as ornamentals in many southern hemisphere countries. The Melastomataceae reside in the order Myrtales and are close relatives of the Myrtaceae, to which the genus *Eucalyptus* belongs. The recent discovery of the *Eucalyptus* canker pathogen *Cryphonectria cubensis* on *Tibouchina* spp., first in Colombia and subsequently in South Africa, has prompted a more detailed survey for other *Eucalyptus* pathogens that might occur on this tree. In this study we report on the discovery of an *Endothiella* sp. on diseased stems of *Tibouchina* spp. in Australia. Characterisation of this fungus based on morphology and on comparisons of β -tubulin gene sequences showed that the fungus represents an undescribed *Endothiella* sp. resembling the anamorph of the *Eucalyptus* pathogen *Cryphonectria eucalypti*. Greenhouse pathogenicity tests including isolates of *C. eucalypti* from Australia and South Africa showed that the undescribed *Endothiella* sp. is significantly more pathogenic than *C. eucalypti* isolates from South Africa and Australia

INTRODUCTION

Cryphonectria eucalypti M. Venter & M. J. Wingf., is a mild canker pathogen of *Eucalyptus* spp. in Australia (Walker, Old & Murray 1985, Old *et al.* 1986), Tasmania (Yuan & Mohammed 1997, Wardlaw 1999, Yuan & Mohammed 1999, 2000) and South Africa (Van der Westhuizen *et al.* 1993, Venter *et al.* 2002). Typical symptoms of *C. eucalypti* infection are basal stem cankers, kino exudation from depressed cankers and in severe cases, branch and shoot die-back in juvenile trees (Walker *et al.* 1985, Old *et al.* 1986, Van der Westhuizen *et al.* 1993). Severe cankers extending into the cambium have also been reported in Tasmania (Wardlaw 1999). Cankers caused by *C. eucalypti* are often covered in orange fruiting structures, which makes them very conspicuous on the stems of trees (Van der Westhuizen *et al.* 1993). In Australia the fungus has been reported to kill trees under stressful conditions (Walker *et al.* 1985, Old *et al.* 1986, Wardlaw 1999).

Cryphonectria eucalypti was previously known as *Endothia gyrosa* (Schw.: Fr.) Fr. (Venter *et al.* 2002), a canker pathogen of many hardwood species in the United States (Shear, Stevens & Tiller 1917, Stipes & Phipps 1971, Roane *et al.* 1974, Appel & Stipes 1986). *C. eucalypti*, however, is only known to infect *Eucalyptus* spp. in Australia, Tasmania and South Africa and is clearly distinguished from *E. gyrosa* based on morphological characteristics and DNA sequence data (Venter *et al.* 2001, Venter *et al.* 2002).

A recent and intriguing discovery has been that the serious canker pathogen *Cryphonectria cubensis* (Bruner) Hodges occurs not only on members of the Myrtaceae but also on *Tibouchina* spp., which reside in the Melastomataceae (Wingfield *et al.* 2001). Although this discovery seemed unusual at first, it is better understood in the light of recent DNA based comparisons showing that these two families in the Myrtales are closely related (Conti *et al.* 1997). The presence of *C. cubensis* on both *Eucalyptus* spp. and *Tibouchina* spp. has raised the question whether these plants might not share other pathogens.

Although the origin of *C. eucalypti* is not known for certain, its common occurrence on *Eucalyptus* in Australia suggests that it is native in that area. *Tibouchina* spp. are

native to South America but relatively widely planted in cities in the eastern parts of Australia as ornamentals. The aim of this study was to consider whether these ornamental plants have become infected with the commonly occurring *C. eucalypti*.

MATERIALS AND METHODS

Fungal isolates

Tibouchina urvilleana Cogn. trees growing as ornamentals in Melbourne, Coff's Harbour and Brisbane were examined during November 2001 for stem canker symptoms. Cankers covered in structures resembling an *Endothiella* sp. were found on *T. urvilleana* trees in Melbourne and at Coff's Harbour. Isolations were made directly from fungal structures and spore masses were transferred to Malt Extract Agar (MEA) containing 10 g Malt extract and 15 g agar per litre water.

Morphological characterisation

Fruiting structures on *T. urvilleana* bark were compared with herbarium specimens of *C. eucalypti* from *Eucalyptus* spp. (Venter *et al.* 2002) (Table 1). Fruiting structures were sectioned using a Leica CM1100 cryostat and Leica embedding medium (Setpoint Technologies, Johannesburg, South Africa) at $-20\text{ }^{\circ}\text{C}$ to a thickness of $12\text{ }\mu\text{m}$. Conidia and conidiophores were mounted in 3% KOH and measured. Ten measurements were taken of conidiophores and conidia for each collection and these are presented as (min-) (mean-SD) – (mean+SD) (-max) μm . Standard colour notations given by Rayner (1970) were used. Bark specimens bearing fruiting structures have been deposited in the herbarium of the National Collection of Fungi, Pretoria, South Africa (PREM) (Table 2).

DNA isolation and amplification

Mycelium from actively growing cultures was inoculated into 1.5 ml microcentrifuge tubes containing 750 μl , 3% (w/v) Malt Extract Broth (Merck Laboratory Supplies,

Germany). DNA was isolated from 5-day-old cultures using the method described by Murray and Thompson (1980). Two β -tubulin gene regions were amplified using primer pairs Bt1a (5'-TTT CCC CGT CTC CAC TTC TTC ATG-3'), Bt1b (5'-GAC GAG ATC GTT CAT GTT GAA GC-3') and Bt2a (5'-GGT AAC CAA ATC GGT GCT GCT TTC-3'), Bt2b (5'-ACC CTC AGT GTA GTG ACC CTT GGC-3') (Glass & Donaldson 1995).

Each polymerase chain reaction (PCR) contained 2 ng DNA, 0.2 mM of each dNTP (Promega, Madison, Wisconsin, U.S.A.), 0.15 μ M of primers Bt1a/b and Bt2a/b, 5 U/ μ l Taq polymerase (Roch Molecular Biochemicals, Alameda, California) and 1X Buffer containing MgCl₂ (10 mM Tris-HCL, 1.5 mM MgCl₂, 50 mM KCL). Sterile water was used to adjust the final volume to 25 μ l. Amplification reactions were performed on a Perkin Elmer GeneAmp PCR System 9700 thermocycler (Perkin-Elmer Applied Biosystems Inc., Foster City, California). The conditions for all PCR reactions were: an initial denaturation at 96 °C for one min followed by 35 cycles of denaturation at 94 °C for 30 sec, annealing for one min at 54 °C, followed by extension at 72 °C for 90 sec. A 5 sec elongation step was added with each cycle after the first twenty-five cycles. The process was completed with a final extension at 72 °C for ten minutes. PCR products were visualised on a 2% agarose-ethidium bromide gel using ultra violet light. Product sizes were estimated with a 100 bp standard size marker (Promega).

DNA sequencing and analyses

PCR products were purified using a High Pure PCR Product Purification Kit (Roche Diagnostic GmbH, Mannheim, Germany) and sequenced with the same primer pairs used in the PCR amplification reactions. An ABI PRISM™ Dye Terminator Cycle Sequencing Ready Reaction Kit with AmpliTaq® DNA Polymerase, FS (Perkin-Elmer, Warrington, United Kingdom) was used for sequencing with an ABI PRISM 3100™ automated sequencer. Sequences were aligned using ClustalX (Thompson *et al.* 1997) and manually adjusted using Sequence Navigator version 1.0.1 (Perkin-Elmer Applied BioSystems Inc., Foster City, California). All sequences obtained in this study have been deposited in GenBank (Table 1).

Data analyses were performed using PAUP* (Phylogenetic Analysis Using Parsimony) version 4.0b (Swofford 1998). Analyses were done using the heuristic search option with TBR (tree-bisection-reconnection) branch swapping. Gaps inserted during sequence alignment were treated as fifth base (NEWSTATE). A bootstrap analysis (50% majority rule, 1000 replications) was done to determine the confidence levels of the tree branching points (Felsenstein 1995). Previously published sequences of various commonly known *Cryphonectria* spp. were included for comparative purposes (Table 2). *Diaporthe ambigua* Nitschke, a genus known to be closely related to *Cryphonectria*, was treated as a monophyletic outgroup taxon to root the phylogenetic tree. The stringency of the branch nodes was tested using Markov Chain Monte Carlo Algorithms (MCMC) (Larget & Simon 1999) in Bayesian Analysis (Lutzoni, Pagel & Reeb 2001). Random trees were obtained through 100 000 generations, with every 10th tree sampled. The first 1500 trees were discarded as the burnin period. A general time reversal model was used and four MCMC chains were run simultaneously in the analysis. The sampled trees were summarised in a consensus tree showing posterior possibility of the branches.

Pathogenicity

To determine the relative pathogenicity of the *Endothiella* sp. isolated from *T. urvilleana* in Australia, pathogenicity trials were performed under greenhouse conditions. The tests were performed using a complete randomised design. All trees were maintained under greenhouse conditions for two weeks to acclimatise them prior to inoculation. The greenhouse was subjected to natural day/night conditions and a temperature setting of ~25 °C. Tree diameter varied from 20 to 30 mm. The two most rapidly growing and healthy isolates of the test fungus from *T. urvilleana* (CMW 6245, CMW 6246) were each inoculated onto twenty-five *T. urvilleana* trees. Twenty-five trees were also each inoculated with the isolates of *C. eucalypti* from *Eucalyptus* in South Africa (CMW 7036) and Australia (CMW 7038), previously shown to be pathogenic (Venter *et al.* 2002). Twenty trees were inoculated with sterile MEA plugs to serve as a control.

Wounds were made on the test trees using a 10 mm diameter cork borer. Mycelial plugs of a similar size were taken from the actively growing edges of 7-day-old cultures and placed in the wounds with the mycelium facing the cambium. Wounds were sealed with laboratory film (Parafilm "M", American National Can™ Chicago, IL.) to protect the inoculated fungus and cambium from desiccation. After 10 weeks, lesion lengths were measured and compared. Data were subjected to analysis of variance using the General Linear Model procedure of SAS (SAS/STAT Users guide, Version 6, 1989).

RESULTS

Fungal isolates

An *Endothiella* sp. was found on five *T. urvilleana* trees. Four isolates (CMW 6244, CMW 6245, CMW 6246, CMW 6249) were obtained from trees in Melbourne. One isolate (CMW 10729) was isolated from a tree at Coff's Harbour. All isolates are maintained in the culture collection (CMW) of the Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, South Africa.

Morphological characterisation

Only asexual fruiting bodies were found on *T. urvilleana* trees (PREM 57596). The conidiomata of the fungus resembled the *Endothiella* anamorph of *Cryphonectria* spp. Stromata were 180-330 µm wide, orange (15) (Rayner 1970), pulvinate, semi-immersed in the bark, uni- to multilocular with strongly convoluted locules (Fig. 1A-B). Long sterile hyphae, (18.5-) 31.5-60.5 x 1-1.5 (-2) µm reminiscent of the paraphyses found between conidiophores of *C. eucalypti* (Walker *et al.* 1985, Venter *et al.* 2002), were observed (Fig. 1C). Conidia were cylindrical (Fig. 1D) and similar in size (3.0-) 3.5-4.5 (-5.0) x 1.0-1.5 µm to those of *C. eucalypti* (Walker *et al.* 1985, Venter *et al.* 2002). Conidiophores (Fig. 1E) were (6.0-)8.5-18.0(-25) x 1.0-1.5(-2.0) µm and corresponded with those of *C. eucalypti* (Venter *et al.* 2002). The conidiogenous cells of the fungus on *T. urvilleana* from Australia differed from those of *C. eucalypti*. Phialides of the fungus on *T. urvilleana* had inconspicuous collarettes

and attenuated apices (Fig. 1E). Phialides of the holotype and paratype specimens of *C. eucalypti* from South Africa (PREM 56211, PREM 56212, PREM 56305, PREM 56214, PREM 56215, PREM 56216), however, had flaring collarettes and the apices of the conidiogenous cells were not as attenuated as those of the fungus from *T. urvilleana* (Fig. 1F). These differences suggest that the fungus on *Tibouchina* from Australia is different to *C. eucalypti* found on *Eucalyptus*.

