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PERSOONIA *Reflections*

Beware of your dishwasher!

Your dishwasher probably harbours a fungus that is potentially able to grow in your brain. This disturbing news was presented by Polona Zalar at a Workshop on Black yeasts in Slovenia, May 2010, with data from a worldwide sampling study. Dishwashers appeared to be an excellent environment for fungi that we otherwise extract from nature only with great efforts and sophisticated isolation methods. Earlier also bathrooms, steambaths and swimming pools had been found positive for an array of black fungi that are otherwise known from human infections (Matos et al. 2002, Lian & de Hoog 2010). This waterborne mycobiota has large health implications, and has systematically been neglected in indoor studies.

The workshop was organised by Nina Gunde-Cimerman and colleagues. The very different backgrounds of the 50 participants reflected the highly diverse ecologies of the black yeasts and allies. A recent lecture by Cecile Gueidan given at the International Mycological Congress in Edinburgh, last August, provided a beautiful summary of the fascinating diversity of life styles of these fungi. *Chaetothyriales* are notorious for their morbid opportunism on healthy humans. People finally die after a chronic but devastating disease process (Li et al. 2010). Where does this ability come from? Cecile investigated the ancestral lineages of *Chaetothyriales*, and encountered bizarre ecologies only: growth on bare rock, in the nests of ants and making up living communication tunnels, as species-specific symbionts of mosses, in the deep sea – and frequently on humans, frogs, toads and fishes. Do any of these habitats give clues to understanding their virulence?

Not only opportunism is striking in the *Chaetothyriales*, but also their association with highly toxic hydrocarbons. Francesc Prenafeta-Boldú and colleagues had described this remarkable combination of features as 'dual ecology' (Frenafeta-Boldú et al. 2006). It reminds one of *Cryptococcus neoformans* which uses laccase to decompose monoaromates, enabling dopamin assimilation which explains its neurotropism in the human host. Also the black yeasts comprise neurotropes, such as the BioSafety Level-3 pathogens *Cladophialophora bantiana* and *Rhinocladiella mackenziei*. Dual ecology may have its roots in ant-symbiosis. From the work of Rumsais Blatrix and Veronika Mayer it appeared that alkylbenzenes are essential compounds in ant ecology: the insects communicate with each other using a wide diversity of derivatives, and keep their nests free from microbial contamination by a massive production of creosote-like compounds. It has been known since the early studies of June Wang that creosoted wood is an excellent enrichment source for black yeasts (Wang & Zabel 1990). And the habit to grow with toxic compounds may stem from their ancestral habit to grow with lichens, which are active producers of an array of secondary metabolites. This closes the circle and links degradation of peculiar classes of chemical compounds with accidental but highly effective opportunism – a remarkable example of ecological fit and allowing drastic host jumps (Sudhadham et al. 2008).

Dothidealean black yeasts are perhaps even more bizarre. They live at the edge of life, as extremophiles on bare rock in the Antarctic or on sun-littered buildings of the Mediterranean where summer temperatures may rise till over 60 °C. Others massively colonise the heavily irradiating remains of the Chernobyl nuclear power plant. Black fungi may even benefit from radioactivity (Dadachova et al. 2007). This fits with their ancestral position in phylogenetic trees indicating their possible prevalence in prehistoric ages when the atmosphere allowed more radiation than today. They are also found in salterns in hot waters near the NaCl saturation point, and colonise galvanisation jars at a pH below 1. Their specialised mechanisms to cope with increased osmolarity also enable them to cope with other types of stress (Plemenitas et al. 2008). Silvano Onofri presented experiments with *Cryomyces* in the Space Shuttle, where the Antarctic extremophile was subjected to conditions of the extraterrestrial. The fungus was not harmed in any way (Onofri et al. 2008). It therefore provides an excellent model for space research: if anything will ever appear to live on the planet Mars, it will look like a *Cryomyces*.

Here again we had the central research question: why do these fungi thrive in such difficult environments? They disappear when conditions become milder, and some might therefore be good markers of climate change: they will be among the first Antarctic fungi to become extinct, after having survived the extreme successfully for millions of years (Selbmann et al. 2005). But their weakness is that they are utterly unable to cope with competition of fellow microbes that are moving in with more permissive climatic conditions. On the other hand, an extremophile like *Friedmanniomyces antarcticus* is also involved in a finely tuned interplay of algae, cyanobacteria and black fungi inside rock called the 'cryptendolithic community', together surviving the climate of Antarctica's Dry Valleys, the World's most hostile place to live (Friedmann & Ocampo 1976).

The black yeasts are a Wonder World of inventive solutions to environmental challenge. They are closer to us than we realised until recently, and they harbour a wealth of undescribed diversity. The Black Yeast Working Group, which functions under the auspices of the International Society for Human and Animal Mycology (ISHAM) has opened a Pandora's box of ecologies. The implications are good and bad: we need to become aware of the health risk of these fungi, without neglecting their potential applications in agriculture, industry, medicine, and bioremediation.

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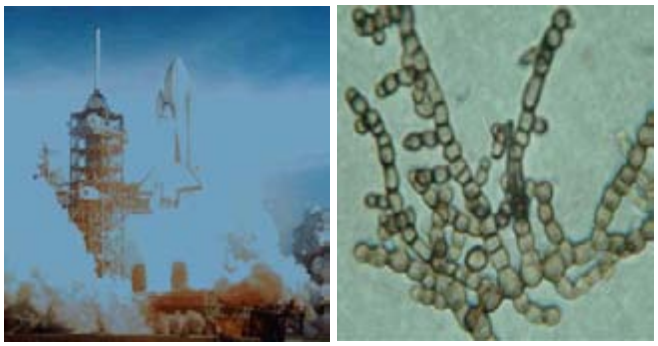

Launch of the Space Shuttle. *Cryomyces* species (right) were used for experiments in outer space by the European Space Agency in the Columbus space laboratory in 2009.

Report on the IMC9, 1–6 August 2010 – Edinburgh

The 9th International Mycological Congress, which was organised by the British Mycological Society, was held in Edinburgh during the first week of August 2010. The meeting, which is widely seen as the 'Olympiad of Mycology', was attended by close to 1 800 mycologists, and included close to 500 different speakers, which by itself is quite an accomplishment. Due to the limited time available to fit 'mycology' into a single week, a selection of 30-odd symposia were presented as Special Interest Groups the Sunday before the official opening of the meeting. This year the programme had a specific theme, namely 'The Biology of Fungi', which catered for different disciplines in mycology (Cell Biology, Biochemistry and Physiology; Evolution, Biodiversity and Systematics; Genomics, Genetics and Molecular Biology; Pathogenesis and Disease Control; Environment, Ecology and Interactions).

Each of the five disciplines had one slot for a plenary speaker, and a chair and committee to help select symposia and symposia chairs, and these then again selected the speakers for their symposia, which made it quite a complicated process. In spite of this, however, the resulting programme was extremely exciting, and basically catered for all. Details of the program can be found at http://www.imc9.info/programme.htm. The congress kicked off with a keynote by **John Taylor**, wearing a Scottish kilt, and citing Scottish poetry in a keynote address titled *The poetry of mycological accomplishment and challenge*. The plenary speakers representing the different themes were: **Alastair Fitter** (York University, UK) – *A forgotten phylum*?; **Joseph Heitman** (Duke University, USA) – *Microbial pathogens in the fungal kingdom*; **David Hibbett** (Clark University, USA) – *Knowing and growing the fungal tree of life*; **Nancy Keller** (UW Madison, USA) – *Unlocking the fungal treasure box*; **Gero Steinberg** (Exeter University, UK) – *Organelle transport in fungi - stochastic or controlled?*; **Nick Talbot** (Exeter University, UK) – *Welcome to the pressure dome: investigating the molecular genetics of plant infection by the rice blast fungus*. Other noteworthy happenings were the official launch of the journal of the International Mycological Association '*IMA Fungus – The global mycological journal'*. David Hawksworth will be acting as Editor-in-Chief, while the Executive Committee elected for the coming 4 years will be associate editors. The journal will cover all aspects of mycology, and is peer-reviewed, open-access, full colour, and fast track, appearing in June and December (www.imafungus.org), and from January 2011 onwards, will also be hosted online via IngentaConnect. Other exciting happenings related to the nomenclature sessions convened by David Hawksworth, and moderated by Ronald Petersen. Based on a questionnaire, delegates voted to be overwhelmingly in favour of adopting the concept of registration of names via MycoBank, the name repository of the IMA. Finally, during the closing ceremony the IMA bestowed awards upon several deserving mycologists, namely Franz Oberwinkler was awarded the de Bary medal for outstanding research. Two Ainsworth medals were awarded for extraordinary service to world mycology, namely to Emory Simmons and to Richard Korf (letters of nomination can be read on www.ima-mycology.org). The meeting closed with Emory Simmons drumming up support for everyone to again meet in 2014, namely at the IMCX which will be held in Bangkok, Thailand, under the guidance of Leka Manoch, of Kasetsart University. For more photos of the event, kindly visit www.ima-mycology.org, and www.IMC9.info.

IMC9 Edinburgh: a selection of mycologists and memorable events that made the meeting a great success.


Nectriella rusci

Fungal Planet 50 – 23 December 2010

Nectriella rusci Lechat, Lowen & Gardiennet, *sp. nov.*

Anamorph. Acremonium-like.

Ascomata subglobosa, immersa, haud stromatica 180–220 µm diam, aurantia vel pallide luteis, immutabilia in 3 % KOH vel acido lactico. Paries peritheciorum 20–25 µm lata. Asci clavatos (53–)60–70(–75) × 8.5–10(–12) µm (m = 63.4 × 9.2 µm, n = 20), octospori, unitunicati, ascosporis biserialibus. Ascosporae ab ellipsoideis ad fusiformes (12.5–)13–14.5(–17) × 2.8–3.2 µm (m = 14.2 × 3 µm, n = 20), uniseptatae, hyalinae, spinosae. Status asexualis Acremonii similis.

Etymology. The epithet *rusci* refers to the substratum *Ruscus aculeatus*.

Ascomata scattered singly or in groups of 2–5, subglobose, 180–220 µm diam, non-stromatic, totally immersed in host tissues, with only the rounded apex of papilla protruding at surface of periderm, at first orange-yellow, then pale yellow, not changing colour in 3 % KOH or lactic acid, completely covered by thick-walled, intertwined hyphae, except ostiolar region, 1.5–2.5 µm diam with wall 0.5–1 µm thick, hyaline. *Apex* of papilla composed of thin-walled, cylindrical to clavate cells, 8–12 × 2–2.8 µm. *Ascomatal wall* comprised of intertwined hyphae, 20–25 µm thick, of a single region composed of globose to ellipsoidal cells, 2.5–8 × 1.5–2.5 µm, hyaline to pale yellowish, thick-walled, wall 0.7–1.5(–2) µm thick, becoming narrower and thin-walled toward centre. *Asci* clavate, (53–)60–70(–75) × 8.5–10(–12) µm (av. = 63.4 × 9.2 µm, n = 20), short-stipitate, apex rounded with an inconspicuous refractive apical ring, usually containing biseriate ascospores, completely filling each ascus, numerous asci in which 2–4 of 8 ascospores are aborted. *Ascospores* ellipsoidal to fusiform with rounded ends, (12.5–)13–14.5(–17) × 2.8–3.2 µm (av. = 14.2 × 3 µm, n = 20), 1-septate, not constricted at septum, hyaline, spinulose.

Culture characteristics — Colony grown at 25 °C, on 2 % Difco potato-dextrose agar with 5 mg/L streptomycin, pale pinkish white, reaching 4–5 cm diam after 2 wk. Hyphae smooth, 2–3 µm diam. Conidiophores long, subcylindrical, monophialidic 70–100 µm long, 2–3 µm diam, 1–2-septate, simple or stalked with two secondary branches, sporulating in middle of colony, some orthophialides observed. Conidia ellipsoidal to subcylindrical, hyaline, smooth, non-septate, hyaline, smooth, (4.5–)5–12(–18) × 2.5–4.8(–5.2) µm (av. = 8.4 × 4.5 µm, n = 30). Abscission scar basal, minute.

Typus. France, Côte d'Or, Messigny et Vantoux, on cladodes of *Ruscus aculeatus*, 12 Dec. 2009, *A. Gardiennet*, deposited at Faculté de Pharmacie de Lille, France (LIP) AG09358 holotype, culture ex-type CBS 126457, MycoBank MB516770.

Notes — Through our ongoing research of hypocrealean fungi we discovered an undescribed species of *Nectriella* on the cladodes of *Ruscus aculeatus*. Although we have found many other hypocrealean fungi on this host, this is the first time a species of *Nectriella* is reported on *Ruscus*. *Nectriella rusci* is difficult to see because it is totally immersed in the tissues of the host and possesses very small pale yellow ascomata. This fungus is not described in Lowen (1991)[1] and Rossman et al. (1999)[2]; we did not find any species corresponding to our specimen. *Nectriella rusci* resembles *N. alpina* because of the intertwined hyphal wall but differs from *N. alpina* by its smaller ascospores, (12.5–)13–14.5(–17) × 2.8–3.2 µm vs (12.5–)13–17.5(–19) × 3.5–5(–7) µm, and hosts, *Arabidis* or *Saxifraga* vs *Ruscus aculeatus*.

Colour illustrations. Ascomata on host substratum; vertical section through ascomatal wall; asci and ascospores; conidiophore and conidia (C. Lechat). Scale bars = 10 µm.

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Sphaerographium nyssicola

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Sphaerographium nyssicola Minnis, Rossman & D.F. Farr, *sp. nov.*

Conidiis uniseptatis. Differt a *Sphaerographium tenuirostrum* conidiis longioribus, 20–29 µm longis.

Etymology. Named for its occurrence on overwintered, dead and fallen leaves of the genus *Nyssa*, the substrate from which the type was isolated.

Conidiomata pycnidial, superficial or immersed in agar, separate or confluent with walls partially fused, typically globose, glabrous, unilocular, black, 190–650 µm diam. *Ostioles* single or rarely two, on end of a concolorous neck up to 480 µm long or on a short papilla in neckless forms. *Conidiomatal wall* bilayered with a darkly pigmented outer layer of relatively thick-walled *textura angularis* and a hyaline inner layer of similarly shaped cells with thinner walls. *Conidiophores* covering inner wall layer, often branching at base and at times with secondary branching, smooth, hyaline, septate, 16–56 × 1.3–2.6 µm. *Conidiogenous cells* determinate, integrated or discrete, phialidic, cylindrical, walls smooth, hyaline, non-terminal cells producing conidia at a locus immediately below each apical septum, terminal cells 6.4–12 × 1.3–1.9 µm, collarette lacking. *Conidia* whitish in mass, solitary, fusiform, falcate, apex acute, base broadly acute to slightly rounded, walls smooth, hyaline, medianly 1-septate, eguttulate, vacuoles occasionally present, 20–29 × 1.9–2.6 µm.

Culture characteristics — Colonies 46–50 mm diam on potato-dextrose agar (Difco) after 14 d at 24 °C with a 12 h light/dark rhythm; mycelium at times scanty, superficial to more or less immersed, with aerial mycelium absent or present as a low, dense, white, velutinous to lanose mat; margin even to slightly lobed, colourless; pycnidia developing somewhat in a pattern of concentric rings; reverse colourless to white, pycnidia observable. Mycelium with hyphae branching, septate, walls smooth, hyaline, 1.3–3.8 µm diam.

Typus. USA, Maryland, Prince George's Co., Glenn Dale, U.S. Plant Introduction Station, 11601 Old Pond Dr., 38°58'00.49"N 76°48'12.78"W, on overwintered, dead and fallen leaves of *Nyssa* spp., May 2009, collected by *R.T. Olsen*, isolated by *A.M. Minnis* from BPI 880897 (sparse material associated with proposed epitype of *Sphaerella nyssicola*), BPI 881009 (dried culture on PDA, holotype); culture ex-holotype CBS 128284, GenBank ITS HQ338472, MycoBank MB519095.

Notes — *Sphaerographium* is a little known and rarely collected genus of coelomycetes. Recent work including a revision of the genus[2, 3] has reduced the number of species that are correctly classified in the genus to three. *Sphaerographium petiolicola*, known from *Sorbus* petioles in Europe, differs from the present species in having aseptate conidia; *S. squarrosum*, known from *Lonicera* twigs in Europe, differs in having 1–3 septate conidia; and *S. tenuirostrum*, known from *Camellia* petals in New Zealand, differs in having shorter (< 20 µm long) conidia[2, 3]. *Sphaerographium nyssicola* is the only species in the genus known from the USA.

No ITS sequences of *Sphaerographium* exist for species rank comparison; we have generated one for this new species and deposited it in GenBank as a DNA barcode for future work. A Blast search of the ITS sequence data in GenBank reveals an affinity with *Chaetomella* and *Pilidium*. Based on previous analyses using nSSU rDNA, these two coelomycetous genera along with *Sphaerographium* and others form a recently discovered lineage in the *Leotiomycetes*, *Ascomycota*[1]. It is presumed that *S. nyssicola* and the other species classified in the genus are saprobic. Significantly more sampling is needed to gain a better understanding of this genus. However, this information is more likely to come from chance encounters like the present one than directed efforts due to the difficulty in obtaining fresh collections[3].

Colour illustrations. Overwintered, dead and fallen leaves of *Nyssa* at topotype; conidiomata; conidiophores; conidia. Scale bars = 10 µm.

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Sphaceloma freyliniae

Fungal Planet 52 – 23 December 2010

Sphaceloma freyliniae Crous, *sp. nov.*

Sphacelomatis protearum simile, sed conidiis (3.5–)4–6(–7) × (2.5–)3–4 µm.

Etymology. Named after the host from which it was collected, *Frelinia lanceolata*.

Lesions foliicolous, amphigenous, irregular, red-brown with indistinct margins, 1–6 mm diam. *Mycelium* internal, consisting of hyaline to pale brown, smooth, 3–4 µm wide hyphae. *Conidiomata* sporodochial or acervular on leaves, cream to pale brown, wall composed of pale brown *textura angularis*, up to 300 µm diam. *Conidiophores* subcylindrical to doliiform or ampulliform, hyaline to pale brown, smooth, 0–2-septate, unbranched or branched below, 10–20 × 3.5–5 µm. *Conidiogenous cells* enteroblastic, polyphialidic, hyaline to pale brown, smooth-walled, subcylindrical to doliiform or ampulliform, 6–10 × 3.5–4.5 µm; collarettes and loci indistinct. *Conidia* hyaline, aseptate, ellipsoidal, apex obtuse, base subtruncate to bluntly rounded, (3.5–)4–6(–7) × (2.5–)3–4 µm in vitro.

Culture characteristics — (in the dark, 25 °C): Colonies slow growing, reaching 5 mm diam after 7 d. On oatmeal agar erumpent, with sparse to moderate aerial mycelium, and smooth, lobate margins; surface scarlet with patches of saffron. On malt extract agar and potato-dextrose agar saffron, with patches of scarlet.

Typus. South Africa, Western Cape Province, Cape Town, Kirstenbosch Botanical Garden, on leaves of *Freylinia lanceolata*, 8 May 2010, *P.W. Crous*, CBS-H 20485 holotype, cultures ex-type CPC 18336, 18335 = CBS 128204, ITS sequence of CPC 18335, GenBank HQ599577, MycoBank MB517530.

Notes — The genus *Freylinia* (*Scrophulariaceae*) is endemic to Africa, and has nine species that occur in South Africa. *Freylinia lanceolata* (common names: honeybells, honeybell bush, 'heuningklokkiesbos' in Afrikaans) is a small tree or shrub with golden-yellow, honey-scented, cylindrical flowers that occur in terminal heads on long, arching, drooping branches[1]. The ITS sequence of this species identifies its closest sister species to be *Elsinoë australis* (GenBank FJ010289; identity = 593/655 (91 %), gaps = 39/655 (5 %)).

Scab leaf disease, caused by *Sphaceloma freyliniae,* represents the first disease recorded on this host in South Africa[2].

Colour illustrations. Leaves of a *Freylinia lanceolata* tree in Kirstenbosch Botanical Garden with scab disease symptoms; honeybell flowers; sporodochia on host; conidiogenous cells giving rise to conidia; conidia. Scale bars = 10 µm.

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Anthostomella pinea

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Anthostomella pinea Crous, *sp. nov.*

Anthostomellae formosae similis, sed ascosporis majoribus, (15–)16–18 (–19) × (6–)7–8 µm, distinguitur.

Etymology. Named after the host from which it was collected, *Pinus*.

Ascomata immersed, solitary, ostiolar region papillate, black, shiny, globose, up to 300 µm diam, with central periphysate ostiolar canal, up to 30 µm; wall consisting of 3–4 layers of brown *textura angularis*. *Paraphyses* hyaline, septate, branched, with rounded ends, 3–4 µm wide, intermingled among asci, exceeding them in length. *Asci* 8-spored, subcylindrical, 70–140 × 5–6 µm, stipitate, unitunicate, with a bluntly rounded apex, apex not staining in Meltzer's reagent. *Ascospores* (15–)16–18(–19) × (6–)7–8 µm, uniseriate, ellipsoid to gibbose, smooth-walled, with a central guttule, consisting of a larger brown cell, 12–16 µm long, and a smaller, hyaline, basal dwarf cell, 2–3 µm long and 3 µm wide; with straight germ slit in middle of the spore, not covering the whole length of the spore; immature ascospores with mucoid sheath, up to 4 µm wide, but the sheath is not persistent, disappearing at maturity.

Culture characteristics — (in the dark, 25 °C): Colonies on oatmeal agar, potato-dextrose agar and malt extract agar cream to white, with moderate aerial mycelium; surface somewhat woolly, margins feathery; reverse cream. Colonies reaching 12 mm diam after 7 d, remaining sterile.

Typus. France, Rente de Mars, next to the Autogrill along the A31, 47°25.342'N 005°10.258'E, on needles of *Pinus* sp., 17 July 2010, *P.W. Crous*, CBS-H 20486 holotype, cultures ex-type CPC 18388, 18387 = CBS 128205, ITS sequence of CPC 18387 GenBank HQ599578, MycoBank MB517531.

Notes — Lu & Hyde[1] treat several species of *Anthostomella* that occur on *Pinaceae*, and need to be compared to this taxon. However, based on its ascospore dimensions and basal dwarf cell, the germ slit that does not cover the whole length of the spore, asci that do not stain in Meltzer's reagent, and lack any visible apical apparatus, the present collection appears to represent a novel species, described here as *A. pinea*. A megablast search in GenBank using the ITS sequence was mainly uninformative; mostly unnamed sequences such as '*Sordariomycetes* sp.' and '*Xylaria* sp' were obtained. The closest named hits were obtained with *Anthostomella conorum* (GenBank EU552099; Identities = 578/681 (85 %), Gaps = 54/681 (7 %)) and *Anthostomella proteae* (GenBank EU552101; Identities = 561/660 (85 %), Gaps = 44/660 (6%)).

Colour illustrations. Needles of *Pinus* sp.; ascomata on needle; asci with ascospores. Scale bars = 10 µm.

Reference. [1]Lu B, Hyde KD. 2000. A world monograph of Anthostomella. Fungal Diversity Research Series 4: 1–376.

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Fusicladium peltigericola

Fungal Planet 54 – 23 December 2010

Fusicladium peltigericola Crous & Diederich, *sp. nov.*

Conidiophora solitaria, erecta, subcylindrica, recta vel geniculata-sinuosa, non ramosa, 1–4(–7)-septata, 10–40(–90) × 3–4 µm, brunnea, laevia. Cellulae conidiogenae terminales, brunneae, laeviae, sympodialiter proliferantes, subcylindricae, 10–30 × 3–4 µm; cicatrices conidiales applanatae, inconspicuae vel leniter fuscatae, sed non refractivae et non incrassatae, 2–2.5 µm diam. Ramoconidia in 1–3 seriebus, subcylindrica, in medio unieuseptata, (27–)33–40(–65) × 4(–5) µm; conidia intercalaria et terminalia, subcylindrica, mediobrunnea, subtile verruculosa, 0–1-euseptata, (18–)25–33(–40) × (3.5–)4(–5) µm.

Etymology. Named after the lichen host from which it was collected, *Peltigera rufescens*.

Mycelium consisting of smooth, branched, septate, brown, 2–3 µm diam hyphae. *Conidiophores* solitary, erect, subcylindrical, straight to geniculous-sinuous, unbranched, 1–4(–7)-septate, 10–40(–90) × 3–4 µm, brown, smooth. *Conidiogenous cells* terminal, brown, smooth, proliferating sympodially, subcylindrical, rarely straight, mostly geniculate-sinuous, 10–30 × 3–4 µm; scars flattened, inconspicuous to somewhat darkened, but not refractive, not appearing thickened, 2–2.5 µm wide. *Ramoconidia* in 1–3 series, subcylindrical, medianly 1-euseptate, relatively thick-walled, medium brown, finely verruculose, basal hilum flattened, somewhat darkened, 2–2.5 µm wide, with one to several sympodial, apical loci; frequently with lateral branch up to 10 µm long, 3–4 µm wide, (27–)33–40(–65) × 4(–5) µm; older ramoconidia at times developing up to 3 septa; *intercalary* and *terminal conidia* subcylindrical, medium brown, finely verruculose, apex obtusely rounded or flattened, proliferating in sympodial fashion to form short chains of conidia, 0–1-euseptate; septum mostly in upper third of conidium, (18–)25–33(–40) × (3.5–)4(–5) µm; hila flattened, 2–2.5 µm wide, somewhat darkened, not thickened.

Culture characteristics — (in the dark, 25 °C): Colonies on oatmeal agar spreading, with moderate aerial mycelium; surface smooth, fuscous-black, margin lobate, smooth; reaching 15 mm diam after 1 mo. Colonies on cornmeal agar erumpent, spreading with dense, moderate aerial mycelium and lobate, smooth to feathery margins; colonies reaching 15 mm diam after 1 mo; surface olivaceous-grey to fuscous-black.

Typus. Luxembourg, Lamadelaine, in a disused quarry, on terricolous *Peltigera rufescens*, over galls induced by *Hawksworthiana peltigericola*, May 2008, *P. Diederich*, CBS-H 20487 holotype, culture ex-type CPC 15252 = CBS 128206, ITS sequence GenBank HQ599579, MycoBank MB517532.

Notes — The genus *Fusicladium* is recognised as anamorph of *Venturia*[1–3]. Presently no *Fusicladium* species are known from lichens, nor are there any DNA sequence data of similar species currently deposited in GenBank. The closest sister taxa in GenBank based on the ITS sequence are *Fusicladium betulae* (GenBank FJ839641; Identities = 459/464 (99 %), Gaps = 2/464 (0 %)), *Venturia tremulae* var. *tremulae* (GenBank EU035475; Identities = 704/712 (99 %), Gaps = 4/712 (0 %)) and *Venturia ditricha* (GenBank EU035456; Identities = 704/712 (99 %), Gaps = 4/712 (0 %)). Morphologically *F. peltigericola* is distinct from all taxa treated in the recent monograph by Schubert et al.[2] based on the combination of characters, namely its large, subcylindrical ramoconidia that become up to 3-septate, and its terminal conidia that become 1-septate in the upper third of the conidium. Although *F. peltigericola* was isolated from a *Peltigera* thallus colonised with *Hawksworthiana peltigericola* (which could not be cultivated), there was no conclusive macroscopic proof that *F. peltigericola* is lichenicolous. However, conidia isolated from the thallus took up to 2 wk to germinate, and grew extremely slowly for the first few months, suggesting that there may be an association with *P. rufescens*. Further collections would be required, however, to clarify its ecology.

Acknowledgement The authors acknowledge G. Marson for the background photograph.

Colour illustrations. *Peltigera rufescens*; conidiophores with conidiogenous cells giving rise to conidia. Scale bars = 10 µm.

References. [1]Beck A, Ritschel A, Schubert K, Braun U, Triebel D. 2005. Phylogenetic relationships of the anamorphic genus Fusicladium s. lat. as inferred by ITS nrDNA data. Mycological Progress 4: 111–116. [2]Schubert K, Ritschel A, Braun U. 2003. A monograph of Fusicladium s. lat. (hyphomycetes). Schlechtendalia 9: 1–132. [3]Crous PW, Schubert K, Braun U, Hoog GS de, Hocking AD, Shin H-D, Groenewald JZ. 2007. Opportunistic, human-pathogenic species in the Herpotrichiellaceae are phenotypically similar to saprobic or phytopathogenic species in the Venturiaceae. Studies in Mycology 58: 185–217.