DNA sequencing and analyses

PCR amplification of the four isolates from *Tibouchina* in Australia, with the two primer pairs resulted in fragments of ~540 bp (Bt1a/Bt1b) and ~490 bp (Bt2a/Bt2b), respectively. Aligned sequences of the combined data resulted in a data set of 1097 characters (Appendix 1), consisting of 566 constant characters, 424 parsimony informative characters and 107 variable characters that were parsimony uninformative. The heuristic search produced two most parsimonious trees, of which one is presented (Fig. 2). Most variation between trees occurred in the *C. eucalypti* clade. A strict Bootstrap consensus tree [tree length = 1045 steps, Consistency index (CI) = 0.820, Retention index (RI) = 0.88664, Rescaled consistency index (RC) = 0.727 and Homoplasy index (HI) = 0.180] was generated from the 107 variable characters and most branches were well supported with high bootstrap values (Fig. 2). Posterior probability values calculated for the branch nodes supported the bootstrap values. All the isolates from *T. urvilleana* from Australia grouped in a separate clade (bootstrap support 96%, posterior probability 53%) most closely related to the *C. eucalypti* clade. These clades grouped within the greater *Cryphonectria* clade separate from the *Endothia* clade (bootstrap support 100%, posterior probability 100%).

Pathogenicity

Greenhouse inoculations on *T. urvilleana* trees resulted in distinct lesions within ten weeks (Fig. 3). The control inoculations produced no lesions (Table 3). There were no significant differences in pathogenicity between the Australian (CMW 7038) and South African (CMW 7036) *C. eucalypti* isolates ($P=0.1699$). Isolates of the undescribed

Endothiella sp. were, however, significantly more pathogenic than the *C. eucalypti* isolates ($P < 0.001$).

DISCUSSION

This study presents the first report of an *Endothiella* sp., closely related to *C. eucalypti*, from *T. urvilleana* in Australia. Although initial identification suggested that the fungus was the same as *C. eucalypti*, morphological differences between the two fungi were found. These morphological differences were relatively inconspicuous. However, comparison of DNA sequences showed clearly that the fungus from *Tibouchina* was distinct from *C. eucalypti*.

The *Endothiella* sp. found on *T. urvilleana* in this study shares a number of characteristics with the anamorph of *C. eucalypti*. The two fungi can, however, easily be distinguished based on phialide morphology. The anamorph of *C. eucalypti* is recognised by conspicuous phialides with flaring collarettes (Venter *et al.* 2002). In comparison, the fungus from *T. urvilleana* has inconspicuous phialides with attenuated ends.

DNA sequence data provided strong support for morphological observations suggesting that the *Endothiella* sp. from *Tibouchina* is different to the anamorph of *C. eucalypti*. In this study we particularly chose to use β -tubulin sequences for comparison. This was because, of the various gene regions tested for this group of fungi (Venter *et al.* 2002), this region has been shown to accurately reflect phylogenetic relationships in *Cryphonectria* and allied genera (Venter *et al.* 2002). Our data, both based on morphological and DNA sequence comparisons, thus, strongly suggest that the fungus from *Tibouchina* in Australia represents the anamorph of a distinct species of *Cryphonectria*.

No teleomorph state was found associated with the *Endothiella* sp. discovered on *T. urvilleana* in Australia. However, its morphology is very similar to that of the anamorph of *C. eucalypti*. Phylogenetic analysis of DNA sequence data confirmed this relationship and we are confident that the fungus will represent a species of *Cryphonectria sensu stricto*. Although it would perhaps be logical to do so, description

of the fungus as a species of *Cryphonectria* is not permitted (ICBN section 59.2, Greuter *et al.* 2000). Description in an anamorph genus is thus required.

Currently, *Endothiella* serves as an anamorph genus for both *Endothia* and *Cryphonectria* (Barr 1978). However, *Endothiella* anamorphs of *Endothia* and *Cryphonectria* differ substantially. *Endothia* anamorphs are large, superficial, tubercular and multilocular while those of *Cryphonectria* are semi-immersed and uni- to multilocular (Micales & Stipes 1987, Myburg *et al.* 2003). An additional anamorph genus, thus, needs to be established for the genera *Endothia* and *Cryphonectria*, after which the fungus discovered on *T. urvilleana* in this study can be described.

In this study, we were able to show that the *Endothiella* sp. from *T. urvilleana* is pathogenic to this tree. We further assume that the fungus was responsible for die-back on the ornamental trees sampled. Our results have also shown that the *Endothiella* sp. is more pathogenic than *C. eucalypti* isolates from South Africa and Australia. Although it was beyond the scope of this study, it would be interesting to determine whether the *Endothiella* sp. from *Tibouchina* is pathogenic to *Eucalyptus*.

It is interesting to speculate on the possible origin of the *Endothiella* sp. occurring on *T. urvilleana* in Australia. *Tibouchina* spp. have been introduced into this country and it is possible that the fungus was introduced with these plants. Another possibility is that the fungus originated on native *Eucalyptus* and has the ability to infect *Tibouchina*. Given the wide distribution of the plants sampled, we favour the latter hypothesis. This would imply that the *Endothiella* sp. occurs on *Eucalyptus* in Australia and it has probably been masked by the widespread occurrence of the very similar *C. eucalypti*. Extensive collections of *C. eucalypti* in Australia with comparisons of isolates based on DNA sequences would resolve this question. This would also make it possible to evaluate the potential importance of the *Endothiella* sp. as a pathogen of *Eucalyptus*, both in Australia and elsewhere in the world.

LITERATURE CITED

- Appel, D. N. & Stipes, R. J. (1986) A description of declining and blighted pin oaks in eastern Virginia. *Journal of Arboriculture* **12**: 155-158.
- Barr, M. E. (1978) The Diaporthales in North America with emphasis on *Gnomonia* and its segregates. *Mycologia Memoir no. 7*. J. Cramer Publisher: Lehre, Germany.
- Conti, E., Litt, A., Wilson, P. G., Graham, S. A., Briggs, B. G., Johnson, L. A. S. & Systma, K. J. (1997) Interfamilial relationships in Myrtales: Molecular phylogeny and patterns of morphological evolution. *Systematic Botany* **22**: 629-647.
- Felsenstein, J. (1995) Confidence intervals on phylogenetics: an approach using bootstrap. *Evolution* **39**: 783-791.
- Glass, N. L. & Donaldson, G. C. (1995) Development of primer sets designed for use with the PCR to amplify conserved genes from filamentous ascomycetes. *Applied and Environmental Microbiology* **61**: 1323-1330.
- Greuter, W., McNeill, J., Barrie, F. R., Burdet, H. M., Demoulin, V., Filgueiras, T. S., Nicolson, D. H., Silva, P. C., Skog, J. E., Trehane, P., Turland, N. J. & Hawksworth, D. L. (2000) International Code of Botanical Nomenclature (Saint Louis Code). XVI International Botanical Congress, St. Louis, Missouri, July-August 2000. Königstein, Germany: Koeltz Scientific Books, 389 p.
- Larget, B. & Simon, D. L. (1999) Markov Chain Monte Carlo Algorithms for the Bayesian Analysis of Phylogenetic Trees. *Molecular Biology and Evolution* **16**: 750-759.
- Lutzoni, F., Pagel, M. & Reeb, V. (2001) Major fungal lineages are derived from lichen symbiotic ancestors. *Nature* **411**: 937-940.
- Micales, J. A. & Stipes, R. J. (1987) A re-examination of the fungal genera *Cryphonectria* and *Endothia*. *Phytopathology* **77**: 650-654.
- Myburg, H., Gryzenhout, M., Wingfield, B. D., Wingfield, M. J. & Stipes, R. J. (2003) A reassessment of the fungal genera *Cryphonectria* and *Endothia* based on DNA sequence data. *Mycologia* (submitted).
- Murray, M. G. & Thompson, W. F. (1980) Rapid isolation of high molecular weight plant DNA. *Nucleic Acid Research* **8**: 4321-4325.

- Old, K. M., Murray, D. I. L., Kile, G. A., Simpson, J. & Malafant, K. W. J. (1986) The pathology of fungi isolated from eucalypt cankers in south-eastern Australia. *Australian Forestry Research* **16**: 21-36.
- Rayner, R. W. (1970) A Mycological Colour Chart. Commonwealth Mycological Institute and British Mycological Society, Kew, Surrey, U.K.
- Roane, M. K., Stipes, R. J., Phipps, P. M. & Miller, O. K. Jr. (1974) *Endothia gyrosa*, causal pathogen of pin oak blight. *Mycologia* **66**: 1042-1047.
- SAS Statistical Software (1989) SAS/STAT User's Guide, Version 6, Fourth Edition, Vol. 1 & 2. SAS Institute Inc., Cary, NC, USA.
- Shear, C. L., Stevens, N. E. & Tiller, R. J. (1917) *Endothia parasitica* and related species. *United States Department of Agriculture Bulletin* **380**: 1-82.
- Stipes, R. J. & Phipps, P. M. (1971) A species of *Endothia* associated with a canker disease of pin oak (*Quercus palustris*) in Virginia. *Plant Disease Reporter* **55**: 467-469.
- Swofford, D. L. (1998) PAUP: Phylogenetic Analysis Using Parsimony (*and Other Methods) Version 4. Sinauer Assoc. Inc.: Sunderland, MA, U.S.A.
- Thompson, J. D., Gibson, T. J., Plewniak, F., Jeanmougin, F. & Higgins, D. G. (1997) The CLUSTAL W windows interface: flexible strategies for multiple sequence alignment aided by quality analysis tools. *Nucleic Acids Research* **25**: 4876-4882.
- Van der Westhuizen, I. P., Wingfield, M. J., Kemp, G. H. J. & Swart, W. J. (1993) First report of the canker pathogen *Endothia gyrosa* on *Eucalyptus* in South Africa. *Plant Pathology* **42**: 661-663.
- Venter, M., Wingfield, M. J., Coutinho, T. A. & Wingfield, B. D. (2001) Molecular characterisation of *Endothia gyrosa* isolates from *Eucalyptus* in South Africa and Australia. *Plant Pathology* **50**: 211-217.
- Venter, M., Myburg, H., Wingfield, B. D., Coutinho, T. A. & Wingfield, M. J. (2002) A new species of *Cryphonectria* from South Africa and Australia, pathogenic to *Eucalyptus*. *Sydowia* **54**: 98-117.
- Walker, T. J., Old, K. M. & Murray, D. I. L. (1985) *Endothia gyrosa* on *Eucalyptus* in Australia with notes on some other species of *Endothia* and *Cryphonectria*. *Mycotaxon* **23**: 353-370.

- Wardlaw, T. J. (1999) *Endothia gyrosa* associated with severe stem cankers on plantation grown *Eucalyptus nitens* in Tasmania, Australia. *European Journal of Forest Pathology* **29**: 129-208.
- Wingfield, M. J., Rodas, C., Myburg, H., Venter, M., Wright, J. & Wingfield, B. D. (2001) *Cryphonectria* canker on *Tibouchina* in Colombia. *Forest Pathology* **31**: 1-10.
- Yuan, Z. Q. & Mohammed, C. (1997) Investigation of fungi associated with stem cankers of eucalypts in Tasmania, Australia. *Australian Plant Pathology* **26**: 78-84.
- Yuan, Z. Q. & Mohammed, C. (1999) Pathogenicity of fungi associated with stem cankers to *Eucalyptus* in Tasmania, Australia. *Plant Disease* **83**: 1063-1069.
- Yuan, Z. Q. & Mohammed, C. (2000) The pathogenicity of isolates of *Endothia gyrosa* to *Eucalyptus nitens* and *E. globulus*. *Australian Plant Pathology* **29**: 29-30.

Table 1. Specimens used in the morphological comparisons.

Herbarium allocation*	Identification	Host	Origin	Collector	Date
PREM 56211	<i>C. eucalypti</i>	<i>E. grandis</i> x <i>camaldulensis</i>	Nyalazi, SA	M. Venter	1998
PREM 56212	<i>C. eucalypti</i>	<i>E. grandis</i>	Sabie, SA	J. Roux	1998
PREM 56305	<i>C. eucalypti</i>	<i>E. saligna</i>	Tzaneen, SA	M. Venter	1999
PREM 56214	<i>C. eucalypti</i>	<i>E. grandis</i>	Dukuduku, SA	M. Venter	1998
PREM 56215	<i>C. eucalypti</i>	<i>E. grandis</i>	Amangwe, SA	M. Venter	1998
PREM 56216	<i>C. eucalypti</i>	<i>E. grandis</i>	Dukuduku, SA	M. Venter	1998
PREM 57597	<i>Endothiella</i> sp.	<i>T. urvilleana</i>	Australia	M.J. Wingfield	2001

* PREM, National Collection of Fungi, Pretoria, South Africa.