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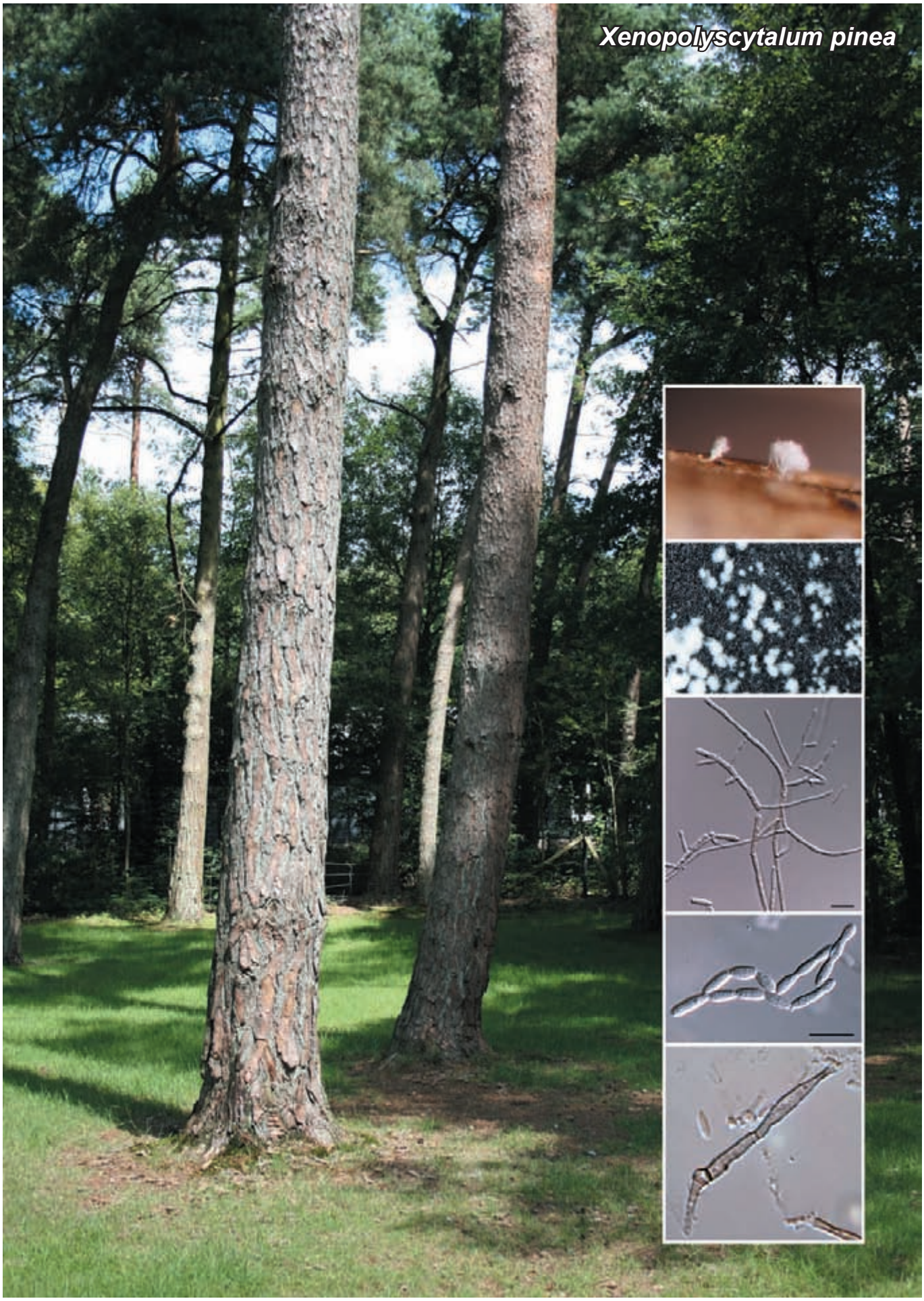
Xenopolyscytalum pinea

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Xenopolyscytalum Crous, *gen. nov.*

Polyscytalo morphologice simile, sed conidiis aseptatis cum hilis fuscatis et item statu synanamorphoso *chalaroide* discernitur.

Etymology. Named after its similarity to the genus *Polyscytalum*.

Mycelium consisting of smooth, branched, septate, brown hyphae, which become somewhat warty with age. *Conidiophores* dimorphic. *Penicillate conidiophores* erect, with white tufts of branched, catenulate conidia; conidiophore cylindrical, erect, brown, verruculose, septate; base lacking rhizoids and not swollen; conidiogenous cells apical, hyaline to brown, smooth, proliferating sympodially, giving rise to ramoconidia. *Ramoconidia* hyaline, aseptate, smooth, subcylindrical. *Conidia* subcylindrical to narrowly ellipsoid, hyaline, smooth, aseptate, occurring in branched chains, ends with a flattened, somewhat erumpent, darkened scar. *Chalara*-type conidiophores erect, cylindrical, unbranched, brown, verruculose to smooth, septate. *Conidiogenous cells* terminal, long ampulliform; collarette with flaring apex, and visible ring wall building at base of collarette. *Conidia* cylindrical, hyaline, smooth; ends truncate, somewhat darkened.

Type species. *Xenopolyscytalum pinea*.
MycoBank MB517533.

Xenopolyscytalum pinae Crous, *sp. nov.*

Conidiophora penicillata, erecta, cylindrica, brunnea, verruculosa, 2–6-septata, ad 50 µm procera, 2–3 µm lata; ad basim non rhizoida et non inflata; cellulae conidiogenae terminales, hyalinae vel brunneae, laeviae, 5–12 × 1.5–2.5 µm, sympodialiter proliferantes, 1–3 ramoconidia facientes, hyalinae, laeviae, aseptatae, subcylindricae, 5–10 × 1.5–2 um. Conidia subcylindrica vel anguste ellipsoidea, hyalina, laevia, aseptata, catenulata, 3–4(–7) × 1.5(–2) µm.

Etymology. Named after the host from which it was collected, *Pinus*.

Mycelium consisting of smooth, branched, septate, brown, 1.5–2.5 µm diam hyphae, which become somewhat warty with age. *Conidiophores* dimorphic. *Penicillate conidiophores* erect, with white tufts of branched, catenulate conidia; conidiophore cylindrical, erect, brown, verruculose, 2–6-septate, up to 50 µm tall, 2–3 µm wide; base lacking rhizoids and not swollen; conidiogenous cells apical, hyaline to brown, smooth, 5–12 × 1.5–2.5 µm, proliferating sympodially, giving rise to 1–3 ramoconidia. *Ramoconidia* hyaline, smooth, aseptate, subcylindrical, 5–10 × 1.5–2 µm. *Conidia* subcylindrical to narrowly ellipsoid, hyaline, smooth, aseptate, occurring in branched chains, ends with a flattened, somewhat erumpent, darkened scar, 0.5 µm wide, 3–4(–7) × 1.5(–2) µm. *Chalara*-type conidiophores erect, cylindrical, unbranched, brown, verruculose to smooth, 1–3-septate, up to 40 µm tall, 2–3 µm wide. *Conidiogenous cells* terminal, long ampulliform, 15–25 × 2–3 µm; collarette 3–5 µm long, apex flaring, 1.5–2 µm wide with visible ring wall building at base of collarette, which is 1 µm wide. *Conidia* cylindrical, hyaline, smooth, 3–4(–5) × 1.5(–2) µm; ends truncate, somewhat darkened.

Culture characteristics — (in the dark, 25 °C, after 1 mo): Colonies on oatmeal agar flat, spreading, lacking aerial mycelium, with diffuse margin; surface dark mouse grey with patches of isabelline, reaching 60 mm diam. On potato-dextrose agar similar, dark mouse grey on surface and reverse. On malt extract agar spreading, somewhat erumpent, with sparse aerial mycelium, and smooth, even margins; surface dark mouse grey, with patches of mouse grey and pale mouse grey; reverse dark mouse grey to mouse grey.

Typus. Netherlands, Putten, on needles of *Pinus* sp., 8 July 2007, *P.W. Crous*, CBS-H 20488 holotype, cultures ex-type CPC 14225, 14234 = CBS 126493, ITS sequences of CPC 14234, 14225 GenBank HQ599581 and HQ599580, respectively and LSU sequences of CPC 14234, 14225 GenBank HQ599583 and HQ599582, respectively, MycoBank MB517534.

Notes — The genus *Polyscytalum,* which is based on *P. fecundissimum*, clustered with *Phlogicylindrium eucalypti* in *Sordariomycetes*[1, 2], and is thus genetically distinct from *Xenopolyscytalum*, which belongs to the *Helotiales*. Morphologically *Xenopolyscytalum* is distinct from *Polyscytalum* in having macroconidiophores that have chains of aseptate conidia with somewhat darkened hila, and having microconidiophores that are *Chalara*-like, but distinct from *Chalara* s.str. in having flaring collarettes. Identical ITS and LSU sequences were obtained for both strains of *X. pinea* sequenced. A megablast search of NCBIs GenBank nucleotide database using the LSU sequence retrieved as closest sisters *Chalara constricta* (GenBank FJ176256; Identities = 848/853 (99 %), Gaps = 0/853 (0 %)), *Tricladium caudatum* (GenBank GQ477319; Identities = 843/850 (99 %), Gaps = 0/850 (0 %)), *Discocistella grevillei* (GenBank GU727554; Identities = 865/874 (99 %), Gaps = 5/874 (0 %)), *Cistella acuum* (GenBank GU727552; Identities = 865/874 (99 %), Gaps = 5/874 (0 %)) and *Rhytisma acerinum* (GenBank AF356696; Identities = 798/820 (98 %), Gaps = 4/820 (0 %)). The highest identities based on ITS were found with *Helicodendron websteri* (GenBank EF029197; Identities = 522/530 (99 %), Gaps = 4/530 (0 %)) and *Hyalodendriella betulae* (GenBank EU040232; Identities = 575/618 (94 %), Gaps = 11/618 (1 %)).

Colour illustrations. Pine trees in Putten; colonies on needle and agar; conidiophores giving rise to conidial chains; *Chalara*-like synanamorph. Scale bars = 10 µm.

References. [1]Crous PW, Schubert K, Braun U, Hoog GS de, Hocking AD, Shin H-D, Groenewald JZ. 2007. Opportunistic, human-pathogenic species in the Herpotrichiellaceae are phenotypically similar to saprobic or phytopathogenic species in the Venturiaceae. Studies in Mycology 58: 185–217. [2]Cheewangkoon R, Groenewald JZ, Summerell BA, Hyde KD, To-anun C, Crous PW. 2009. Myrtaceae, a cache of fungal biodiversity. Persoonia 23: 55–85.

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Strelitziana albiziae

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Strelitziana albiziae Crous & H.D. Shin, *sp. nov.*

Strelitzianae australiensis similis, sed conidiis minoribus et obclavatis, (17–)38–65(–80) × (2.5–)3 µm, (1–)3–8(–10)-septatis, distinguitur.

Etymology. Named after the host from which it was collected, *Albizia julibrissin*.

Mycelium consisting of smooth, septate, branched hyphae, pale brown, 2.5–3 µm diam. *Conidiophores* erect, solitary, subcylindrical, straight to geniculous-sinuous, pale brown, 1–9-septate, 20–100 × 3–4 µm. *Conidiogenous cells* terminal, integrated, pale brown, with several short, conspicuous apical denticles, 2–4 µm long, 1–1.5 µm wide; conidiogenesis rhexolytic with remnants of separating cell clearly visible on conidiogenesis cell, and at times visible on conidium hilum as a minute marginal frill, 15–50 × 3–4 µm. *Conidia* pale brown, smooth, long obclavate, widest at basal septum, tapering to a subobtusely rounded apex and long obconically subtruncate base, 1 µm wide, at times with inconspicuous marginal frill, (17–)38–65(–80) × (2.5–)3 µm, (1–)3–8(–10)-septate; microcyclic conidiation present in culture.

Culture characteristics — (in the dark, 25 °C, after 1 mo): Colonies on oatmeal agar (OA) spreading with moderate aerial mycelium, with even, smooth margins; surface greenish black, with patches of olivaceous-grey; greenish black on malt extract agar (MEA) (surface and reverse), olivaceous-grey on potato-dextrose agar (PDA) (surface), iron-grey (reverse); colonies reaching 40 mm diam on OA, 25 mm on MEA, and PDA.

Typus. Korea, Jecheon, on leaves of *Albizia julibrissin* infected with *Camptomeris albiziae*, 19 Oct. 2007, *H.-D. Shin*, CBS-H 20489 holotype, cultures ex-type CPC 14750, 14749 = CBS 126497, ITS sequence GenBank HQ599584 and LSU sequence GenBank HQ599585, MycoBank MB517535.

Notes — A megablast search in GenBank using the LSU sequence retrieved as closest sisters *Strelitziana australiensis* (GenBank GQ303326; Identities = 856/891 (97 %), Gaps = 10/891 (1 %)) and *S. africana* (GenBank DQ885895; Identities = 890/928 (96 %), Gaps = 12/928 (1 %)). These same two species were also obtained when a megablast was performed with the ITS sequence, albeit with a slightly lower sequence identity (*S. australiensis* GenBank GQ303295, Identities = 659/716 (93 %), Gaps = 27/716 (3 %) and *S. africana* GenBank DQ885895, Identities = 668/724 (93 %), Gaps = 25/724 (3 %)). Therefore on DNA sequence data, *S. albiziae* is related to *S. africana* (conidia (18–)50–70(–95) × 3(–3.5) µm, 3–5(–10)-septate), and *S. australiensis* (30–)50–60(–73) × 2.8–3.2 µm, 4–8-septate)[1, 2]. Conidia of *S. australiensis* are similar in size to those of *S. albiziae*, and also have a small, globose, hyaline, apical mucilaginous appendage. On average though, conidia of *S. albiziae* are smaller, have more septa, and are obclavate rather than subcylindrical.

Colour illustrations. Leaves of *Albizia julibrissin* infected with *Camptomeris albiziae*; conidiophore with conidiogenous cell giving rise to conidium (note separating cell); conidiogenous cell with remnants of separating cells; conidia. Scale bars = 10 µm.

References. [1]Arzanlou M, Crous PW. 2006. Strelitziana africana. Fungal Planet No. 8. [2]Cheewangkoon R, Groenewald JZ, Summerell BA, Hyde KD, To-anun C, Crous PW. 2009. Myrtaceae, a cache of fungal biodiversity. Persoonia 23: 55–85.