Table 2. Isolates considered in DNA sequence comparisons and pathogenicity trials.

Culture no. ^a	Isolate identity	Host	Origin	Genbank accession
				number
CMW 1543	<i>C. macrospora</i>	<i>Castanopsis cuspidata</i>	Japan	AF1368351 ^c AF368351 ^d
CMW 1651	<i>C. parasitica</i>	<i>Castanea dentata</i>	U.S.A.	AF273074 ^c , AF273467 ^d
CMW 1652	<i>C. parasitica</i>	<i>C. dentata</i>	U.S.A.	AF273468 ^c AF27075 ^d
CMW 2091	<i>Endothia gyrosa</i>	<i>Quercus palustris</i>	U.S.A.	AF368337 ^c AF368336 ^d
CMW 5288	<i>Diaporthe ambigua</i>	<i>Malus</i> sp.	South Africa	AF 543817 ^c AF 543818 ^d
CMW 6244 ^b	<i>Endothiella</i> sp.	<i>T. urvilleana</i>	Australia	AY194474
CMW 6245 ^b	<i>Endothiella</i> sp.	<i>T. urvilleana</i>	Australia	AY194475
CMW 6246 ^b	<i>Endothiella</i> sp.	<i>T. urvilleana</i>	Australia	AY194476
CMW 6249 ^b	<i>Endothiella</i> sp.	<i>T. urvilleana</i> .	Australia	AY194477
CMW 7036	<i>C. eucalypti</i>	<i>Eucalyptus</i> sp.	South Africa	AF368341 ^c ; AF368340 ^d
CMW 7037	<i>C. eucalypti</i>	<i>Eucalyptus</i> sp.	Australia	AF368343 ^c ; AF368342 ^d
CMW 7038	<i>C. eucalypti</i>	<i>Eucalyptus</i> sp.	Australia	AF368345 ^c ; AF368344 ^d
CMW 7042	<i>E. gyrosa</i>	<i>Q. suber</i>	U.S.A.	AF368335 ^c AF368334 ^d
CMW 7045	<i>E. gyrosa</i>	<i>Q. palustris</i>	U.S.A.	AF368339 ^c AF368338 ^d
CMW 7046	<i>E. singularis</i>	-	U.S.A.	AF368333 ^c AF368332 ^d
CMW 7047	<i>C. parasitica</i>	<i>Q. virginiana</i>	U.S.A.	AF273469 ^c , AF273073 ^d
CMW 7048	<i>C. parasitica</i>	<i>Q. virginiana</i>	U.S.A.	AF273470 ^c , AF273076 ^d
CMW 10729 ^b	<i>Endothiella</i> sp.	<i>T. urvilleana</i>	Australia	AY194478

^a Culture collection (CMW) of the Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, 0002, South Africa.

^b β -tubulin 1a/b and 2a/b sequence data generated in this study.

^c β -tubulin 1a/b sequence data obtained from Genbank.

^d β -tubulin 2a/2b sequence data obtained from Genbank.

Table 3. Mean lesion lengths on *Tibouchina urvilleana* trees 6 weeks after inoculation with the undescribed *Endothiella* sp. and *C. eucalypti* in the greenhouse.

Isolates	^a Mean lesion length (mm)	Host
^b CMW 7036	28.4	<i>Eucalyptus</i>
^b CMW 7038	25.4	<i>Eucalyptus</i>
^c CMW 6245	36.1	<i>T. urvilleana</i>
^c CMW 6246	39.7	<i>T. urvilleana</i>
Control	10.0	

^aEach value is the average of 25 measurements for each isolate

^b*Cryphonectria eucalypti*

^c*Endothiella* sp.

P > 0.001

CV = 27.53

R-Square = 0.65

F = 56.51

Figure. 1. Light micrographs of fruiting structures of the *Endothiella* sp. on *T. urvilleana* from Australia. (a) Conidioma on bark. (b) Longitudinal section through conidioma. (c) Paraphyses (indicated with arrow). (d) Conidia. (e) Conidiophores. (f) Light micrograph of conidiophores (collarettes indicated with arrow) of *C. eucalypti* from South Africa. (Scale bars of a, b 100 μm ; c, d, e, f 10 μm)

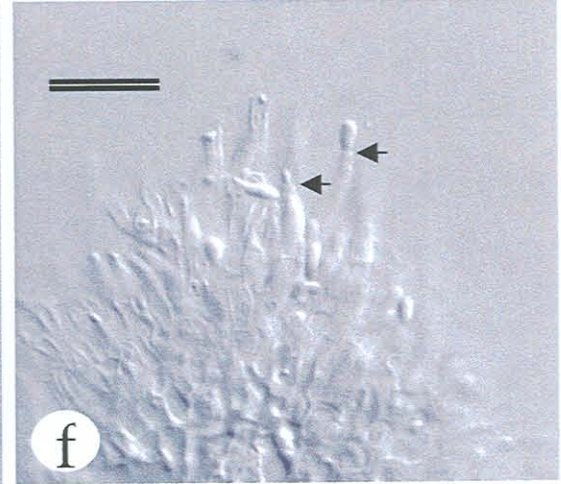
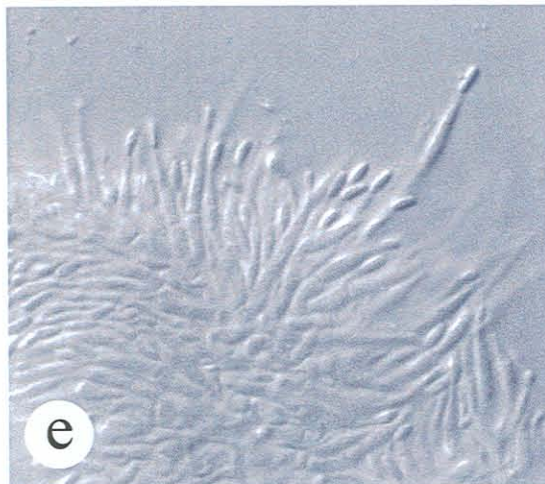
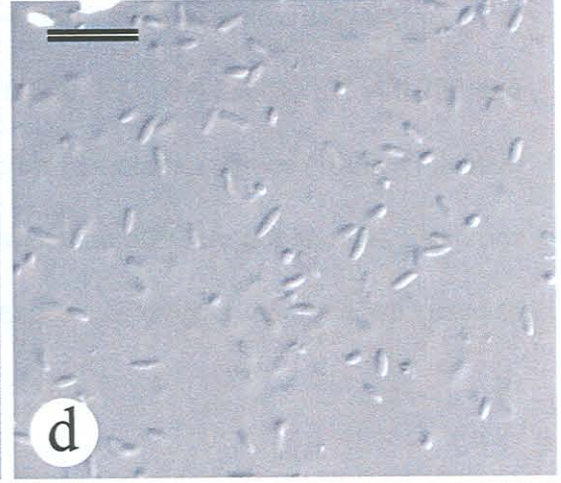
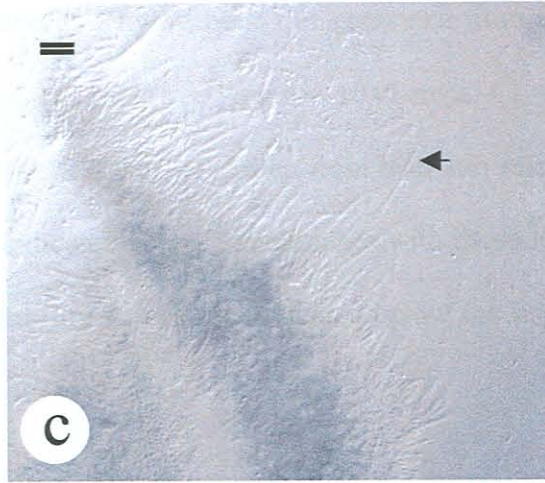
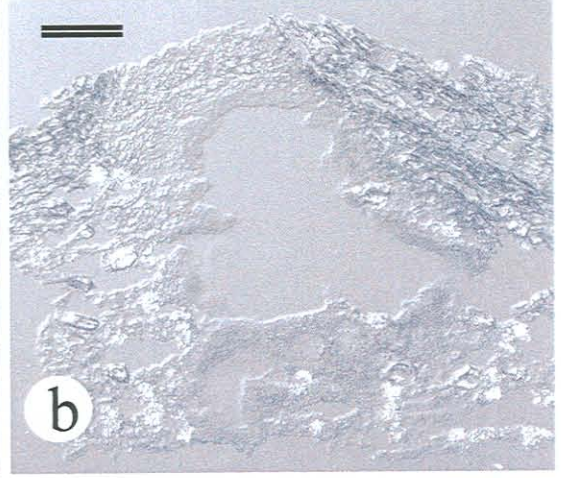
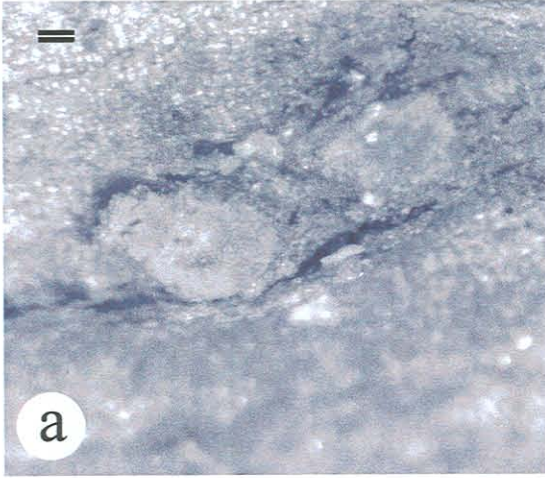


Figure. 2. Phylogenetic tree generated from β -tubulin gene sequence data set. A strict consensus tree (tree length = 1045 steps, CI = 0.820, RI = 0.088664, RC = 0.727 and HI = 0.180) was generated from heuristic searches. Bootstrap values (1000 replicates) are indicated above the branches with those lower than 50% are not shown. Posterior probability values are indicated below the branches. *Diaporthe ambigua* was used to root the tree.

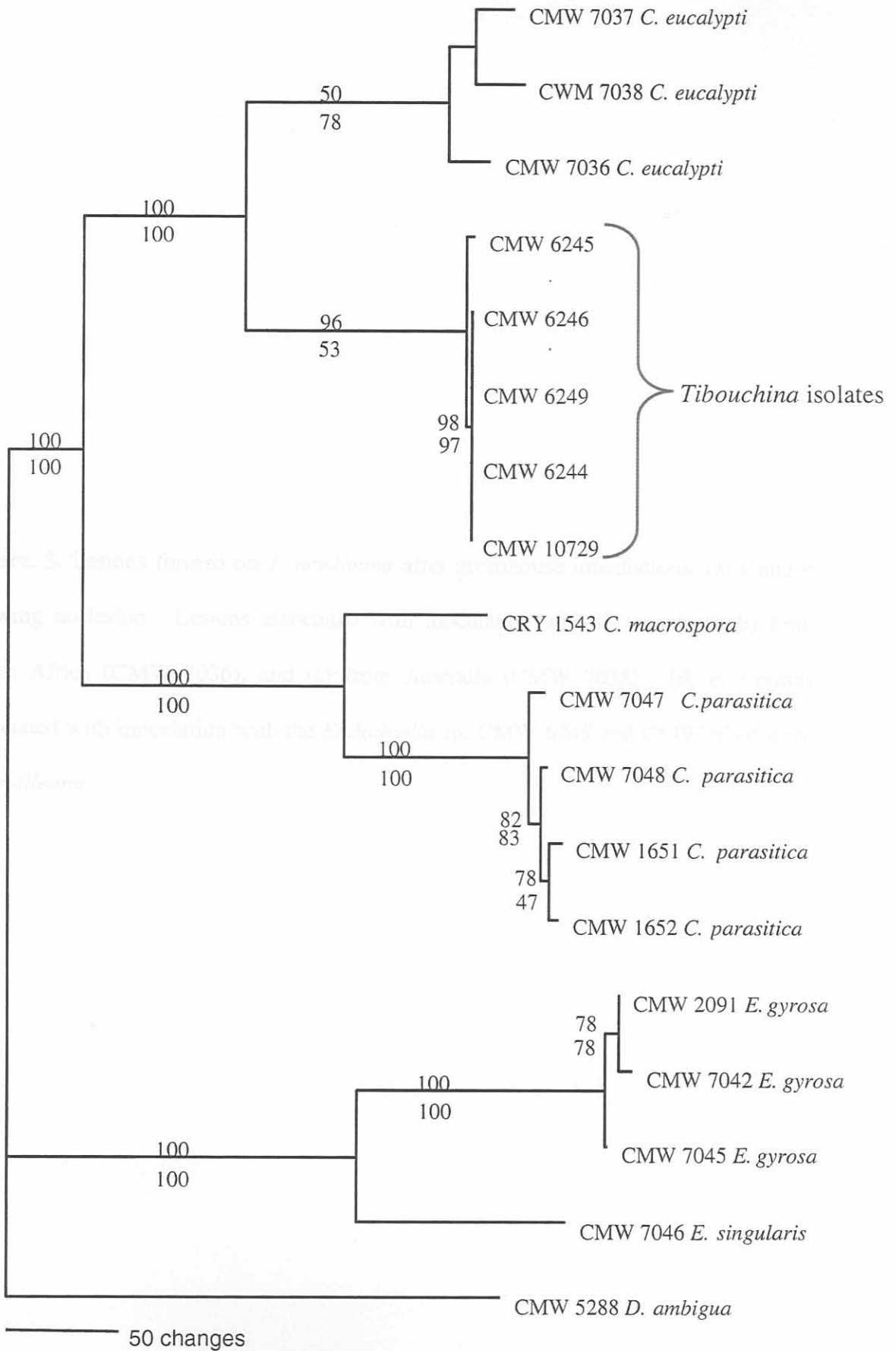


Figure. 3. Lesions formed on *T. urvilleana* after greenhouse inoculations. (a) Control showing no lesion. Lesions associated with inoculation with *C. eucalypti* (b) from South Africa (CMW 7036), and (c) from Australia (CMW 7038). (d, e) Lesions associated with inoculation with the *Endothiella* sp. CMW 6245 and CMW 6246 from *T. urvilleana*.

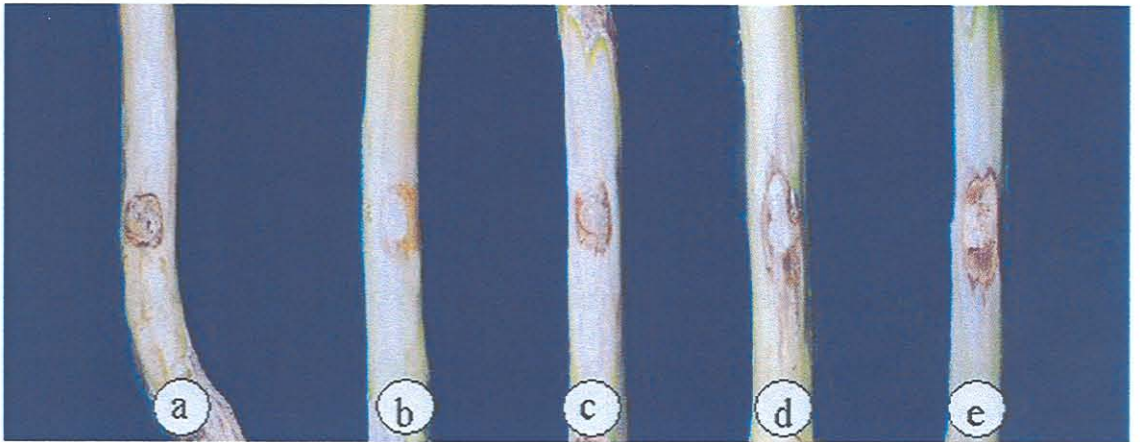
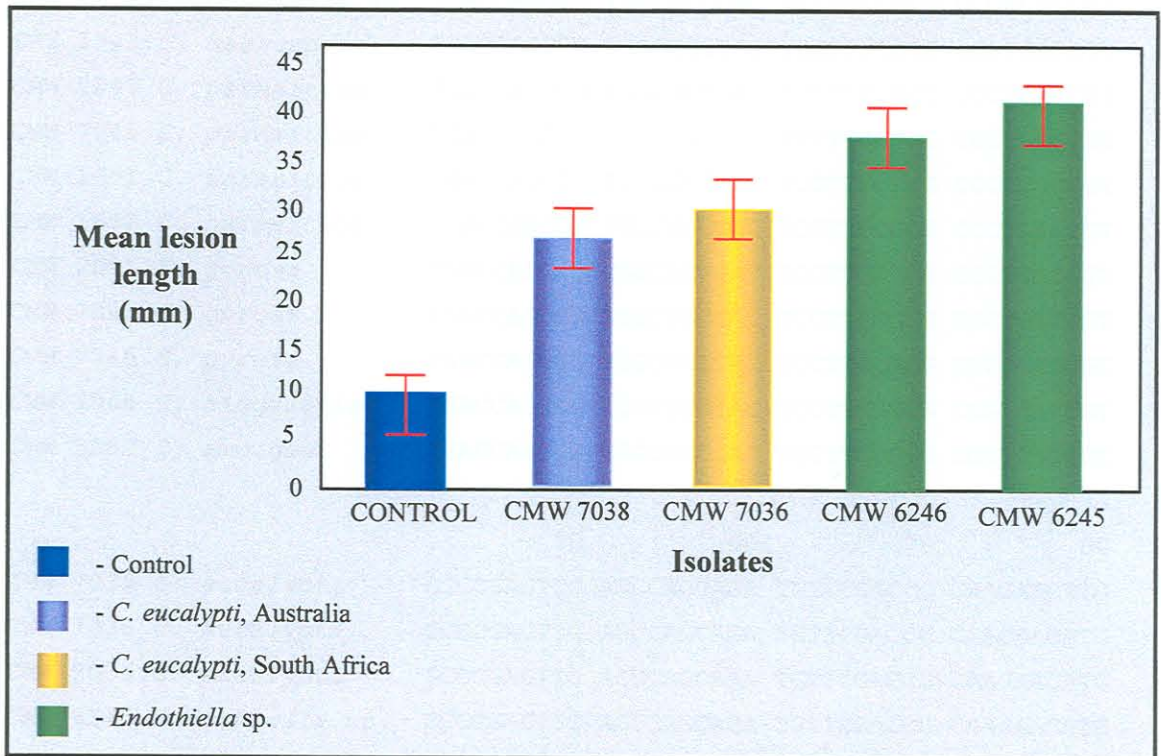


Figure. 4. Bar chart indicating the average lesion length in millimetres resulting from inoculation trials of *Endothiella* sp. and *C. eucalypti* on *Tibouchina urvilleana*. Error bars indicate 95% confidence interval of the data.



APPENDIX 1

	10	20	30	40
CMW 7037 <i>C. eucalypti</i>	TGACCAGCCG	TGGCGCCCAC	TCTTTCCGCG	CCCTCACCGT
CWM 7038 <i>C. eucalypti</i>	TGACCAGCCG	TGGCGCCCAC	TCTTTCCGCG	CCCTCACCGT
CMW 7036 <i>C. eucalypti</i>	TGACCAGCCG	TGGCGCCCAC	TCTTTCCGCG	CCCTCACCGT
CMW 6245 <i>Endothiella</i> sp.	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CMW 6246 <i>Endothiella</i> sp.	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CMW 6249 <i>Endothiella</i> sp.	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CMW 6244 <i>Endothiella</i> sp.	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CMW 10729 <i>Endothiella</i> sp.	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CRY 1543 <i>C. macrospora</i>	TGACCAGCCG	TGGCGCCTAC	TCCTTCCGCG	CCCTCACCGT
CMW 7047 <i>C. parasitica</i>	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CMW 7048 <i>C. parasitica</i>	TGACCAGCCG	TGGCGCCCAC	TCTTTCCGCG	CCCTCACCGT
CMW 1651 <i>C. parasitica</i>	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CMW 1652 <i>C. parasitica</i>	TGACCAGCCG	TGGCGCCCAC	TCCTTCCGCG	CCCTCACCGT
CMW 2091 <i>E. gyrosa</i>	TGACCAGCCG	TGGCGCTTAC	TCCTTCCGCG	CCGTCACCGT
CMW 7042 <i>E. gurosa</i>	TGACCAGCCG	TGGCGCTTAC	TCCTTCCGCG	CCGTCACCGT
CMW 7045 <i>E. gyrosa</i>	TGACCAGCCG	TGGCGCTTAC	TCCTTCCGCG	CCGTCACCGT
CMW 7046 <i>E. singularis</i>	TGACCAGCCG	TGGCGCCTAC	TCCTTCCGCG	CCGTCACCGT
CMW 5288 <i>D. ambigua</i>	TGACCAGCCG	CGGCGCCCAC	TCCTTCCGTG	CCGTCACCGT
	50	60	70	80
CMW 7037 <i>C. eucalypti</i>	GCCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CWM 7038 <i>C. eucalypti</i>	GCCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 7036 <i>C. eucalypti</i>	GCCCCGAGTTG	ACCCAGCAA	TGTTTCGACCC	CAAGAACATG
CMW 6245 <i>Endothiella</i> sp.	GCCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 6246 <i>Endothiella</i> sp.	GCCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 6249 <i>Endothiella</i> sp.	GCCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 6244 <i>Endothiella</i> sp.	GCCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 10729 <i>Endothiella</i> sp.	GCCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CRY 1543 <i>C. macrospora</i>	TCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 7047 <i>C. parasitica</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 7048 <i>C. parasitica</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 1651 <i>C. parasitica</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 1652 <i>C. parasitica</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 2091 <i>E. gyrosa</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 7042 <i>E. gurosa</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 7045 <i>E. gyrosa</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 7046 <i>E. singularis</i>	CCCCGAGTTG	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG
CMW 5288 <i>D. ambigua</i>	GCCCCGAGCTC	ACCCAGCAGA	TGTTTCGACCC	CAAGAACATG

		90	100	110	120
CMW 7037	<i>C. eucalypti</i>	ATGGCTGCCT	CGGACTTCCG	CAACGGCCGT	TACCTGACGT
CWM 7038	<i>C. eucalypti</i>	ATGGCTGCCT	CGGACTTCCG	CAACGGCCGT	TACCTGACGT
CMW 7036	<i>C. eucalypti</i>	ATGGCTGCCT	CGGACTTCCG	CAACGGCCGT	TACCTGACGT
CMW 6245	<i>Endothiella</i> sp.	ATGGCCGCCT	CGGACTTCCG	CAACGGCCGC	TACCTGACGT
CMW 6246	<i>Endothiella</i> sp.	ATGGCCGCCT	CGGACTTCCG	CAACGGCCGC	TACCTGACGT
CMW 6249	<i>Endothiella</i> sp.	ATGGCCGCCT	CGGACTTCCG	CAACGGCCGC	TACCTGACGT
CMW 6244	<i>Endothiella</i> sp.	ATGGCCGCCT	CGGACTTCCG	CAACGGCCGC	TACCTGACGT
CMW 10729	<i>Endothiella</i> sp.	ATGGCCGCCT	CGGACTTCCG	CAACGGCCGC	TACCTGACGT
CRY 1543	<i>C. macrospora</i>	ATGGCTGCCT	CTGACTTCCG	TAACGGTCGC	TACCTGACAT
CMW 7047	<i>C. parasitica</i>	ATGGCTGCCT	CTGACTTCCG	CAACGGTCGC	TACCTGACAT
CMW 7048	<i>C. parasitica</i>	ATGGCTGCCT	CTGACTTCCG	CAACGGTCGC	TACCTGACAT
CMW 1651	<i>C. parasitica</i>	ATGGCTGCCT	CTGACTTCCG	CAACGGTCGC	TACCTGACAT
CMW 1652	<i>C. parasitica</i>	ATGGCTGCCT	CTGACTTCCG	CAACGGTCGC	TACCTGACAT
CMW 2091	<i>E. gyrosa</i>	ATGGCCGCCT	CTGACTTCCG	CAACGGCCGT	TACCTGACGT
CMW 7042	<i>E. gurosa</i>	ATGGCCGCCT	CTGACTTCCG	CAACGGCCGT	TACCTGACGT
CMW 7045	<i>E. gyrosa</i>	ATGGCCGCCT	CTGACTTCCG	CAACGGCCGT	TACCTGACGT
CMW 7046	<i>E. singularis</i>	ATGGCCGCCT	CTGACTTCCG	CAACGGTCGC	TACCTGACGT
CMW 5288	<i>D. ambigua</i>	ATGGCCGCCT	CTGACTTCCG	TAATGGTCGC	TACCTGACGT