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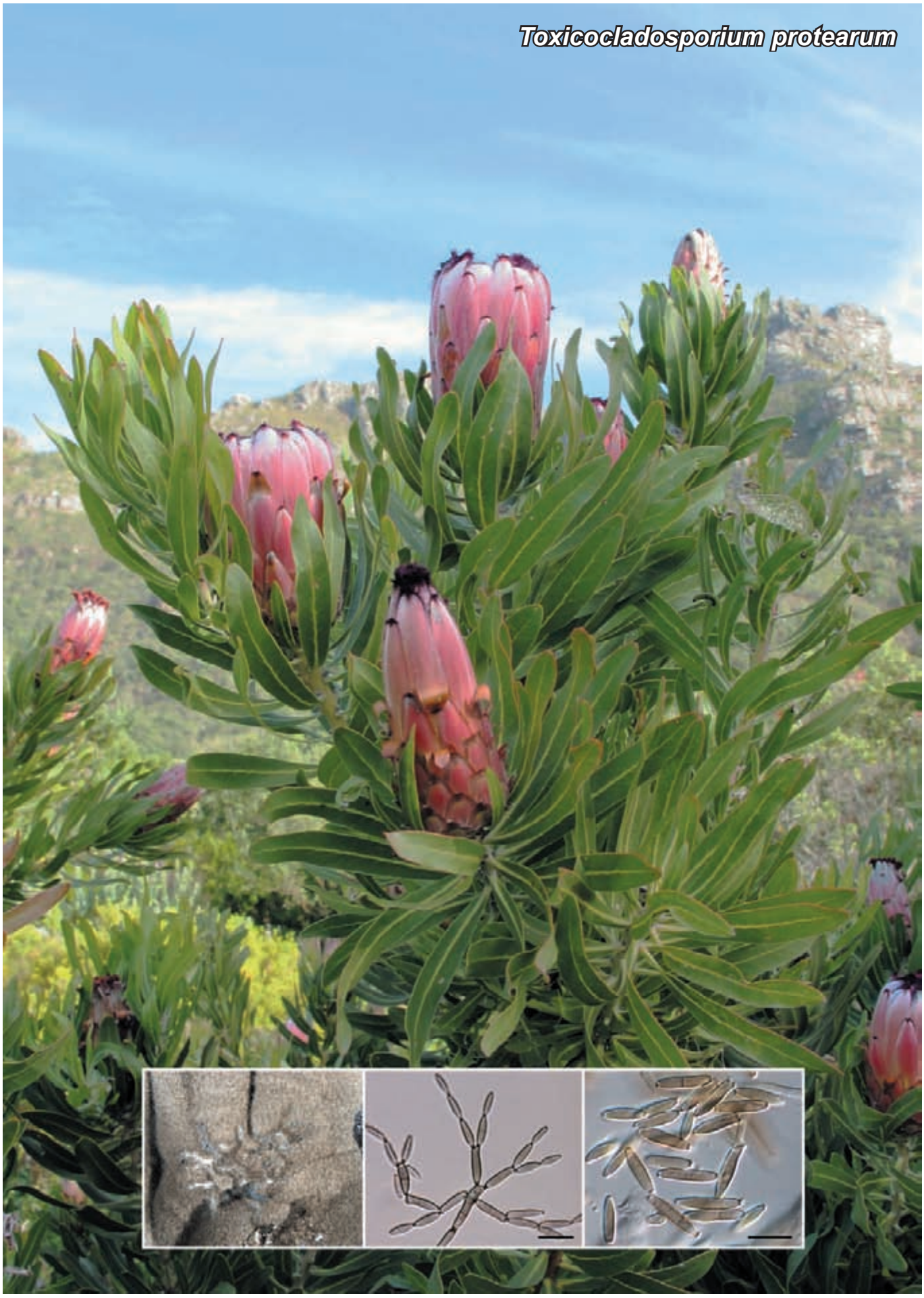
Toxicocladosporium protearum

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Toxicocladosporium protearum Crous & Roets, *sp. nov.*

Toxicocladosporio veloxo simile, sed conidiis majoribus, (9–)11–13(–16) × (2–)2.5(–3) µm, discernitur.

Etymology. Named after the host from which it was collected, *Protea*.

Mycelium consisting of smooth, septate, brown, branched, 2–3 µm diam hyphae. *Conidiophores* erect, medium brown, with an apical apparatus of penicillate branches; conidiophores cylindrical, smooth, 1–8-septate, 30–80 µm tall, 3–4 µm wide; base lacking rhizoids. *Conidiogenous cells* terminal, medium to dark brown, smooth, subcylindrical, 10–20 × 2.5–3 µm, with 1–2 apical loci, that are thickened, darkened, somewhat refractive, 1–1.5 µm wide. *Ramoconidia* subcylindrical, 0–1-septate, medium to dark brown, smooth, 15–20 × 2.5–3.5 µm. *Conidia* occurring in branched chains of up to 10, subcylindrical to narrowly fusoid-ellipsoidal, (9–)11–13(–16) × (2–)2.5(–3) µm, 0–1-septate; conidial hila somewhat thickened, darkened and refractive, 0.5–1 µm.

Culture characteristics — (in the dark, 25 °C, after 1 mo): Colonies on oatmeal agar flat, spreading, with sparse aerial mycelium, with even, smooth margins; surface greenish black, reaching 40 mm diam. On malt extract agar spreading, with moderate aerial mycelium, folded, green-black, with sectors of olivaceous-grey; greenish black in reverse. Similar on potato-dextrose agar.

Typus. South Africa, Stellenbosch, J.S. Marais Garden, on leaves of *Protea* sp., 22 Apr. 2008, *F. Roets*, CBS-H 20490 holotype, cultures ex-type CPC 15254 = CBS 126499, CPC 15255, 15256, ITS sequence of CPC 15254 GenBank HQ599586 and LSU sequence of CPC 15254 GenBank HQ599587, MycoBank MB517536.

Notes — A megablast search in GenBank using the LSU sequence retrieved as closest sisters *Toxicocladosporium chlamydosporum* (GenBank FJ790302; Identities = 881/883 (99 %), Gaps = 0/883 (0 %)), *Toxicocladosporium veloxum* (GenBank FJ790306; Identities = 880/883 (99 %), Gaps = 0/883 (0 %)) and *Toxicocladosporium irritans* (GenBank EU040243; Identities = 870/885 (99 %), Gaps = 4/885 (0 %)). These three species were also obtained when a megablast was performed with the ITS sequence, albeit with a slightly lower sequence identity (*T. veloxum* GenBank FJ790288, Identities = 609/613 (99 %), Gaps = 3/613 (0 %), *T. chlamydosporum* GenBank FJ790284, Identities = 604/614 (99 %), Gaps = 3/614 (0 %) and *T. irritans* GenBank EU040243, Identities = 517/542 (96 %), Gaps = 12/542 (2 %)). Therefore on DNA sequence data of the ITS region, *T. protearum* is 4 nucleotides different from *T. veloxum*[1]. Morphologically they differ in that *T. veloxum* has smaller intercalary (9–12 × 2.5–3 µm) and terminal (8–10 × 2–2.5 µm) conidia than *T. protearum*.

Colour illustrations. Protea burchellii in Kirstenbosch Botanical Garden; colony on malt extract agar; conidiophores with conidiogenous cells giving rise to conidia. Scale bars = 10 µm.

Reference. [1]Crous PW, Wingfield MJ, Groenewald JZ. 2009. Niche sharing reflects a poorly understood biodiversity phenomenon. Persoonia 22: 83–94.

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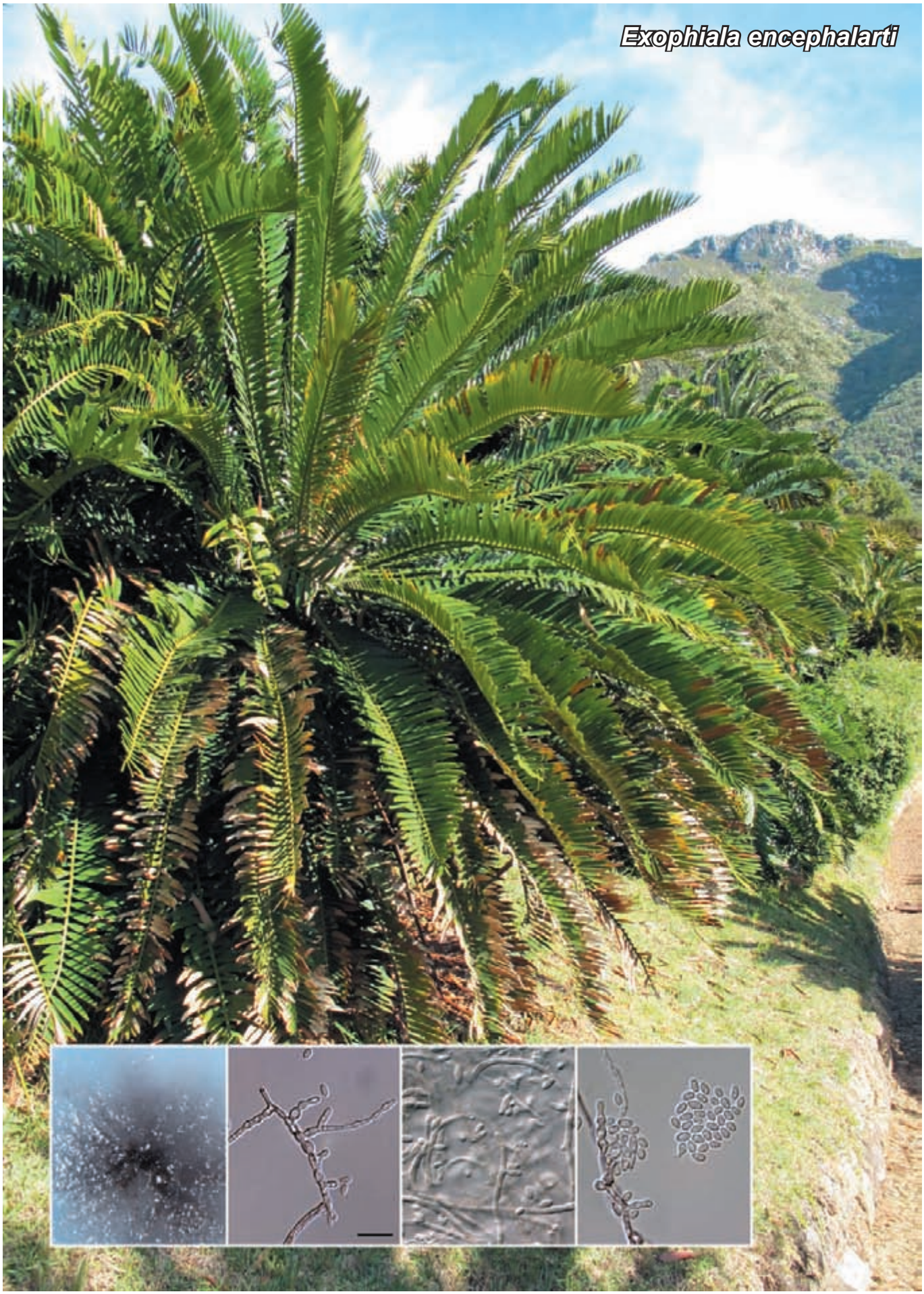
Exophiala encephalarti

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Exophiala encephalarti Crous, *sp. nov.*

Exophialae placitae similis, sed conidiis minoribus, (3–)4–5(–6) × (2–)2.5(–3) µm, discernitur.

Etymology. Named after the host from which it was collected, *Encephalartos*.

Mycelium consisting of smooth, septate, brown, branched, 2–3 µm diam hyphae. *Conidiophores* mostly reduced to conidiogenous cells, or with a supporting cell. *Conidiogenous cells* pale brown, smooth, reduced to conidiogenous loci, 0.5 µm wide, or ampulliform to doliiform, 5–7 × 1.5–2.5 µm; proliferating 1–2 times percurrently near apex. *Conidia* aseptate, (3–)4–5(–6) × (2–)2.5(–3) µm, ellipsoid, hyaline, smooth, guttulate, widest in middle, apex obtuse, tapering to a subtruncate base, 0.5 µm wide.

Culture characteristics — (in the dark, 25 °C, after 1 mo): Colonies on oatmeal agar slimy, lacking aerial mycelium, with diffuse margins, greyish-sepia. On potato-dextrose agar flat, spreading, with sparse aerial mycelium and feathery margins; surface olivaceous-grey with iron-grey margins; reverse iron-grey; colonies reaching 15 mm diam.

Typus. South Africa, Western Cape Province, Kirstenbosch Botanical Garden, on leaves of *Encephalartos transvenosus*, 27 Feb. 2009, *P.W. Crous*, CBS-H 20491 holotype, cultures ex-type CPC 16282, 16281 = CBS 128210, ITS sequence of CPC 16281 GenBank HQ599588 and LSU sequence of CPC 16281 GenBank HQ599589, MycoBank MB517537.

Notes — Based on the LSU sequence of *Exophiala encephalarti*, a megablast search of the NCBI's GenBank nucleotide database reveals the closest neighbours to be *Brycekendrickomyces acaciae* (GenBank FJ839641; Identities = 852/880 (97 %), Gaps = 10/880 (1 %)), *Exophiala placitae* (GenBank EU040215; Identities = 845/885 (96 %), Gaps = 16/885 (1 %)) and *Sarcinomyces petricola* (GenBank FJ358249; Identities = 814/854 (96 %), Gaps = 16/854 (1 %)), all in *Chaetothyriales*. Morphologically it resembles other species of *Exophiala*[1], though phylogenetically, it appears to represent a distinct lineage.

Colour illustrations. *Encephalartos* plants growing in Kirstenbosch Botanical Garden; hyphae with conidiogenous cells giving rise to conidia. Scale bar = 10 µm.

Reference. [1]Crous PW, Schubert K, Braun U, Hoog GS de, Hocking AD, Shin H-D, Groenewald JZ. 2007. Opportunistic, human-pathogenic species in the Herpotrichiellaceae are phenotypically similar to saprobic or phytopathogenic species in the Venturiaceae. Studies in Mycology 58: 185–217.