		130	140	150	160
CMW 7037	<i>C. eucalypti</i>	GCTCTGCCAT	CTTGTACG--	----TTTTCT	GCTTCTTTCT
CWM 7038	<i>C. eucalypti</i>	GCTCTGCCAT	CTTGTACG--	----TTTT--	-----
CMW 7036	<i>C. eucalypti</i>	GCTCTGCCAT	CTTGTACG--	----TTTT-T	G--TCTT-CT
CMW 6245	<i>Endothiella</i> sp.	GCTCTGCCAT	CTTGTACG--	----TTTTTT	GCTTCTTTCT
CMW 6246	<i>Endothiella</i> sp.	GCTCTGCCAT	CTTGTACG--	----TTTTTT	GCTTCTTTCT
CMW 6249	<i>Endothiella</i> sp.	GCTCTGCCAT	CTTGTACG--	----TTTTTT	GCTTCTTTCT
CMW 6244	<i>Endothiella</i> sp.	GCTCTGCCAT	CTTGTACG--	----TTTTTT	GCTTCTTTCT
CMW 10729	<i>Endothiella</i> sp.	GCTCTGCCAT	CTTGTACG--	----TTTTTT	GCTTCTTTCT
CRY 1543	<i>C. macrospora</i>	GCTCTGCCAT	CTTGTAAAGT	TTCTATA---	-----
CMW 7047	<i>C. parasitica</i>	GCTCTGCCAT	CTTGTAAAG--	----TTTTCT	TGTCTTTTCC
CMW 7048	<i>C. parasitica</i>	GCTCTGCCAT	CTTGTAAAG--	----TTTTCT	TGTCTTTTCC
CMW 1651	<i>C. parasitica</i>	GCTCTGCCAT	CTTGTAAAG--	----TTTTCT	TGCCTTTTCC
CMW 1652	<i>C. parasitica</i>	GCTCTGCCAT	CTTGTAAAG--	----TTTTCT	TGTCTTTTCC
CMW 2091	<i>E. gyrosa</i>	GCTCTGCCAT	CTTGTAAAGTG	GT---TCCCC	CC--ACAC--
CMW 7042	<i>E. gurosa</i>	GCTCTGCCAT	CTTGTAAAGTG	GT---TCCCC	CC--ACAC--
CMW 7045	<i>E. gyrosa</i>	GCTCTGCCAT	CTTGTAAAGTG	GT---TCCCC	CC--ACAC--
CMW 7046	<i>E. singularis</i>	GCTCTGCCAT	CTTGTAAAGTG	GTC--TCCCC	CCCAACACCC
CMW 5288	<i>D. ambigua</i>	GCTCTGCCAT	CTTGTAAAGT-	-----	-----CCC

	170	180	190	200
CMW 7037 <i>C. eucalypti</i>	CT----ATCT	C-ACAAA-TC	-TCGGATCCA	CCTCTC----
CWM 7038 <i>C. eucalypti</i>	-T----GTCT	C-ACAAA-TC	-TCGGATCCA	CCTCTC----
CMW 7036 <i>C. eucalypti</i>	CT----GTCT	C-ACACA-TC	-TCGGATCCA	CCTCTC----
CMW 6245 <i>Endothiella</i> sp.	CT----GTCT	C-ACAAA-CC	-TCGGATCCA	CCTCTC----
CMW 6246 <i>Endothiella</i> sp.	CT----GTCT	C-ACAAA-CC	-TCGGATCCA	CCTCTC----
CMW 6249 <i>Endothiella</i> sp.	CT----GTCT	C-ACAAA-CC	-TCGGATCCA	CCTCTC----
CMW 6244 <i>Endothiella</i> sp.	CT----GTCT	C-ACAAA-CC	-TCGGATCCA	CCTCTC----
CMW 10729 <i>Endothiella</i> sp.	CT----GTCT	C-ACAAA-CC	-TCGGATCCA	CCTCTC----
CRY 1543 <i>C. macrospora</i>	-----CCTT	CTCGCAA-GC	CTC-GATGAA	CATCTC----
CMW 7047 <i>C. parasitica</i>	TCGCAGGTCT	AGACAAA---	-----	CGTTTC----
CMW 7048 <i>C. parasitica</i>	TCGCAGGTCT	CGACAAA---	-----	CGTCTT----
CMW 1651 <i>C. parasitica</i>	TCGCAAGTCT	CGACGAA---	-----	CGTCTT----
CMW 1652 <i>C. parasitica</i>	TCGCAAGTCT	CGACGAA---	-----	CGTCTT----
CMW 2091 <i>E. gyrosa</i>	-----ACCCG	CTGG-CGCCT	TTGGGGGGCT	GTCA-----
CMW 7042 <i>E. gurosa</i>	-----ACCCG	CTGG-CGCCT	TTGGGGGGCT	GTCA-----
CMW 7045 <i>E. gyrosa</i>	-----ACCCG	TTGG-CGCCT	TTGGGGGGCT	GTCA-----
CMW 7046 <i>E. singularis</i>	C--AGACCCC	CTGGGCGCCT	TTGGCGGGAG	AGGGCTGTCA
CMW 5288 <i>D. ambigua</i>	CTGAGCATCT	----CCACAC	GACCCAAGT-	-----

	210	220	230	240
CMW 7037 <i>C. eucalypti</i>	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CWM 7038 <i>C. eucalypti</i>	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CMW 7036 <i>C. eucalypti</i>	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CMW 6245 <i>Endothiella</i> sp.	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CMW 6246 <i>Endothiella</i> sp.	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CMW 6249 <i>Endothiella</i> sp.	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CMW 6244 <i>Endothiella</i> sp.	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CMW 10729 <i>Endothiella</i> sp.	GGGCTTGTTT	TT--GCTAA-	CCCTG-CTTT	-CCTCTCTCC
CRY 1543 <i>C. macrospora</i>	GGGCTTCTTG	----GCTAA-	CCCCACGTTT	--CTCTCTTT
CMW 7047 <i>C. parasitica</i>	GGGCTGTTTG	----GCTAA-	CCCTGTCTTT	--CTCTCTTC
CMW 7048 <i>C. parasitica</i>	GGGCTGTTTG	----GCTAA-	CCCTGTCTTT	--CTCTCTTC
CMW 1651 <i>C. parasitica</i>	GGGCTGTTTG	----GCTAA-	CCCTGTCTTT	--CTCTCTTC
CMW 1652 <i>C. parasitica</i>	GGGCTGTTTG	----GCTAA-	CCCTGTCTTT	--CTCTCTTC
CMW 2091 <i>E. gyrosa</i>	GGGCTTGTTT	TTT-GCTGA-	-----	-CCCCTATCC
CMW 7042 <i>E. gurosa</i>	GGGCTTGTTT	TTT-GCTGA-	-----	-CCCCTATCC
CMW 7045 <i>E. gyrosa</i>	GGGCTTGTTT	TTT-GCTGA-	-----	-CCCCTATCC
CMW 7046 <i>E. singularis</i>	GGGCTTGTTT	CT--GCTAA-	-----	-CCCCTATCC
CMW 5288 <i>D. ambigua</i>	-----GTTT	GCGCGCTGAC	AC-TGTCT--	-----

		250	260	270	280
CMW 7037	<i>C. eucalypti</i>	CC-----TAC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CWM 7038	<i>C. eucalypti</i>	CC-----TAC	AGCCGGGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 7036	<i>C. eucalypti</i>	CC-----TAC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 6245	<i>Endothiella</i> sp.	CC-----TAC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 6246	<i>Endothiella</i> sp.	CC-----TAC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 6249	<i>Endothiella</i> sp.	CC-----TAC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 6244	<i>Endothiella</i> sp.	CC-----TAC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 10729	<i>Endothiella</i> sp.	CC-----TAC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CRY 1543	<i>C. macrospora</i>	CC-----TCT	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 7047	<i>C. parasitica</i>	CCCT---TCT	AGCCGGGGTA	AGGTCTCCAT	GAAGGAAGTC
CMW 7048	<i>C. parasitica</i>	CCCTTC-TTT	AGCCGTGGTA	AGGTCTCCAT	GAAGGAAGTC
CMW 1651	<i>C. parasitica</i>	CCCTTC-TCA	AGCCGTGGTA	AGGTCTCCAT	GAAGGAAGTC
CMW 1652	<i>C. parasitica</i>	CCCTTC-TCT	AGCCGTGGTA	AGGTCTCCAT	GAAGGAAGTC
CMW 2091	<i>E. gyrosa</i>	C-----TCC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 7042	<i>E. gurosa</i>	C-----TCC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 7045	<i>E. gyrosa</i>	C-----TCC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 7046	<i>E. singularis</i>	CC-----TCC	AGCCGTGGCA	AGGTCTCCAT	GAAGGAGGTC
CMW 5288	<i>D. ambigua</i>	-----TCT	AGCCGTGGAA	AGGTCTCCAT	GAAGGAGGTC

		290	300	310	320
CMW 7037	<i>C. eucalypti</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CWM 7038	<i>C. eucalypti</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 7036	<i>C. eucalypti</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 6245	<i>Endothiella</i> sp.	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 6246	<i>Endothiella</i> sp.	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 6249	<i>Endothiella</i> sp.	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 6244	<i>Endothiella</i> sp.	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 10729	<i>Endothiella</i> sp.	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CRY 1543	<i>C. macrospora</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 7047	<i>C. parasitica</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 7048	<i>C. parasitica</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 1651	<i>C. parasitica</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 1652	<i>C. parasitica</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 2091	<i>E. gyrosa</i>	GAGGACCAA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 7042	<i>E. gurosa</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 7045	<i>E. gyrosa</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 7046	<i>E. singularis</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT
CMW 5288	<i>D. ambigua</i>	GAGGACCAGA	TGCGCAACGT	CCAGAGCAAG	AACTCGTCCT

		330	340	350	360
CMW 7037	<i>C. eucalypti</i>	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CWM 7038	<i>C. eucalypti</i>	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 7036	<i>C. eucalypti</i>	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 6245	<i>Endothiella</i> sp.	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 6246	<i>Endothiella</i> sp.	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 6249	<i>Endothiella</i> sp.	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 6244	<i>Endothiella</i> sp.	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 10729	<i>Endothiella</i> sp.	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CRY 1543	<i>C. macrospora</i>	ACTTCGTCGA	ATGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 7047	<i>C. parasitica</i>	ACTTCGTCGA	GTGGATTCCC	AACAACGTCC	AGACCGCCCT
CMW 7048	<i>C. parasitica</i>	ACTTCGTCGA	GTGGATTCCC	AACAACGTCC	AGACCGCCCT
CMW 1651	<i>C. parasitica</i>	ACTTCGTCGA	GTGGATTCCC	AACAACGTCC	AGACCGCCCT
CMW 1652	<i>C. parasitica</i>	ACTTCGTCGA	GTGGATTCCC	AACAACGTCC	AGACCGCCCT
CMW 2091	<i>E. gyrosa</i>	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 7042	<i>E. gurosa</i>	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 7045	<i>E. gyrosa</i>	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 7046	<i>E. singularis</i>	ACTTCGTCGA	GTGGATCCCC	AACAACGTCC	AGACCGCCCT
CMW 5288	<i>D. ambigua</i>	ACTTCGTCGA	ATGGATTCCC	AACAACGTCC	AGACCGCCCT

		370	380	390	400
CMW 7037	<i>C. eucalypti</i>	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CWM 7038	<i>C. eucalypti</i>	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CMW 7036	<i>C. eucalypti</i>	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CMW 6245	<i>Endothiella</i> sp.	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CMW 6246	<i>Endothiella</i> sp.	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CMW 6249	<i>Endothiella</i> sp.	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CMW 6244	<i>Endothiella</i> sp.	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CMW 10729	<i>Endothiella</i> sp.	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCCACC
CRY 1543	<i>C. macrospora</i>	CTGCTCCATC	CCCCCAAGG	GCCTCAAGAT	GTCCTCTACC
CMW 7047	<i>C. parasitica</i>	TTGCTCCATT	CCCCCAGGG	GCCTAAAGAT	GTCCTCGACC
CMW 7048	<i>C. parasitica</i>	CTGCTCCATT	CCCCCAGGG	GCCTCAAGAT	GTCCTCGACC
CMW 1651	<i>C. parasitica</i>	CTGCTCCATT	CCCCCAAGG	GCCTCAAGAT	GTCCTCGACC
CMW 1652	<i>C. parasitica</i>	CTGCTCCATT	CCCCCAAGG	GCCTCAAGAT	GTCCTCGACC
CMW 2091	<i>E. gyrosa</i>	CTGCTCCATC	CCCCCAGGG	GTCTCAAGAT	GTCCTCCACC
CMW 7042	<i>E. gurosa</i>	TTGCTCCATC	CCCCCAGGG	GTCTAAAGAT	GTCCTCCACC
CMW 7045	<i>E. gyrosa</i>	CTGCTCCATC	CCCCCAGGG	GTCTCAAGAT	GTCCTCCACC
CMW 7046	<i>E. singularis</i>	TTGCTCCATC	CCCCCAAGG	GTCTCAAGAT	GTCCTCCACC
CMW 5288	<i>D. ambigua</i>	GTGCTCGATC	CCTCCAAGG	GTCTCAAGAT	GTCCTCTACC

	410	420	430	440
CMW 7037 <i>C. eucalypti</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CWM 7038 <i>C. eucalypti</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 7036 <i>C. eucalypti</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 6245 <i>Endothiella</i> sp.	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 6246 <i>Endothiella</i> sp.	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 6249 <i>Endothiella</i> sp.	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 6244 <i>Endothiella</i> sp.	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 10729 <i>Endothiella</i> sp.	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CRY 1543 <i>C. macrospora</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 7047 <i>C. parasitica</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTAAAGC
CMW 7048 <i>C. parasitica</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 1651 <i>C. parasitica</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 1652 <i>C. parasitica</i>	TTTGTCTGGCA	ACTCCACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 2091 <i>E. gyrosa</i>	TTTGTCTGGCA	ACTCTACCGC	CATCCAGGAG	CTTTTCAAGC
CMW 7042 <i>E. gurosa</i>	TTTGTCTGGCA	ACTCTACCGC	CATCCAGGAG	CTCTTCAAGC
CMW 7045 <i>E. gyrosa</i>	TTTGTCTGGCA	ACTCTACCGC	CATCCAGGAG	CTTTTCAAGC
CMW 7046 <i>E. singularis</i>	TTTGTCTGGCA	ACTCCACCGC	TATCCAGGAG	CTCTTCAAGC
CMW 5288 <i>D. ambigua</i>	TTCTGTGGTA	ACTCGACTGC	TATCCAGGAG	CTGTTCAAGC

	450	460	470	480
CMW 7037 <i>C. eucalypti</i>	GTGTTGGCGA	GCAGTTCACC	GCCA-G----	--TTCCGGCG
CWM 7038 <i>C. eucalypti</i>	GTGTTGGCGA	GCAGTTCACC	GCCATGT---	--TTCCGGCG
CMW 7036 <i>C. eucalypti</i>	GTGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGGCG
CMW 6245 <i>Endothiella</i> sp.	GTGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGGAG
CMW 6246 <i>Endothiella</i> sp.	GTGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGGCG
CMW 6249 <i>Endothiella</i> sp.	GTGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGGCG
CMW 6244 <i>Endothiella</i> sp.	GTGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGGCG
CMW 10729 <i>Endothiella</i> sp.	GTGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGGCG
CRY 1543 <i>C. macrospora</i>	GTGTCGGCGA	GCAGTTCACC	GCCATGTCTA	TGTTCCGTCTG
CMW 7047 <i>C. parasitica</i>	GTGTCGGCGA	GCAGTTCACC	GCCATG----	--TTCCGGCG
CMW 7048 <i>C. parasitica</i>	GTGTCGGCGA	GCAGTTTACC	GCCATG----	--TTCCGGCG
CMW 1651 <i>C. parasitica</i>	GTGTCGGCGA	GCAGTTTACC	GCCATG----	--TTCCGGCG
CMW 1652 <i>C. parasitica</i>	GTGTCGGCGA	GCAGTTTACC	GCCATG----	--TTCCGGCG
CMW 2091 <i>E. gyrosa</i>	GCGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGTCTG
CMW 7042 <i>E. gyrosa</i>	GCGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGTCTG
CMW 7045 <i>E. gyrosa</i>	GCGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGTCTG
CMW 7046 <i>E. singularis</i>	GCGTTGGCGA	GCAGTTCACC	GCCATG----	--TTCCGTCTG
CMW 5288 <i>D. ambigua</i>	GTGTCGGCGA	GCAGTTCACC	GCCATG----	--TTCAGGCG

	490	500	510	520
CMW 7037 <i>C. eucalypti</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGG-GA	CCCGATACGG
CWM 7038 <i>C. eucalypti</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGG-GA	CCCGATACGG
CMW 7036 <i>C. eucalypti</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGG-GA	CACGATACGG
CMW 6245 <i>Endothiella</i> sp.	CAAGGCTTTC	TTGCATTGGT	ACACTGGTGA	GGGGATACGG
CMW 6246 <i>Endothiella</i> sp.	CAAGGCTTTC	TTGCATTGGT	ACACTGGTGA	GGGGATGGAC
CMW 6249 <i>Endothiella</i> sp.	CAAGGCTTTC	TTGCATTGGT	ACACTGGTGA	GGGGATGGAC
CMW 6244 <i>Endothiella</i> sp.	CAAGGCTTTC	TTGCATTGGT	ACACTGGTGA	GGGGATGGAC
CMW 10729 <i>Endothiella</i> sp.	CAAGGCTTTC	TTGCATTGGT	ACACTGGTGA	GGGGATGGAC
CRY 1543 <i>C. macrospora</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGGG-A	CACGATACAA
CMW 7047 <i>C. parasitica</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGGTTT	TCGACACGAT
CMW 7048 <i>C. parasitica</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGGTTT	TCGACACGAT
CMW 1651 <i>C. parasitica</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGGTTT	TCGACACGAT
CMW 1652 <i>C. parasitica</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGGTTT	TCGACACGAT
CMW 2091 <i>E. gyrosa</i>	CAAGGCCTTC	TTGCATTGGT	ACACCGGTGA	GGGTATGGAC
CMW 7042 <i>E. gyrosa</i>	CAAGGCCTTC	TTGCATTGGT	ACACCGGTGA	GGGTATGGAC
CMW 7045 <i>E. gyrosa</i>	CAAGGCCTTC	TTGCATTGGT	ACACCGGTGA	GGGTATGGAC
CMW 7046 <i>E. singularis</i>	CAAGGCCTTC	TTGCATTGGT	ACACCGGTGA	GGGTATGG--
CMW 5288 <i>D. ambigua</i>	CAAGGCTTTC	TTGCATTGGT	ACACTGG---	-----

	530	540	550	560
CMW 7037 <i>C. eucalypti</i>	C--GATGT--	CG----ACC-	---TCGTGCA	GCAGAC----
CWM 7038 <i>C. eucalypti</i>	C--GATGT--	CG----ACC-	---TCGTGCA	GCAGAC----
CMW 7036 <i>C. eucalypti</i>	C--GATGT--	CG----ACC-	---TCGTGCA	GCAGAC----
CMW 6245 <i>Endothiella</i> sp.	C--GATGT--	CG----ACC-	---TCGTGCG	GCAGAC----
CMW 6246 <i>Endothiella</i> sp.	G--GATGT--	CG----ACC-	---TCGTGCG	GCAGAC----
CMW 6249 <i>Endothiella</i> sp.	G--GATGT--	CG----ACC-	---TCGTGCG	GCAGAC----
CMW 6244 <i>Endothiella</i> sp.	G--GATGT--	CG----ACC-	---TCGTGCG	GCAGAC----
CMW 10729 <i>Endothiella</i> sp.	G--GATGT--	CG----ACC-	---TCGTGCG	GCAGAC----
CRY 1543 <i>C. macrospora</i>	C--GATAT--	CG----ACA-	---TCGTGCA	GCAGAC----
CMW 7047 <i>C. parasitica</i>	A--CAGCT--	AC----ATCG	ACATCGTGCA	GCAGAC----
CMW 7048 <i>C. parasitica</i>	A--CAGCT--	AC----ATCG	ACATCGTGCA	GCAGAC----
CMW 1651 <i>C. parasitica</i>	A--CAGCT--	AC----ATCG	ACATCGTGCA	GCAGAC----
CMW 1652 <i>C. parasitica</i>	A--CAGCT--	AC----ATCG	ACATCGTGCA	GCAGAC----
CMW 2091 <i>E. gyrosa</i>	G---AGATGG	AGTTC-ACCG	AGGCCGAGTT	CAACATGAAC
CMW 7042 <i>E. gyrosa</i>	G---AGATGG	AGTTC-ACCG	AGGCCGAGTT	CAACATGAAC
CMW 7045 <i>E. gyrosa</i>	G---AGATGG	AGTTC-ACCG	AGGCCGAGTT	CAACAT----
CMW 7046 <i>E. singularis</i>	-----TA	TTTTCGACTC	GATA-----	CAAC-----
CMW 5288 <i>D. ambigua</i>	-----	-----	-----	-----

	570	580	590	600
CMW 7037 <i>C. eucalypti</i>	----TTGGGT	GCTGACCTCG	-ACGCCAGGC	AAACCATT-T
CWM 7038 <i>C. eucalypti</i>	----TTGGGT	GCTGACCTCG	-ACCGCAGGC	AAACCATT-T
CMW 7036 <i>C. eucalypti</i>	----TTGGGT	GCTGACCTCG	-ACCGCAGGC	AAACCATC-T
CMW 6245 <i>Endothiella</i> sp.	----TTGGGT	GCTGACCTCG	-ACCGCAGGC	AAACCATC-T
CMW 6246 <i>Endothiella</i> sp.	----TTGGGT	GCTGACCTCG	-ACCGCAGGC	AAACCATC-T
CMW 6249 <i>Endothiella</i> sp.	----TTGGGT	GCTGACCTCG	-ACCGCAGGC	AAACCATC-T
CMW 6244 <i>Endothiella</i> sp.	----TTGGGT	GCTGACCTCG	-ACCGCAGGC	AAACCATC-T
CMW 10729 <i>Endothiella</i> sp.	----TTGGGT	GCTGACCTCG	-ACCGCAGGC	AAACCATC-T
CRY 1543 <i>C. macrospora</i>	----TTGGAT	GCTAATCTCG	-ACCACAGGC	AAACCATC-T
CMW 7047 <i>C. parasitica</i>	----TTGGAT	GCTGACCTCG	-ACAATAGGC	AAACCATC-T
CMW 7048 <i>C. parasitica</i>	----TTGGAT	GCTGACCTCG	-ACAATAGGC	AAACCATC-T
CMW 1651 <i>C. parasitica</i>	----TTGGAT	GCTGACCTCG	-ACAATAGGC	AAACCATC-T
CMW 1652 <i>C. parasitica</i>	----TTGGAT	GCTGACCTCG	-ACAATAGGC	AAACCATC-T
CMW 2091 <i>E. gyrosa</i>	GA---TGCA	A--CCACCGA	CGCGTGT---	-CGAC-GTTG
CMW 7042 <i>E. gyrosa</i>	GAATTTGGCA	A--CCACCGA	CGCGTGT---	-CGAC-GTTG
CMW 7045 <i>E. gyrosa</i>	-----GGGCA	A--CCACCGA	CGCGTGT---	-CGAC-GTTG
CMW 7046 <i>E. singularis</i>	-----	-----GA	TATCGA----	-----
CMW 5288 <i>D. ambigua</i>	-----	-----	-----C	AAACCATC-T

	610	620	630	640
CMW 7037 <i>C. eucalypti</i>	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CWM 7038 <i>C. eucalypti</i>	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CMW 7036 <i>C. eucalypti</i>	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CMW 6245 <i>Endothiella</i> sp.	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CMW 6246 <i>Endothiella</i> sp.	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CMW 6249 <i>Endothiella</i> sp.	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CMW 6244 <i>Endothiella</i> sp.	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CMW 10729 <i>Endothiella</i> sp.	CGGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTATGTACC
CRY 1543 <i>C. macrospora</i>	CCGGCGAGCA	TGGTCTCGAC	AGCAATGGCG	TGTATGTACC
CMW 7047 <i>C. parasitica</i>	CCGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTACGTACC
CMW 7048 <i>C. parasitica</i>	CCGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTACGTACC
CMW 1651 <i>C. parasitica</i>	CCGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTACGTACC
CMW 1652 <i>C. parasitica</i>	CCGGCGAGCA	CGGCCTCGAC	AGCAATGGCG	TGTACGTACC
CMW 2091 <i>E. gyrosa</i>	CCGGCCTCGT	GGTGGCTTCG	GTGC----TG	ACCTCGGCTG
CMW 7042 <i>E. gyrosa</i>	CCGGCCTCGT	GGTGGCTTCG	GTGC----TG	ACCTCGGCTG
CMW 7045 <i>E. gyrosa</i>	CCGGCCTCGT	GGTGGCTTCG	GTGC----TG	ACCTCGGCTG
CMW 7046 <i>E. singularis</i>	-CATCGTGCA	GCAGACTTGG	ATGC----TG	ACCTCGACCA
CMW 5288 <i>D. ambigua</i>	CTGGCGAGCA	CGGTCTCGAC	AGCAATGGCG	TGTACGTACC