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Pseudocercospora nephrolepidicola

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Pseudocercospora nephrolepidicola Crous & R.G. Shivas, *sp. nov.*

Teleomorph. *Mycosphaerella*-like.

Pseudocercosporae nephrolepidis similis, sed conidiis minoribus, (40–)50–60(–95) × (2.5–)3.5(–4) µm, distinguitur.

Etymology. Named after the host from which it was collected, *Nephrolepis* (*Lomariopsidaceae*).

Leaf spots amphigenous, medium brown, with indistinct margins, 2–12 mm diam. *Conidiomata* pale to medium brown, amphigenous, fasciculate, arising from a well-developed subepidermal, medium brown stroma, up to 150 µm wide, and 50 µm high. *Mycelium* consisting of smooth, septate, brown, branched, 2–3 µm diam hyphae. *Conidiophores* subcylindrical, medium brown, smooth, unbranched or branched below, irregularly geniculate-sinuous, in loosely aggregated fascicles, or separate on superficial mycelium, 1–4-septate, 25–45(–90) × 2.5–3(–3.5) µm. *Conidiogenous cells* terminal on conidiophore, integrated, subcylindrical, pale brown, smooth, proliferating 1–2 times percurrently near apex, 15–25(–40) × (2–)2.5(–3) µm. *Conidia* medium brown, smooth, guttulate, subcylindrical, straight to irregularly flexuous, apex obtusely rounded, base truncate, 3–6(–9)-septate, (40–)50–60(–95) × (2.5–)3.5(–4) µm; hila not thickened nor darkened. *Ascomata* globose, erumpent, brown, up to 80 µm diam, with a central ostiole. *Asci* subcylindrical to narrowly obovoid, 35–50 × 8–10 µm. *Ascospores* fusoid-ellipsoidal, widest in middle of apical cell, tapering towards both ends, apex acutely rounded, constricted at septum, 9–11 × 2.5–3.5 µm.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies spreading, erumpent, with folded surface and even, lobate margins, reaching up to 15 mm diam. On potato-dextrose agar surface smoke-grey with patches of grey-olivaceous, iron-grey in reverse; on malt extract agar pale olivaceous-grey (surface), iron-grey in reverse; on oatmeal agar olivaceous-grey with patches of pale olivaceous-grey.

Typus. Australia, Queensland, Brisbane Botanical Garden, on fronds of *Nephrolepis falcata*, 14 July 2009, *P.W. Crous & R.G. Shivas*, CBS-H 20492 holotype, cultures ex-type CPC 17050, 17049 = CBS 128211, ITS sequence of CPC 17049 GenBank HQ599590 and LSU sequence of CPC 17049 GenBank HQ599591, MycoBank MB517538.

Notes — There are several specimens of *Pseudocercospora* spp. on *Nephrolepis* in BRIP, which cannot easily be identified using morphology alone. *Pseudocercospora nephrolepidicola* is morphologically and phylogenetically distinct from *P. nephrolepidis* (on *Nephrolepis cordifolia* (as *N. auriculata*) in Taiwan[1]; conidia subcylindrical, (32–)67–101(–113) × 2–3 µm, 2–9 septate; CBS 119121), in that its conidia are shorter, and wider. Furthermore, *Pseudocercospora phyllitidis*, which was described from leaves of *Nephrolepis* sp. from Florida, has smaller stromata (up to 75 µm diam) with straight to mildly curved obclavate conidia, 20–80 × 2–3.5 µm[2], than the Australian specimen. A megablast search of NCBIs GenBank nucleotide database using the LSU sequence retrieved as closest sisters *Mycosphaerella quasiparkii* (GenBank EU882143; Identities = 807/808 (99 %), Gaps = 0/808 (0 %)), *Rosenscheldiella brachyglottidis* (GenBank GQ355334; Identities = 874/886 (99 %), Gaps = 0/886 (0 %)), *Mycosphaerella swartii* (GenBank DQ923536; Identities = 865/888 (98 %), Gaps = 3/888 (0 %)) and *Pseudocercospora vitis* (GenBank GU214483; Identities = 864/889 (98 %), Gaps = 5/889 (0 %)). A megablast with the ITS sequence revealed high identity to '*Mycosphaerella* sp. De-No' (GenBank HM189290; Identities = 481/482 (99 %), Gaps = 0/482 (0 %)), *M. quasiparkii* (GenBank EU882127; Identities = 573/597 (96 %), Gaps = 17/597 (2 %)) and *Pseudocercospora schizolobii* (GenBank GQ852765; Identities = 571/610 (94 %), Gaps = 28/610 (4 %)).

Colour illustrations. Nephrolepis falcata at Brisbane Botanical Gardens; conidiomata on frond; ascomatum, asci with ascospores; conidiophores, conidia. Scale bars = 10 µm.

References. [1]Kirschner R, Chen CJ. 2007. Foliicolous hyphomycetes from Taiwan. Fungal Diversity 26: 219–239. [2]Chupp C. 1954. A monograph of the fungus genus Cercospora. Ithaca, New York. Published by the author.

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Pseudophloeospora eucalypti

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Pseudophloeospora Crous & R.G. Shivas, *gen. nov.*

Phloeosporae morphologice similis, sed conidiomatibus in vivo pycnidialibus.

Etymology. Morphologically similar, but distinct from *Phloeospora*.

Associated with leaf spots. *Conidiomata* amphigenous, pycnidial, globose, medium brown; pycnidial wall consisting of 3–6 layers of brown *textura angularis*. *Conidiophores* lining the cavity, hyaline, smooth, reduced to conidiogenous cells, or with 1–2 supporting cells, subcylindrical, branched below or unbranched. *Conidiogenous cells* terminal or lateral, hyaline, smooth, tapering to an acutely truncate apex; proliferating inconspicuously percurrently at apex. *Conidia* hyaline, smooth, filiform, flexuous, subcylindrical, tapering to an acutely rounded apex and truncate base, not thickened nor darkened, transversely euseptate.

Type species. *Pseudophloeospora eucalypti*.
MycoBank MB517539.

Notes — Based on its pycnidial conidiomata, and percurrently proliferating conidiogenous cells, the present collection appears to be a member of the *Septoria*/*Phloeospora* complex. Morphologically, it is distinct from *Phloeospora* by having pycnidial conidiomata on the host, and from *Septoria* s.str. by lacking sympodial proliferating conidiogenous cells. Phylogenetically, it clusters apart from the *Capnodiales* (*Mycosphaerellaceae*), and is thus described as a new genus, *Pseudophloeospora*.

Pseudophloeospora eucalypti Crous & R.G. Shivas, *sp. nov.*

Phloeosporellae eucalypticolae similis, sed cellulis conidiogenis percurrenter proliferantibus et conidiis 3-septatis discernitur.

Etymology. Named after the host genus from which it was collected, *Eucalyptus*.

Leaf spots amphigenous, irregular, pale brown, with raised, thin, red-brown margins, 3–10 mm diam. *Conidiomata* amphigenous, pycnidial, globose, medium brown, up to 250 µm diam; pycnidial wall consisting of 3–6 layers of brown textura angularis. *Conidiophores* lining the cavity, hyaline, smooth, reduced to conidiogenous cells, or with 1–2 supporting cells, subcylindrical, branched below or unbranched, 5–15 × 2–3 µm. *Conidiogenous cells* terminal or lateral, hyaline, smooth, tapering to an acutely truncate apex, 0.5–1 µm diam; proliferating inconspicuously percurrently at apex, 4–6 × 1.5–2 µm. *Conidia* hyaline, smooth, guttulate, filiform, flexuous, subcylindrical, widest in lower third, tapering to an acutely rounded apex and truncate base, 0.5–1 µm wide, not thickened nor darkened, (60–)65–75(–80) × (1.5–)2(–2.5) µm, 3-septate.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies spreading, flat to somewhat erumpent with sparse aerial mycelium and even, smooth margins, reaching up to 8 mm diam. On potato-dextrose agar surface and reverse luteus. On oatmeal agar cream to white. On malt extract agar dirty white (surface), luteus (reverse); colonies fertile on OA.

Typus. Australia, Queensland, Brisbane, Jolley's Lookout, 27°23'59.8"S 152°48'23.7"E, on leaves of *Eucalyptus* sp., 15 July 2009, *P.W. Crous & R.G. Shivas*, CBS-H 20493 holotype, culture ex-type CPC 17051 = CBS 128212, ITS sequence GenBank HQ599592 and LSU sequence GenBank HQ599593, MycoBank MB517540.

Notes — A megablast search in GenBank using the LSU sequence retrieved as closest sisters *Ellisembia calyptrata* (GenBank DQ408564; Identities = 824/850 (97 %), Gaps = 8/850 (0 %)), *Dactylaria zapatensis* (GenBank EU107287; Identities = 838/865 (97 %), Gaps = 7/865 (0 %)), *Dactylaria fragilis* (GenBank EU107290; Identities = 832/860 (97 %), Gaps = 8/860 (0 %)) and *Polyscytalum fecundissimum* (GenBank EU035441; Identities = 808/836 (97 %), Gaps = 9/836 (1 %)). A megablast search with the ITS sequence did not reveal any conclusive hits with significant similarity.

Phylogenetically *Pseudophloeospora* is unrelated to *Septoria* s.str. and *Phloeospora* s.str. (*Capnodiales*, *Mycosphaerellaceae*)[1], but clusters with members of *Orbiliales*. *Pseudophloeospora eucalypti* differs morphologically from *Phloeosporella eucalypticola*[2] (BRIP 21999!) in having branched conidiophores, conidiogenous cells with single loci, and 3-septate conidia.

Colour illustrations. View from Jolley's Lookout; pycnidium sporulating on oatmeal agar; conidiophores with conidiogenous cells giving rise to conidia. Scale bar = 10 µm.

References. [1]Crous PW, Schoch CL, Hyde KD, Wood AR, Gueidan C, Hoog GS de, Groenewald JZ. 2009. Phylogenetic lineages in the Capnodiales. Studies in Mycology 64: 17–47. [2]Yip HY. 1997. Phloeosporella eucalypticola sp. nov. from a hybrid between Eucalyptus radiata and E. dives in Australia. Australasian Plant Pathology 26: 26–27.

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Phaeothecoidea melaleuca

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Phaeothecoidea melaleuca Crous & R.G. Shivas, *sp. nov.*

Phaeothecoideae proteae similis, sed conidiis minoribus, (5–)6–7(–8) × (4–)5–6 µm, distinguitur.

Etymology. Named after the host genus from which it was collected, *Melaleuca*.

Mycelium consisting of branched, septate, pale to medium brown, 3–5 µm diam hyphae, frequently constricted at septa and encased in a mucoid sheath which results in black, shiny exudate on the surface of agar media; hyphal ends becoming swollen, ellipsoid, 20–35 µm wide, 25–70 µm long, filled with endoconidia. *Endoconidia* brown, thick-walled, smooth to finely verruculose, ellipsoid to globose, 0–1-septate, (5–)6–7(–8) × (4–)5–6 µm.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies spreading, flat, folded, with sparse aerial mycelium, and smooth, lobate margins, exuding copious amounts of black slime; reaching 15 mm diam. On oatmeal agar, potato-dextrose agar and malt extract agar, olivaceous-black.

Typus. Australia, Queensland, Brisbane, Slaughter Falls, 27°28'35"S 152°57'48.9"E, on leaves of *Melaleuca quinquenervia*, 16 July 2009, *P.W. Crous & R.G. Shivas*, CBS-H 20494 holotype, cultures ex-type CPC 17223, 17224 = CBS 128213, ITS sequence of CPC 17223 GenBank HQ599594 and LSU sequence of CPC 17223 GenBank HQ599595, MycoBank MB517541.

Notes — A megablast search in GenBank using the LSU sequence retrieved as closest sister species *Readeriella brunneotingens* (GenBank EU019286; Identities = 887/907 (98 %), Gaps = 7/907 (0 %)), *Teratosphaeria dimorpha* (GenBank FJ493215; Identities = 886/907 (98 %), Gaps = 7/907 (0 %)) and *Penidiella columbiana* (GenBank EU019274; Identities = 885/906 (98 %), Gaps = 5/906 (0 %)). A megablast with the ITS sequence revealed as closest sister species *Phaeothecoidea proteae* (GenBank EU707898; Identities = 604/646 (94 %), Gaps = 20/646 (3 %)) and *Batcheloromyces leucadendri* (GenBank EU707890; Identities = 593/642 (93 %), Gaps = 20/642 (3 %)). Morphologically *P. melaleuca* and *P. proteae* are distinct, in that endoconidia of *P. proteae* are verruculose and larger in size, (6–)8–10(–13) × (4–)5–6(–11) µm than those of *P. melaleuca*[1].

Colour illustrations. *Melaleuca quinquenervia*; colony on potato-dextrose agar; hyphae with endoconidia; endoconidia. Scale bars = 10 µm.

Reference. [1]Crous PW, Summerell BA, Mostert L, Groenewald JZ. 2008. Host specificity and speciation of Mycosphaerella and Teratosphaeria species associated with leaf spots of Proteaceae. Persoonia 20: 59–86.

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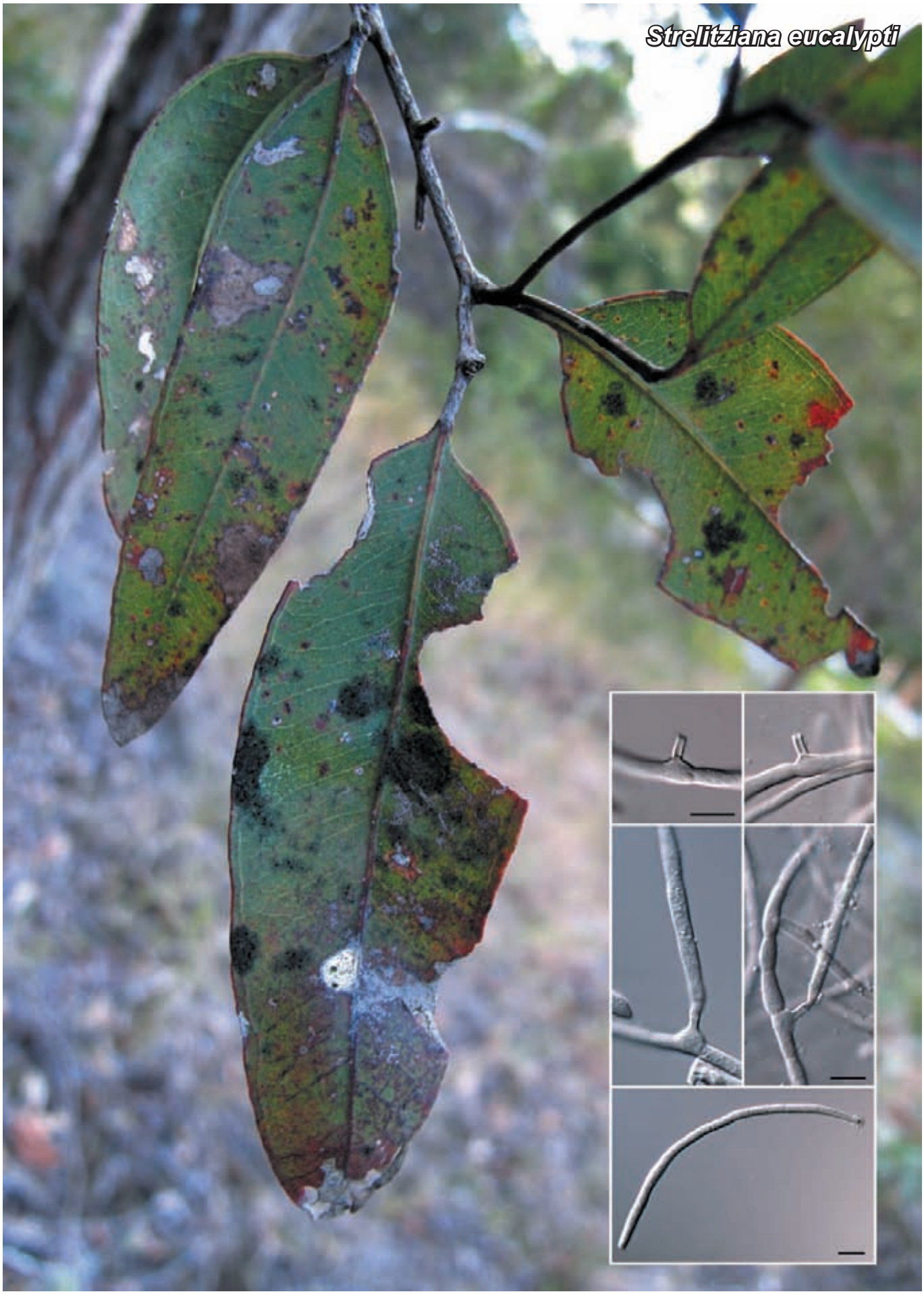
Strelitziana eucalypti

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Strelitziana eucalypti Crous & R.G. Shivas, *sp. nov.*

Strelitzianae australiensis similis, sed conidiis majoribus, (40–)60–80(–130) × (3–)3.5(–4) µm, discernitur.

Etymology. Named after the host from which it was collected, *Eucalyptus*.

Mycelium superficial, consisting of smooth, septate, branched hyphae, pale brown, 2–3 µm diam. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* intercalary on hyphae, pale brown, concolorous with hyphae, basal part swollen, ellipsoid to globose, up to 6 µm tall, with a single conspicuous denticle, 2–5 × 1.5–2 µm; conidiogenesis rhexolytic with remnants of separating cell clearly visible on conidiogenesis cell, rarely visible on conidium hilum as a minute marginal frill. *Conidia* pale brown, smooth, guttulate, long obclavate, widest at basal septum, tapering to a subobtusely rounded apex and truncate base with inconspicuous marginal frill, (40–)60–80(–130) × (3–)3.5(–4) µm, 6–10-septate; conidial hila neither thickened nor darkened, 1.5–2 µm wide; conidial apex frequently with globose mucoid appendix; microcyclic conidiation present in culture.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies erumpent, spreading, with sparse aerial mycelium and feathery margins; reaching up to 7 mm diam. On potato-dextrose agar pale olivaceous-grey (centre), olivaceous-grey (margin), and olivaceous-grey in reverse; on oatmeal agar olivaceous-grey; on malt extract agar pale olivaceous-grey (surface), olivaceous-grey (reverse).

Typus. Australia, Queensland, Brisbane, 27°21'41.5"S 152°47'18.3"E, on leaves of *Eucalyptus* sp. infected with black mildew, 15 July 2009, *P.W. Crous & R.G. Shivas*, CBS-H 20495 holotype, cultures ex-type CPC 17261, 17260 = CBS 128214, ITS sequence of CPC 17260 GenBank HQ599596 and LSU sequence of CPC 17260 GenBank HQ599597, MycoBank MB517543.

Notes — A megablast search in GenBank using the LSU sequence retrieved as closest sisters *Strelitziana australiensis* (GenBank GQ303326; Identities = 820/825 (99 %), Gaps = 3/825 (0 %)) and *Strelitziana africana* (GenBank DQ885895; Identities = 798/830 (97 %), Gaps = 13/830 (1 %)). These same two species, as well as *Pseudoramichloridium henryi* (GenBank GQ303289; Identities = 680/686 (99 %), Gaps = 2/686 (0 %)), were obtained when a megablast was performed with the ITS sequence, albeit with a slightly different sequence identity (*S. australiensis* GenBank GQ303295, Identities = 699/706 (99 %), Gaps = 2/706 (0 %) and *S. africana* GenBank DQ885895, Identities = 665/724 (92 %), Gaps = 23/724 (3 %)). Based on DNA sequence data of the ITS gene, *S. eucalypti* is related to *S. australiensis.* However, *S. eucalypti* has much longer conidia than *S. australiensis* (conidia 30–73 × 2.8–3.2 µm, 4–8-septate)[1, 2]. There is also a significant difference in the ITS sequence between *S. eucalypti* and *S. albiziae* (described in Fungal Planet 56 elsewhere in this volume), Identities = 665/724 (92 %), Gaps = 28/724 (3 %).

An important ecological observation is that *S. albiziae* was isolated from leaves of *Albizia julibrissin* heavily infected with *Camptomeris albiziae*, while *S. eucalypti* was isolated from leaves of a *Eucalyptus* sp. infected with a black mildew. In both cases the causal organism failed to grow in culture, and eventually a species of *Strelitziana* was isolated, suggesting that members of this genus may be fungicolous.

Colour illustrations. Eucalyptus leaves with black mildew, including *Strelitziana eucalypti*; hyphae with separating cells attached to conidiogenous cells; conidia attached to conidiogenous cells; conidium with apical mucoid appendage. Scale bars = 10 µm.

References. [1]Arzanlou M, Crous PW. 2006. Strelitziana africana. Fungal Planet No. 8. [2]Cheewangkoon R, Groenewald JZ, Summerell BA, Hyde KD, To-anun C, Crous PW. 2009. Myrtaceae, a cache of fungal biodiversity. Persoonia 23: 55–85.

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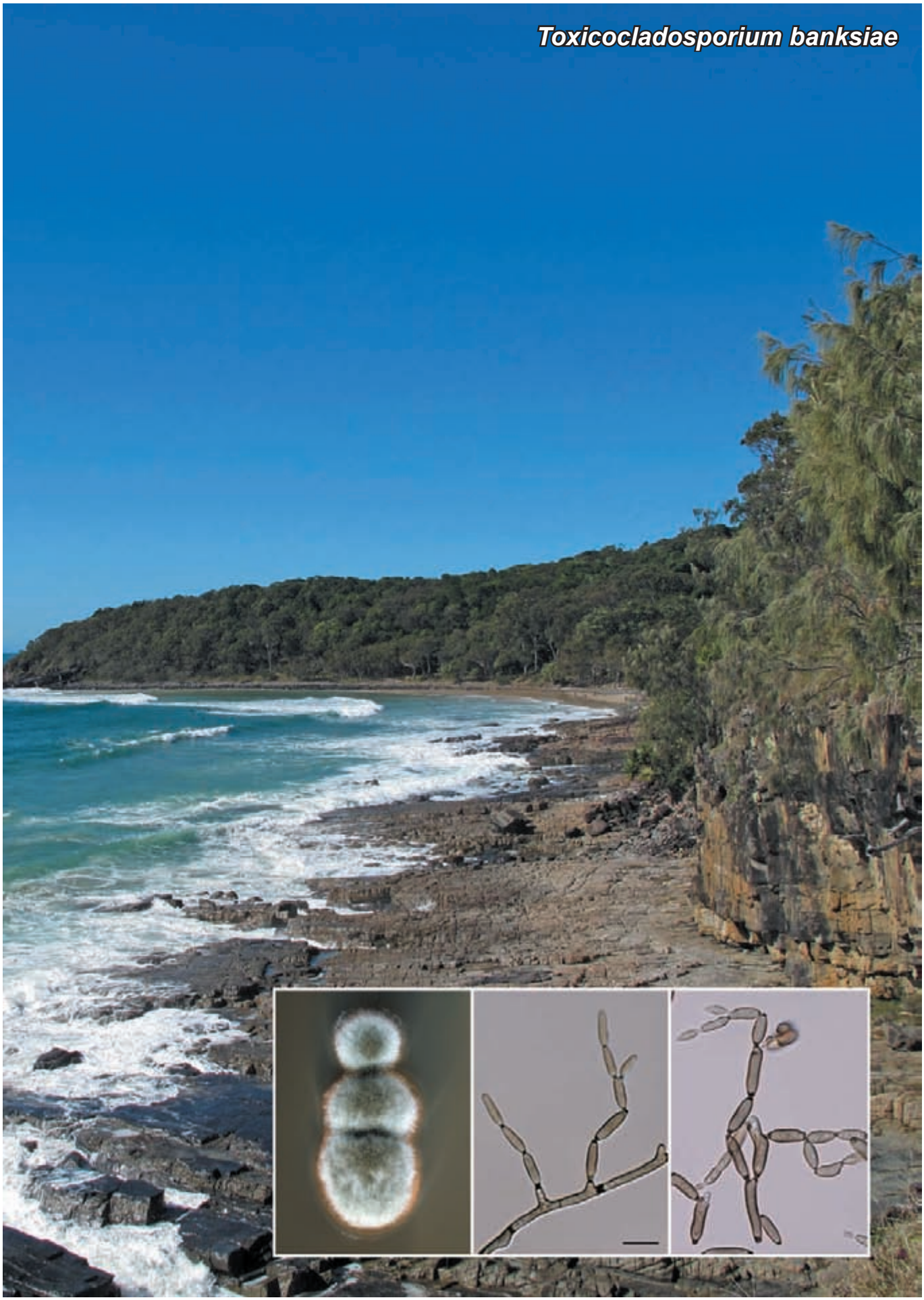
Toxicocladosporium banksiae

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Toxicocladosporium banksiae Crous, R.G. Shivas & McTaggart, *sp. nov.*

Toxicocladosporio veloxo simile, sedconidiis terminalibus majoribus, (7–)8–10(–11) × (2–)2.5–3 µm, distinguitur.

Etymology. Named after the host from which it was collected, *Banksia*.

Mycelium on potato-dextrose agar consisting of smooth, septate, branched hyphae, dark brown, 2.5–4 µm diam; walls and septa becoming dark brown and thickened with age. *Conidiophores* solitary, dimorphic, macronematous, or micronematous, reduced to conidiogenous cells. *Macronematous conidiophores* subcylindrical, straight to geniculate-sinuous, unbranched or branched above, 3–7-septate, dark brown, smooth, walls and septa thick, dark brown, 50–130 × 3–4 µm. *Micronematous conidiophores* reduced to conidiogenous cells (rarely with one or two supporting cells), erect, subcylindrical to doliiform, tapering at apex, 10–40 × 2.5–4 µm. *Conidiogenous cells* integrated, terminal or lateral, subcylindrical, with slight taper towards apex, 6–20 × 2.5–3 µm; proliferating sympodially with 1–3 apical, protruding loci, 1–1.5 µm wide, thickened, darkened and refractive. *Conidia* catenate in branched or unbranched chains, medium to dark brown, thick-walled, with dark, thick septa, finely verruculose; ramoconidia (14–)17–25 × (2.5–)3–4 µm, 0–1-septate, constricted at septa, broadly ellipsoid to subcylindrical; intercalary conidia ellipsoid to ovoid, 10–12(–20) × (2.5–)3–3.5 µm, 0–1-septate, apical conidia pale to medium brown, aseptate, (7–)8–10(–11) × (2–)2.5–3 µm; hila protruding, 1–1.5 µm wide, thickened, darkened and refractive.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies erumpent, spreading, folded, with sparse aerial mycelium and even, lobate margins, reaching up to 7 mm diam. On malt extract agar surface pale olivaceous-grey, reverse olivaceous-grey; on oatmeal agar olivaceous-grey; on potato-dextrose agar olivaceous-grey (surface and reverse).

Typus. Australia, Queensland, Noosa National Park, 26°34'14.0"S 153°4'21.6"E, on leaves of *Banksia emulata*, 13 July 2009, *P.W. Crous, R.G. Shivas & A.R. McTaggart*, CBS-H 20496 holotype, cultures ex-type CPC 17281, 17280 = CBS 128215, ITS sequence of CPC 17280 GenBank HQ599598 and LSU sequence of CPC 17280 GenBank HQ599599, MycoBank MB517544.

Notes — A search of GenBank using the LSU sequence retrieved as closest sisters *Toxicocladosporium chlamydosporum* (GenBank FJ790302; Identities = 854/864 (99 %), Gaps = 4/864 (0 %)), *Toxicocladosporium irritans* (GenBank EU040243; Identities = 853/864 (99 %), Gaps = 4/864 (0 %)) and *Toxicocladosporium veloxum* (GenBank FJ790306; Identities = 853/864 (99 %), Gaps = 4/864 (0 %)). Two of these three species were also obtained when a megablast was performed with the ITS sequence, albeit with a slightly lower sequence identity (*T. veloxum* GenBank FJ790288, Identities = 596/615 (97 %), Gaps = 11/615 (1 %) and *T. chlamydosporum* GenBank FJ790284, Identities = 596/617 (97 %), Gaps = 13/617 (2 %)). Based on the DNA sequence data of the ITS gene, *T. banksiae* is closely related to *T. veloxum* and *T. chlamydosporum*[1]. *Toxicocladosporium veloxum* has smaller intercalary (9–12 × 2.5–3 µm) and terminal (8–10 × 2–2.5 µm) conidia. In *T. chalamydosporum* the ramoconidia (15–18 × 2.5–4 µm), intercalary (8–11 × 3–3.5 µm) and terminal conidia (6–9 × 2.5–3 µm) are smaller, and *T. banksiae* lacks chlamydospores. There is also a significant difference in the ITS sequence between *T. banksiae* and *T. protearum* (described as Fungal Planet 57 elsewhere in this volume), Identities = 636/655 (98 %), Gaps = 10/655 (1 %).