	650	660	670	680
CMW 7037 <i>C. eucalypti</i>	--ACACCATA	CCCT-----	--ACACGGCG	GCCCAC-GCA
CWM 7038 <i>C. eucalypti</i>	--ACACCATA	CCCT-----	--ACACGGCG	GCCCAC-GCA
CMW 7036 <i>C. eucalypti</i>	--ACACCATA	CCCT-----	--ACACGGCG	GCCCAC-GCA
CMW 6245 <i>Endothiella</i> sp.	--ACACCATA	CCCT-----	--GCACGGCG	GCCCAC-GCA
CMW 6246 <i>Endothiella</i> sp.	--ACACCATA	CCCT-----	--GCACGGCG	GCCCAC-GCA
CMW 6249 <i>Endothiella</i> sp.	--ACACCATA	CCCT-----	--GCACGGCG	GCCCAC-GCA
CMW 6244 <i>Endothiella</i> sp.	--ACACCATA	CCCT-----	--GCACGGCG	GCCCAC-GCA
CMW 10729 <i>Endothiella</i> sp.	--ACACCATA	CCCT-----	--GCACGGCG	GCCCAC-GCA
CRY 1543 <i>C. macrospora</i>	--CTACCTCG	GCTT-----	CCCCAGCAAG	ATAGAC-GCG
CMW 7047 <i>C. parasitica</i>	--CTATCTCG	GCTT-----	CCCAAGCAAG	ACAGAC-GCG
CMW 7048 <i>C. parasitica</i>	--CTATCTCG	GCTT-----	CCCAAGCAAG	ACAGAC-GCG
CMW 1651 <i>C. parasitica</i>	--CTATCTCG	GCTT-----	CCCAAGCAAG	ACAGAC-GCG
CMW 1652 <i>C. parasitica</i>	--CTATCTCG	GCTT-----	CCCAAGCAAG	ACAGAC-GCG
CMW 2091 <i>E. gyrosa</i>	CAGGCAAACC	ATCTCCGGCG	A-GCACGGCC	-TCGACAGCG
CMW 7042 <i>E. gyrosa</i>	CAGGCAAACC	ATCTCCGGCG	A-GCACGGCC	-TCGACAGCG
CMW 7045 <i>E. gyrosa</i>	CAGGCAAACC	ATCTCCGGCG	A-GCACGGCC	-TCGACAGCG
CMW 7046 <i>E. singularis</i>	CAGGCAAACC	ATCTCCGGCG	A-GCATGGCC	-TCGACAGCA
CMW 5288 <i>D. ambigua</i>	--TCGTATCC	CCT-----G	CCCCTGGTTC	TCGTCC----

	690	700	710	720
CMW 7037 <i>C. eucalypti</i>	AGATGGACGC	GGCTCG-G-G	CTCTCCT---	-----
CWM 7038 <i>C. eucalypti</i>	AGATGGACGC	GGCCCCG-G-G	CTCTCCT---	-----
CMW 7036 <i>C. eucalypti</i>	AGATGGACGC	GGCTCG-G-G	CTTTCCT---	-----
CMW 6245 <i>Endothiella</i> sp.	AGATGGACGC	GGCTCG-G-G	CTTTCCT---	-----
CMW 6246 <i>Endothiella</i> sp.	AGATGGACGC	GGCTCG-G-G	CTTTCCT---	-----
CMW 6249 <i>Endothiella</i> sp.	AGATGGACGC	GGCTCG-G-G	CTTTCCT---	-----
CMW 6244 <i>Endothiella</i> sp.	AGATGGACGC	GGCTCG-G-G	CTTTCCT---	-----
CMW 10729 <i>Endothiella</i> sp.	AGATGGACGC	GGCTCG-G-G	CTTTCCT---	-----
CRY 1543 <i>C. macrospora</i>	ACTTG-----	-----TGAG	CTTTCCT---	-----
CMW 7047 <i>C. parasitica</i>	ACTT-----	-----GAG	CTTTCCT---	-----
CMW 7048 <i>C. parasitica</i>	ACTT-----	-----GAG	CTTTCCT---	-----
CMW 1651 <i>C. parasitica</i>	ACTT-----	-----GAG	CTTTCCT---	-----
CMW 1652 <i>C. parasitica</i>	ACTT-----	-----GAG	CTTTCCT---	-----
CMW 2091 <i>E. gyrosa</i>	ATGGCGTGTA	T-----GTT	GTACCCTACT	GCTGCCCGGC
CMW 7042 <i>E. gyrosa</i>	ATGGCGTGTA	T-----GTT	GTACCCTACT	GCTGCCCGGC
CMW 7045 <i>E. gyrosa</i>	ATGGCGTGTA	T-----GTT	GTACCCTACT	GCTGCCCGGC
CMW 7046 <i>E. singularis</i>	ATGGCGTGTA	T----GTACT	CTACC-T-CG	GCTTCCCCAG
CMW 5288 <i>D. ambigua</i>	-----	-----	TCTCCCT-CG	GCTT-----

		730	740	750	760
CMW 7037	<i>C. eucalypti</i>	-----	-----	-----GCT	GACCA--CCC
CWM 7038	<i>C. eucalypti</i>	-----	-----	-----GCT	GACCA--CCC
CMW 7036	<i>C. eucalypti</i>	-----	-----	-----GCT	AACCA--CCC
CMW 6245	<i>Endothiella</i> sp.	-----	-----	-----GCT	GACCA--CCC
CMW 6246	<i>Endothiella</i> sp.	-----	-----	-----GCT	GACCA--CCC
CMW 6249	<i>Endothiella</i> sp.	-----	-----	-----GCT	GACCA--CCC
CMW 6244	<i>Endothiella</i> sp.	-----	-----	-----GCT	GACCA--CCC
CMW 10729	<i>Endothiella</i> sp.	-----	-----	-----GCT	GACCA--CCC
CRY 1543	<i>C. macrospora</i>	-----	-----	-----GCT	GACGA---CC
CMW 7047	<i>C. parasitica</i>	-----	-----	-----GCT	GACCA---CC
CMW 7048	<i>C. parasitica</i>	-----	-----	-----GCT	GACCA---CC
CMW 1651	<i>C. parasitica</i>	-----	-----	-----GCT	GACCA---CC
CMW 1652	<i>C. parasitica</i>	-----	-----	-----GCT	GACCA---CC
CMW 2091	<i>E. gyrosa</i>	CGACGCGCTC	GGGCCCTTCC	CC-----GCT	GACCA---CC
CMW 7042	<i>E. gyrosa</i>	CGACGCGCTC	GGGCCCTTCC	CC-----GCT	GACCA---CC
CMW 7045	<i>E. gyrosa</i>	CGACGCGCTC	GGGCCCTTCC	CC-----GCT	GACCA---CC
CMW 7046	<i>E. singularis</i>	CAAGATAGAC	GCG-ACTTGT	GAGACTTCT	GCTGATCACC
CMW 5288	<i>D. ambigua</i>	-----	-----	-----GGC	ACTGACAAC

		770	780	790	800
CMW 7037	<i>C. eucalypti</i>	GCATAGC---	-----	---TACAACG	GCACCTCCGA
CWM 7038	<i>C. eucalypti</i>	GCATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 7036	<i>C. eucalypti</i>	GCGTAGC---	-----	---TACAACG	GCACCTCCGA
CMW 6245	<i>Endothiella</i> sp.	GCATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 6246	<i>Endothiella</i> sp.	GCATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 6249	<i>Endothiella</i> sp.	GCATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 6244	<i>Endothiella</i> sp.	GCATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 10729	<i>Endothiella</i> sp.	GCATAGC---	-----	---TACAACG	GCACCTCCGA
CRY 1543	<i>C. macrospora</i>	ACATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 7047	<i>C. parasitica</i>	ACATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 7048	<i>C. parasitica</i>	ACATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 1651	<i>C. parasitica</i>	ACATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 1652	<i>C. parasitica</i>	ACATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 2091	<i>E. gyrosa</i>	GCACAGC---	-----	---TACAACG	GCACCTCCGA
CMW 7042	<i>E. gyrosa</i>	GCACAGC---	-----	---TACAACG	GCACCTCCGA
CMW 7045	<i>E. gyrosa</i>	GCACAGC---	-----	---TACAACG	GCACCTCCGA
CMW 7046	<i>E. singularis</i>	ACATAGC---	-----	---TACAACG	GCACCTCCGA
CMW 5288	<i>D. ambigua</i>	GCACAGT---	-----	---TACAACG	GCACCTCCGA

		810	820	830	840
CMW 7037	<i>C. eucalypti</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CWM 7038	<i>C. eucalypti</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 7036	<i>C. eucalypti</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 6245	<i>Endothiella</i> sp.	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 6246	<i>Endothiella</i> sp.	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 6249	<i>Endothiella</i> sp.	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 6244	<i>Endothiella</i> sp.	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 10729	<i>Endothiella</i> sp.	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CRY 1543	<i>C. macrospora</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 7047	<i>C. parasitica</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TTAACGAGGT
CMW 7048	<i>C. parasitica</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TTAACGAGGT
CMW 1651	<i>C. parasitica</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TTAACGAGGT
CMW 1652	<i>C. parasitica</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TTAACGAGGT
CMW 2091	<i>E. gyrosa</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 7042	<i>E. gyrosa</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 7045	<i>E. gyrosa</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 7046	<i>E. singularis</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
CMW 5288	<i>D. ambigua</i>	GCTCC-AGCT	CGAGCGCATG	AACGTCTACT	TCAACGAGGT
		850	860	870	880
CMW 7037	<i>C. eucalypti</i>	ATGTC-TTAT	CGGGTGAC-C	AGGCC-TCGA	GCCATCATCC
CWM 7038	<i>C. eucalypti</i>	ATGTC-TTAT	CGGGTGAC-C	AGGCC-TCGA	GCCAGCATCC
CMW 7036	<i>C. eucalypti</i>	ATGTC-TTGT	CGGCTGAC-C	AGGCC-TCCA	GCCATCATCC
CMW 6245	<i>Endothiella</i> sp.	ATGTC-TTAT	CGGCTGGC-C	AGGCC-TCGA	GCCATCATCC
CMW 6246	<i>Endothiella</i> sp.	ATGTC-TTAT	CGGCTGGC-C	AGGCC-TCGA	GCCATCATCC
CMW 6249	<i>Endothiella</i> sp.	ATGTC-TTAT	CGGCTGGC-C	AGGCC-TCGA	GCCATCATCC
CMW 6244	<i>Endothiella</i> sp.	ATGTC-TTAT	CGGCTGGC-C	AGGCC-TCGA	GCCATCATCC
CMW 10729	<i>Endothiella</i> sp.	ATGTC-TTAT	CGGCTGGC-C	AGGCC-TCGA	GCCATCATCC
CRY 1543	<i>C. macrospora</i>	ATGTC-TTAT	CGGGTGAC-C	AGGC--TCGA	GCATCCATCT
CMW 7047	<i>C. parasitica</i>	ATGTC-TTAT	CGGGTGAT-C	AAGC--TCAA	GCTTCCA-CC
CMW 7048	<i>C. parasitica</i>	ATGTC-TTAT	CGGGTGAT-C	AAGC--TCAA	GCTTCCA-CC
CMW 1651	<i>C. parasitica</i>	ATGTC-TTAT	CGGGTGATAC	AAGC--TCAA	GCTTCCA-CC
CMW 1652	<i>C. parasitica</i>	ATGTC-TTAT	CGGGTGAT-C	AAGC--TCAA	GCTTC-A-CC
CMW 2091	<i>E. gyrosa</i>	ATGTC--TAT	GGGGG-AC-C	AGGCCCTGGC	GTGGCCCC--
CMW 7042	<i>E. gyrosa</i>	ATGTC--TAT	GGGGG-AC-C	AGGCCCTGGC	GTGGCCCC--
CMW 7045	<i>E. gyrosa</i>	ATGTC--TAT	GGGGG-AC-C	AGGCCCTGGC	GTGGCCCC--
CMW 7046	<i>E. singularis</i>	ATGTC-TTAT	CGGGTGAC-C	AGGC--TCGA	GCATCCATCT
CMW 5288	<i>D. ambigua</i>	AAGTC-----	-----AA-C	AG-CCACGTC	GTCAATTCAA