Colour illustrations. Noosa National Park; colony on malt extract agar; conidiophores with conidiogenous cells giving rise to conidia. Scale bar = 10 µm.

Reference. [1]Crous PW, Wingfield MJ, Groenewald JZ. 2009. Niche sharing reflects a poorly understood biodiversity phenomenon. Persoonia 22: 83–94.

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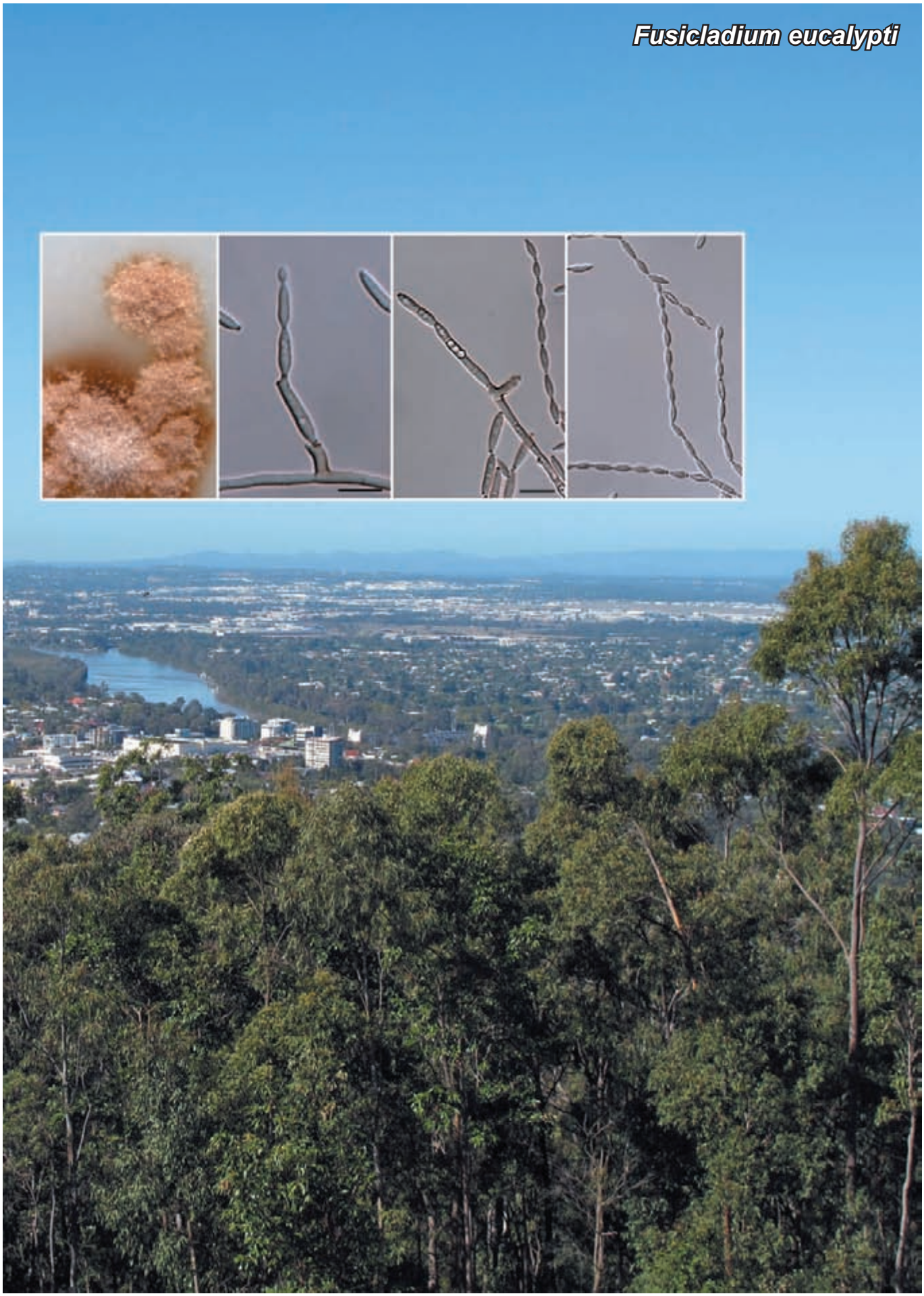
Fusicladium eucalypti

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Fusicladium eucalypti Crous & R.G. Shivas, *sp. nov.*

Fusicladio africano simile, sed conidiis terminalibus minoribus, (7–)8–9(–10) × (2–)2.5(–3) µm, discernitur.

Etymology. Named after the host from which it was collected, *Eucalyptus*.

Mycelium on potato-dextrose agar consisting of smooth, septate, branched hyphae, medium brown, 2–3 µm diam. *Conidiophores* dimorphic, solitary, erect, pale brown, smooth. *Macroconidiophores* 1–6-septate, subcylindrical, straight to flexuous, 30–60 × 2.5–4 µm. *Microconidiophores* reduced to conidiogenous cells, subcylindrical to doliiform, 4–6 × 3–4 µm. *Conidiogenous cells* integrated, terminal or lateral, subcylindrical to doliiform, pale brown, smooth, 4–15 × 3–4 µm; proliferating sympodially near apex; loci thickened and darkened, not refractive, 1–1.5 µm wide. *Conidia* in branched chains, pale brown, smooth, guttulate, subcylindrical to fusoid-ellipsoidal, widest in middle, tapering towards truncate ends; ramoconidia 0–1-septate, (10–)12–13(–15) × (2–)2.5–3 µm; intercalary and apical conidia aseptate, (7–)8–9(–10) × (2–)2.5(–3) µm; hila with darkened, thickened scars, not refractive, 0.5–1 µm wide.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies erumpent, spreading, with moderate aerial mycelium and even, lobate margins, reaching up to 10 mm diam. On malt extract agar surface umber, reverse chestnut; on oatmeal agar umber; on synthetic nutrient-poor agar ochreous.

Typus. Australia, Queensland, Brisbane, Mt Coot-tha, Bardon Trail, 27°27'42.5"S 152°57'15.5"E, on leaves of *Eucalyptus* sp., 12 July 2009, *P.W. Crous & R.G. Shivas*, CBS-H 20497 holotype, cultures ex-type CPC 17325, 17324 = CBS 128216, ITS sequence of CPC 17324 GenBank HQ599600 and LSU sequence of CPC 17324 GenBank HQ599601, MycoBank MB517545.

Notes — Based on the LSU sequence of *Fusicladium eucalypti*, a megablast search of the NCBIs GenBank nucleotide database revealed a strong association with *Venturiaceae* (*Dothideomycetes*), with closest neighbours being *Fusicladium africanum* (GenBank EU035423; Identities = 849/900 (95 %), Gaps = 17/900 (1 %)), *Sympoventuria capensis* (GenBank DQ885904; Identities = 824/878 (94 %), Gaps = 17/878 (1 %)) and *Venturia chlorospora* (GenBank DQ384101; Identities = 843/902 (94 %), Gaps = 18/902 (1 %)). The LSU sequence data showed an interesting association with *Tyrannosorus pinicola* (GenBank DQ470974; Identities = 720/765 (95 %), Gaps = 9/765 (1 %)). Morphologically, there is no similar species known from *Eucalyptus*[1].

Colour illustrations. View of Brisbane River from Mt Coot-tha; conidiophores with conidiogenous cells giving rise to conidia. Scale bars = 10 µm.

Reference. [1]Schubert K, Ritschel A, Braun U. 2003. A monograph of Fusicladium s. lat. (hyphomycetes). Schlechtendalia 9: 1–132.

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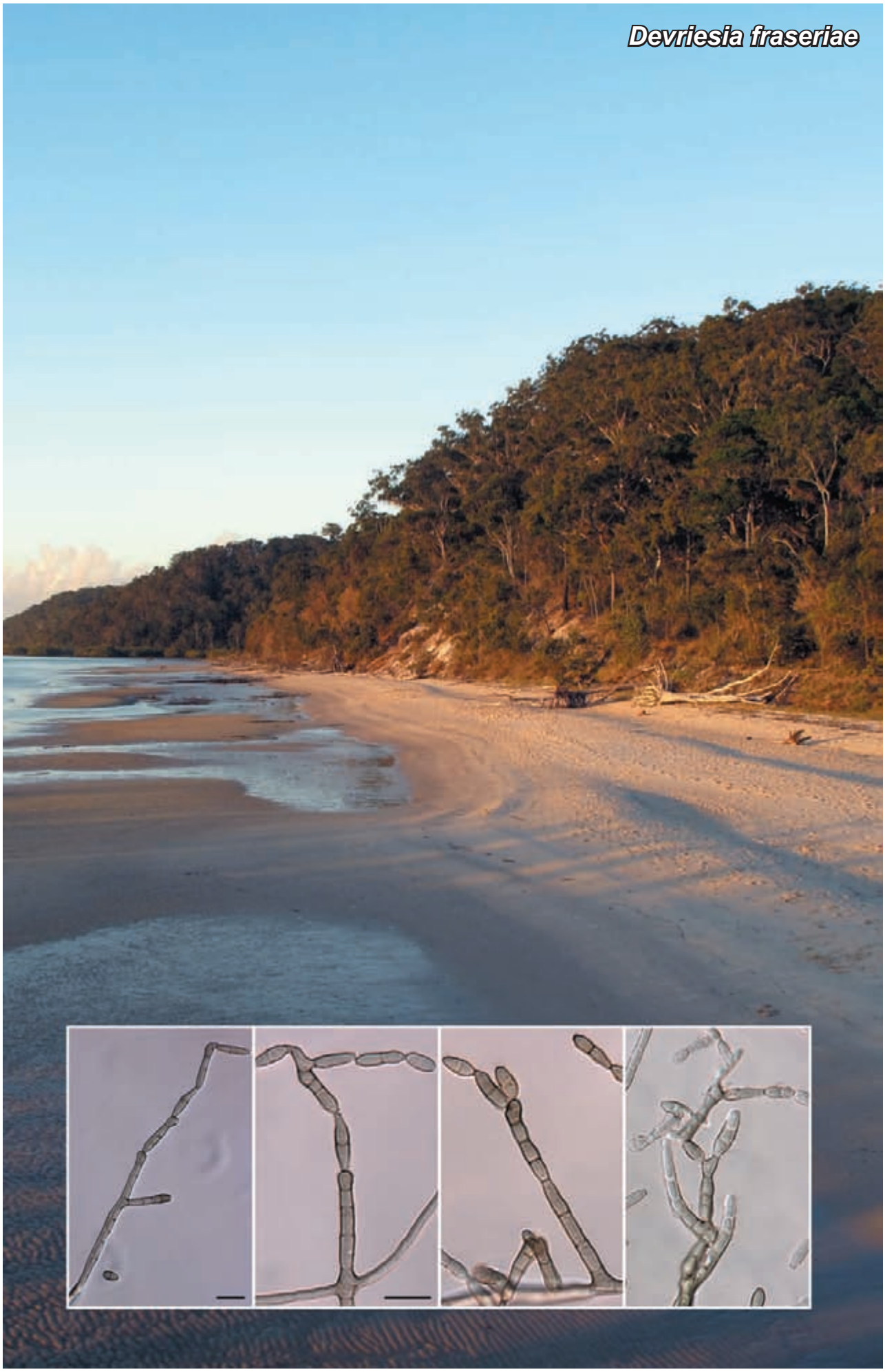
Devriesia fraseriae

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Devriesia fraseriae Crous & R.G. Shivas, *sp. nov.*

Devriesiae lagerstroemiae similis, sed ramoconidiis longioribus, (9–)10–14 (–20) × (3–)3.5(–4) µm, distinguitur.

Etymology. Named after Eliza Anne Fraser (c. 1798–1858?) from whom Fraser Island, where this specimen was collected, takes its name. The pregnant Eliza was shipwrecked on a reef off the Queensland coast in 1836, along with 18 men including her husband Captain James Fraser, who was captain of the sailing ship *Stirling Castle*. The subsequent events, including her rescue, have been the source of much myth and legend.

Mycelium on potato-dextrose agar consisting of smooth, septate, branched hyphae, medium brown, 1.5–2.5 µm diam; forming chains of chlamydospore-like cells, globose, 5–7 µm diam. *Conidiophores* solitary, erect, subcylindrical, straight to somewhat flexuous, unbranched or branched, 6–12-septate, with septa and walls becoming darkened and thickened, medium to dark brown, smooth, 20–110 × 3–4(–5) µm. *Conidiogenous cells* integrated, terminal or lateral, subcylindrical, medium brown, 5–11 × 3–5 µm; proliferating sympodially, scars flattened with an outer collarette visible as a circular rim, darkened along the rim, neither thickened nor refractive, 1–2 µm wide. *Conidia* medium brown, smooth, ellipsoid to subcylindrical or obclavate, in branched chains that often remain intact; ramoconidia 1–2-septate, mostly not constricted at septa, (9–)10–14(–20) × (3–)3.5(–4) µm; intercalary and apical conidia ellipsoid, 0–1-septate, (6–)8–10(–11) × 3(–4) µm; hila somewhat darkened, neither thickened nor refractive, 1–2(–3) µm wide; minute collarette visible on conidial hila.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies spreading, flat, with sparse aerial mycelium and even, lobate margins, reaching up to 8 mm diam. On oatmeal agar iron-grey; on malt extract agar olivaceous-grey to iron-grey (surface), iron-grey in reverse; on synthetic nutrient-poor agar olivaceous-grey.

Typus. Australia, Queensland, Fraser Island, Kingfisher Bay Resort, Main Camp, 25°23'33.2"S 153°01'47.0"E, on leaves of *Melaleuca* sp., 30 July 2009, *P.W. Crous*, CBS-H 20498 holotype, cultures ex-type CPC 17343, 17342 = CBS 128217, ITS sequence of CPC 17342 GenBank HQ599602, MycoBank MB517546.