		890	900	910	920
CMW 7037	<i>C. eucalypti</i>	TGCCTCCTCC	CTCCTCATCC	CC--TCGGGG	CTTTTGTGGC
CWM 7038	<i>C. eucalypti</i>	TGCCTCCTGC	CTCCTCATCC	CC--TCGGGG	CTTTTGTGGC
CMW 7036	<i>C. eucalypti</i>	TGCCTCCTGC	CTCCTCCTTC	CA--TCGGGA	CTTCTGTGGC
CMW 6245	<i>Endothiella</i> sp.	TGCCTCCTGC	CTCCTCCTTC	CC--TCGGGA	CTTTTGTGGC
CMW 6246	<i>Endothiella</i> sp.	TGCCTCCTGC	CTCCTCCTTC	CC--TCGGGA	CTTTTGTGGC
CMW 6249	<i>Endothiella</i> sp.	TGCCTCCTGC	CTCCTCCTTC	CC--TCGGGA	CTTTTGTGGC
CMW 6244	<i>Endothiella</i> sp.	TGCCTCCTGC	CTCCTCCTTC	CC--TCGGGA	CTTTTGTGGC
CMW 10729	<i>Endothiella</i> sp.	TGCCTCCTGC	CTCCTCCTTC	CC--TCGGGA	CTTTTGTGGC
CRY 1543	<i>C. macrospora</i>	CAA----CCC	CCCCCCCCTC	C----CAAAT	CCCGGGCCCC
CMW 7047	<i>C. parasitica</i>	TCGG-CCACC	CCCCCCCCCC	C-TTTCCGGG	G-CCCTC---
CMW 7048	<i>C. parasitica</i>	TCGG-CCAAC	CCCCCCCCCC	C-TTTCCGGG	G-CCCTC---
CMW 1651	<i>C. parasitica</i>	TGGG-CCAAC	CCCCCCCCCC	C-TTTCCGGG	G-CCTTC---
CMW 1652	<i>C. parasitica</i>	TCGG--CAAC	CCCCCCCCCC	C-TTTCCGGG	G-CCTT----
CMW 2091	<i>E. gyrosa</i>	-GCCCGCGGC	CCC-----	-----	-TGGCGTG-A
CMW 7042	<i>E. gyrosa</i>	-GCCCGCGGC	CCC-----	-----	-TGGCGTG-A
CMW 7045	<i>E. gyrosa</i>	-GCCCGCGGC	CCC-----	-----	-TGGCGTG-A
CMW 7046	<i>E. singularis</i>	-----CAGC	CCACCCCTGT	TCCCTC-CAC	TTCTGGTACA
CMW 5288	<i>D. ambigua</i>	ATTTGACAAC	CTACGGCATG	G-TTTCCCGC	CGTCG-----

		930	940	950	960
CMW 7037	<i>C. eucalypti</i>	CT-GACC---	-----G	AGCTTGCCCT	TCTGACGCGT
CWM 7038	<i>C. eucalypti</i>	CT-GACC---	-----G	AGCCTGCCCT	TCTGACGCGT
CMW 7036	<i>C. eucalypti</i>	CT-GACC---	-----G	AGCTTGCCCT	TCTGACGCGT
CMW 6245	<i>Endothiella</i> sp.	CT-GACC---	-----G	AGCTTGCCCT	TCTGACGCGT
CMW 6246	<i>Endothiella</i> sp.	CT-GACC---	-----G	AGCTTGCCCT	TCTGACGCGT
CMW 6249	<i>Endothiella</i> sp.	CT-GACC---	-----G	AGCTTGCCCT	TCTGACGCGT
CMW 6244	<i>Endothiella</i> sp.	CT-GACC---	-----G	AGCTTGCCCT	TCTGACGCGT
CMW 10729	<i>Endothiella</i> sp.	CT-GACC---	-----G	AGCTTGCCCT	TCTGACGCGT
CRY 1543	<i>C. macrospora</i>	TC-GACTTCT	GGCATAGGCG	AGCTTCCTCT	TCTGACGCGC
CMW 7047	<i>C. parasitica</i>	---GACTTCT	GGTATAGGCG	AGCTTCCTCT	TCTGACGCGC
CMW 7048	<i>C. parasitica</i>	---GACTTCT	GGTATAGGCG	AGCTTCCTCT	TCTGACGCGC
CMW 1651	<i>C. parasitica</i>	-T-GACTTCT	GGTATAGGCG	AGCATCCTCT	TCTGACGCGC
CMW 1652	<i>C. parasitica</i>	---GACTTCT	GGTATAGGCG	AGCTTCCTCT	TCTGACGCGC
CMW 2091	<i>E. gyrosa</i>	CC-----	-----G	AGCTCCCA--	-CTGACGCGC
CMW 7042	<i>E. gyrosa</i>	CC-----	-----G	AGCTCCCA--	-CTGACGCGC
CMW 7045	<i>E. gyrosa</i>	CC-----	-----G	AGCTCCCA--	-CTGACGCGC
CMW 7046	<i>E. singularis</i>	GGC-----	-----G	AGCTTCCTCT	TCTGACGCGC
CMW 5288	<i>D. ambigua</i>	-----CCAAG	GCTTG-----	-----	-CTAACGCAT

	970	980	990	1000
CMW 7037 <i>C. eucalypti</i>	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TTCCCCGCGC
CWM 7038 <i>C. eucalypti</i>	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TTCCCCGCGC
CMW 7036 <i>C. eucalypti</i>	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TTCCCCGCGC
CMW 6245 <i>Endothiella</i> sp.	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CMW 6246 <i>Endothiella</i> sp.	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CMW 6249 <i>Endothiella</i> sp.	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CMW 6244 <i>Endothiella</i> sp.	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CMW 10729 <i>Endothiella</i> sp.	TTCTCGTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CRY 1543 <i>C. macrospora</i>	TTCTTATCCA	G-CCTCCAGC	AACAAGTATG	TTCCCCGCGC
CMW 7047 <i>C. parasitica</i>	TTCTTGTCCA	GGCCTCCGGC	AACAAGTATG	TTCCCCGCGC
CMW 7048 <i>C. parasitica</i>	TTCTTGTCCA	GGCCTCCGGC	AACAAGTATG	TTCCCCGCGC
CMW 1651 <i>C. parasitica</i>	TTCTTGTCCA	GGCCTCCGGC	AACAAGTATG	TTCCCCGCGC
CMW 1652 <i>C. parasitica</i>	TTCTTGTCCA	GGCCTCCGGC	AACAAGTATG	TTCCCCGCGC
CMW 2091 <i>E. gyrosa</i>	TCCT-GTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CMW 7042 <i>E. gyrosa</i>	TCCT-GTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CMW 7045 <i>E. gyrosa</i>	TCCT-GTCCA	GGCCTCCGGC	AACAAGTATG	TCCCCCGCGC
CMW 7046 <i>E. singularis</i>	TTCTTATCCA	GGCCTCCAGC	AACAAGTATG	TTCCCCGCGC
CMW 5288 <i>D. ambigua</i>	TTATCGCCCA	GGCCTCCGGC	AACAAGTATG	TGCTCGCGC

	1010	1020	1030	1040
CMW 7037 <i>C. eucalypti</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CWM 7038 <i>C. eucalypti</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 7036 <i>C. eucalypti</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 6245 <i>Endothiella</i> sp.	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 6246 <i>Endothiella</i> sp.	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 6249 <i>Endothiella</i> sp.	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 6244 <i>Endothiella</i> sp.	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 10729 <i>Endothiella</i> sp.	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CRY 1543 <i>C. macrospora</i>	AGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 7047 <i>C. parasitica</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 7048 <i>C. parasitica</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 1651 <i>C. parasitica</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 1652 <i>C. parasitica</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGATGCCGTC
CMW 2091 <i>E. gyrosa</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGACGCCGTC
CMW 7042 <i>E. gyrosa</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGACGCCGTC
CMW 7045 <i>E. gyrosa</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGACGCCGTC
CMW 7046 <i>E. singularis</i>	TGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGACGCCGTC
CMW 5288 <i>D. ambigua</i>	CGTCCTCGTC	GATCTCGAGC	CCGGTACCAT	GGACGCCGTC

	1050	1060	1070	1080
CMW 7037 <i>C. eucalypti</i>	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CWM 7038 <i>C. eucalypti</i>	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CMW 7036 <i>C. eucalypti</i>	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CMW 6245 <i>Endothiella</i> sp.	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CMW 6246 <i>Endothiella</i> sp.	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CMW 6249 <i>Endothiella</i> sp.	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CMW 6244 <i>Endothiella</i> sp.	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CMW 10729 <i>Endothiella</i> sp.	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGT	CCCGACAAC
CRY 1543 <i>C. macrospora</i>	CGCGCCGGCC	CCTTTGGTCA	GCTGTTCCGT	CCCGACAAC
CMW 7047 <i>C. parasitica</i>	CGCGCTGGCC	CCTTTGGTCA	GCTGTTCCGT	CCCGACAAC
CMW 7048 <i>C. parasitica</i>	CGCGCTGGCC	CCTTTGGTCA	GCTGTTCCGT	CCCGACAAC
CMW 1651 <i>C. parasitica</i>	CGCGCTGGCC	CCTTTGGTCA	GCTGTTCCGT	CCCGACAAC
CMW 1652 <i>C. parasitica</i>	CGCGCTGGCC	CCTTTGGTCA	GCTGTTCCGT	CCCGACAAC
CMW 2091 <i>E. gyrosa</i>	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGC	CCCGACAAC
CMW 7042 <i>E. gyrosa</i>	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGC	CCCGACAAC
CMW 7045 <i>E. gyrosa</i>	CGCGCCGGCC	CCTTCGGCCA	GCTGTTCCGC	CCCGACAAC
CMW 7046 <i>E. singularis</i>	CGCGCCGGCC	CCTTTGGCCA	GCTGTTCCGT	CCCGACAAC
CMW 5288 <i>D. ambigua</i>	CGTGCCGGTC	CCTTCGGCCA	GCTGTTCCGC	CCCGACAAC

	1090	1097
CMW 7037 <i>C. eucalypti</i>	TCGTCTTCGG	CCAGTCC
CWM 7038 <i>C. eucalypti</i>	TCGTCTTCGG	CCAGTCC
CMW 7036 <i>C. eucalypti</i>	TCGTCTTCGG	CCAGTCC
CMW 6245 <i>Endothiella</i> sp.	TCGTCTTCGG	CCAGTCC
CMW 6246 <i>Endothiella</i> sp.	TCGTCTTCGG	CCAGTCC
CMW 6249 <i>Endothiella</i> sp.	TCGTCTTCGG	CCAGTCC
CMW 6244 <i>Endothiella</i> sp.	TCGTCTTCGG	CCAGTCC
CMW 10729 <i>Endothiella</i> sp.	TCGTCTTCGG	CCAGTCC
CRY 1543 <i>C. macrospora</i>	TCGTCTTTGG	CCAGTCC
CMW 7047 <i>C. parasitica</i>	TCGTCTTTGG	CCAGTCC
CMW 7048 <i>C. parasitica</i>	TCGTCTTTGG	CCAGTCC
CMW 1651 <i>C. parasitica</i>	TCGTCTTTGG	CCAGTCC
CMW 1652 <i>C. parasitica</i>	TCGTCTTTGG	CCAGTCC
CMW 2091 <i>E. gyrosa</i>	TCGTCTTCGG	CCAGTCC
CMW 7042 <i>E. gyrosa</i>	TCGTCTTCGG	CCAGTCC
CMW 7045 <i>E. gyrosa</i>	TCGTCTTCGG	CCAGTCC
CMW 7046 <i>E. singularis</i>	TCGTCTTTGG	CCAGTCC
CMW 5288 <i>D. ambigua</i>	TCGTCTTCGG	CCAGTCC