Notes — A search of GenBank using the ITS sequence retrieved as closest sister species *Devriesia lagerstroemiae* (GenBank GU214634; Identities = 561/585 (96 %), Gaps = 13/585 (2 %)), *Teratosphaeria knoxdaviesii* (GenBank EU707865; Identities = 561/590 (96 %), Gaps = 11/590 (1 %)) and *Devriesia hilliana* (GenBank GU214633; Identities = 552/605 (92 %), Gaps = 28/605 (4 %)). Based on DNA sequence data of the ITS region, *D. fraseriae* is closely related to *D. lagerstoemiae*, but distinct in that the latter has shorter ramoconidia (9–15 × 3–5 µm), and narrowly ellipsoid intercalary and terminal conidia, (5–)8–12(–15) × 2–3(–4) µm[1].

Colour illustrations. Beach at Fraser Island; conidiophores with conidiogenous cells giving rise to conidia. Scale bars = 10 µm.

Reference. [1]Crous PW, Schoch CL, Hyde KD, Wood AR, Gueidan C, Hoog GS de, Groenewald JZ. 2009. Phylogenetic lineages in the Capnodiales. Studies in Mycology 64: 17–47.

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Pseudocercospora casuarinae

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Pseudocercospora casuarinae Crous & R.G. Shivas, *sp. nov.*

Conidiomata sporodochialia, ad 600 µm diam. et 200 µm procera. Conidiophora brunnea, ramosa, pluriseptata, ad septa constricta vel non constricta, ad 200 µm procera, 3–5 µm lata. Cellulae conidiogenae terminales vel laterales, integratae, subcylindraceae, pallide brunneae, laeviae, 15–30 × 3–4 µm. Conidia pallide brunnea, laevia vel delicate verruculosa, subcylindracea, 3–6-septata, (15–)20–27(–35) × (4–)5(–6) µm.

Etymology. Named after the host from which it was collected, *Casuarina cunninghamiana*.

Conidiomata sporodochial, developing on needles with red-band needle disease; conidiomata on malt extract agar erumpent, dark brown, dense, up to 600 µm diam, and 200 µm high; basal cells of dense, dark brown textura intricata, giving rise to cylindrical, brown, finely verruculose conidiophores that are branched, multi-septate, constricted at septa or not, up to 120 µm tall, 3–5 µm wide, becoming pale brown toward apex, terminating in conidiogenous cells. *Conidiogenous cells* terminal or lateral, integrated, subcylindrical, pale brown, smooth, proliferating sympodially, apex rounded or truncate, fertile locus, 15–30 × 3–4 µm. *Conidia* pale brown, smooth to finely verruculose, subcylindrical to clavate, with rounded apex, tapering from the middle towards a truncate base, 3–6-septate, (15–)20–27(–35) × (4–)5(–6) µm; hila neither thickened nor darkened.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies spreading, erumpent with sparse aerial mycelium, folded surface, and even, lobate margins; colonies reaching up to 8 mm diam. On oatmeal agar iron-grey with patches of pale olivaceous-grey, forming a diffuse red pigment in the agar; on malt extract agar iron-grey on surface and reverse; on synthetic nutrient-poor agar pale olivaceous-grey.

Typus. Australia, Queensland, Cape Tribulation, between Cape Tribulation and Daintree Reserve, Thornton Beachfront Cafe, 16°10'25.7"S 145°26'26.9"E, on needles of *Casuarina cunninghamiana*, 9 Aug. 2009, *P.W. Crous & R.G. Shivas*, CBS-H 20499 holotype, cultures ex-type CPC 17348, 17347 = CBS 128218, ITS sequence of CPC 17347 GenBank HQ599603 and LSU sequence of CPC 17347 GenBank HQ599604, MycoBank MB517547.

Notes — A megablast search of GenBank using the LSU sequence retrieved numerous sequences identical to that of *P. elaeodendri*, e.g. *P. madagascariensis* (GenBank GQ852651), *P. zelkovae* (GenBank GU253850) and *P. weigeliae* (GenBank GU253847). Based on DNA sequence data of the ITS region, *P. casuarina* (on *Casarinaceae*) is closely related to *P. elaeodendri* (on *Celastraceae*) (GenBank GU980950). *Pseudocercospora elaeodendri* differs in having larger conidia (15–95 × 2.5–4 µm, 3–11-septate) than *P. casuarina*[1].

Colour illustrations. Beach at Cape Tribulation, Daintree Reserve; colony on malt extract agar; aggregated conidiophores with conidiogenous cells giving rise to conidia. Scale bars = 10 µm.

Reference. [1]Deighton FC. 1976. Studies on Cercospora and allied genera. VI. Pseudocercospora Speg., Pantospora Cif. and Cercoseptoria Petr. Mycological Papers 140: 1–168.

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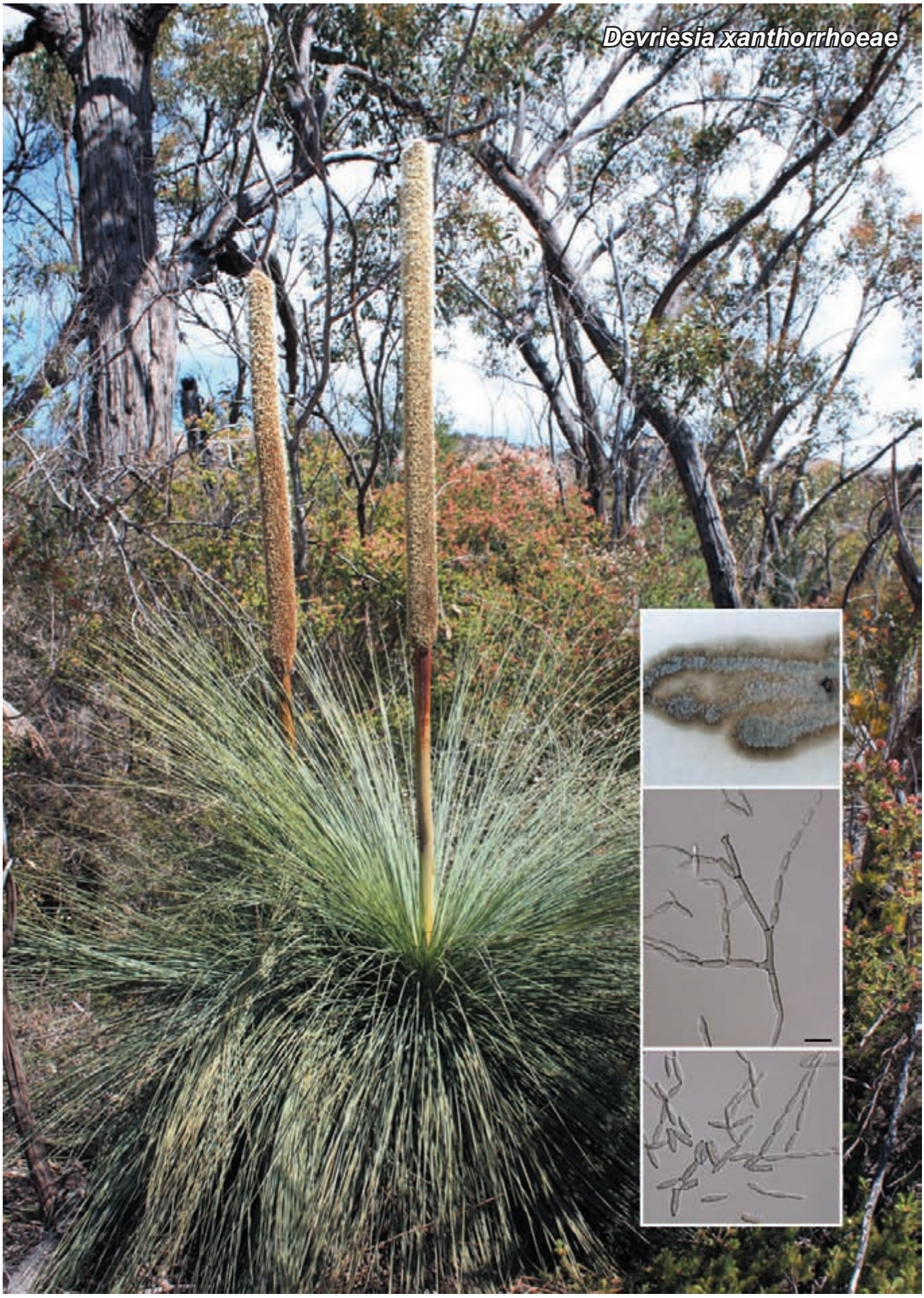
Devriesia xanthorrhoeae

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Devriesia xanthorrhoeae Crous, Pascoe & Jacq. Edwards, *sp. nov.*

Devriesiae lagerstroemiae similis, sed ramoconidiis longioribus, 11–20 × 3–4 µm, discernitur.

Etymology. Named after the host from which it was collected, *Xanthorrhoea australis*.

Mycelium on potato-dextrose agar consisting of smooth, septate, branched hyphae, medium brown, 2–3 µm diam; forming chains of chlamydospore-like cells, ellipsoid, up to 8 µm diam. *Conidiophores* dimorphic, pale brown, smooth, erect. *Macroconidiophores* subcylindrical, straight to flexuous, unbranched or branched, 1–4-septate, 30–80 × 3–4 µm. *Microconidiophores* reduced to conidiogenous cells, doliiform to subcylindrical, 3–7 × 3–4 µm. *Conidiogenous cells* integrated, terminal or lateral, pale brown, smooth, proliferating sympodially, 3–25 × 2–3.5 µm; scars somewhat darkened, neither thickened nor refractive, 1–1.5 µm wide. *Conidia* pale brown, smooth, guttulate, in branched chains; ramoconidia subcylindrical to fusoid-ellipsoidal, 0–1-septate, 11–20 × 3–4 µm; intercalary and apical conidia fusoid-ellipsoid, 0–1-septate, (8–)9–10(–11) × (2–)2.5(–3) µm; hila somewhat darkened, neither thickened nor refractive, 1–1.5 µm wide.

Culture characteristics — (in the dark, 25 °C, after 2 wk): Colonies spreading, flat to erumpent; surface folded, margins smooth, even; colonies reaching up to 8 mm diam. On oatmeal agar pale olivaceous-grey with iron-grey margins; on potato-dextrose agar and malt extract agar iron-grey on surface and reverse.

Typus. Australia, Victoria, Grampians, 37°37'7.5"S 142°19'32.3"E on leaves of *Xanthorrhoea australis* (*Xanthorrhoeaceae*), 21 Oct. 2009, *P.W. Crous*, *I.G. Pascoe & J. Edwards*, CBS-H 20500 holotype, cultures ex-type CPC 17721, 17720 = CBS 128219, ITS sequence of CPC 17720 GenBank HQ599605 and LSU sequence of CPC 17720 GenBank HQ599606, MycoBank MB517548.

Notes — A megablast search of GenBank using the LSU sequence retrieved as closest sister species *Devriesia hilliana* (GenBank GU214414; Identities = 909/911 (99 %), Gaps = 0/911 (0 %)), *D. lagerstroemiae* (GenBank GU214415; Identities = 836/852 (99 %), Gaps = 6/852 (0 %)) and *Teratosphaeria knoxdaviesii* (GenBank EU707865; Identities = 883/900 (99 %), Gaps = 6/900 (0 %)). Based on DNA sequence data of the ITS gene, *D. xanthorrhoeae* is closely related to *D. lagerstroemiae* (GenBank GU214634), but distinct in that the latter has shorter ramoconidia (9–15 × 3–5 µm), and longer intercalary and terminal conidia, (5–)8–12(–15) × 2–3(–4) µm[1].

Colour illustrations. *Xanthorrhoea australis* growing in the Grampians; colony on oatmeal agar; conidiophores with conidiogenous cells giving rise to conidia. Scale bar = 10 µm.

Reference. [1]Crous PW, Schoch CL, Hyde KD, Wood AR, Gueidan C, Hoog GS de, Groenewald JZ. 2009. Phylogenetic lineages in the Capnodiales. Studies in Mycology 64: 17–47.

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Pseudocercospora microsori

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Pseudocercospora microsori R.G. Shivas, A.J. Young & B.C. McNeil, *sp. nov.*

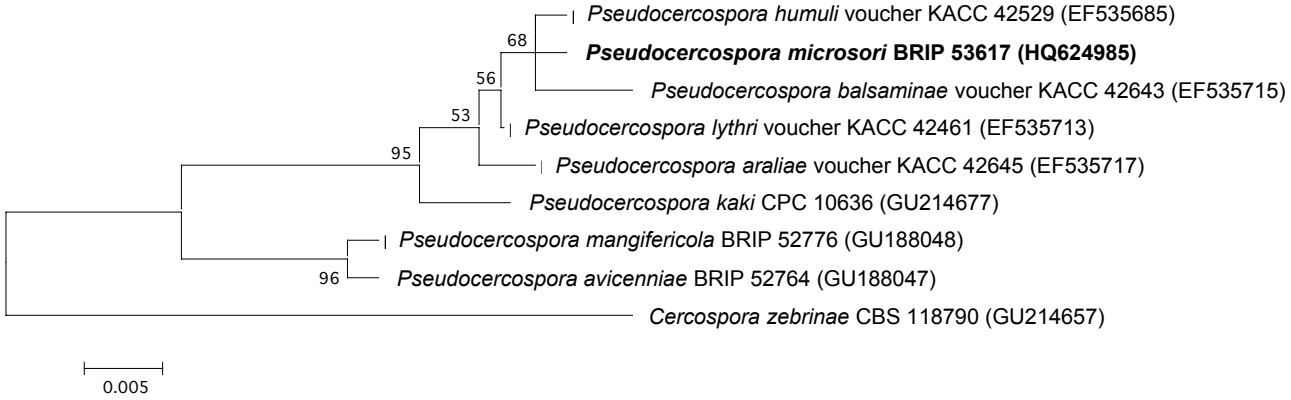
Frondium maculae amphigenae, sparsae ad confluentes, saepe tegentes multum paginae frondium, circulares ad irregulares, marginibus distinctis, inaequalibus et areis chloroticis, finitis venis principibus, 5–15 mm diametro, fuscis rubellis-brunneis, centris cinerascentibus. Conidiomata rubella-brunnea, amphigena, fasciculata, orientia ex stromate maturo substomatali 20–60 µm lato. Conidiophora 5–30 in fasciculis densis vel laxis, geniculata ad sinuosa, inramosa, rubella-brunnea, pallidiora ad apicem, 1–5-septata 30–65 × 3–5 µm. Cellulae conidiogenae terminales in conidiophoro, integratae, subcylindraceae, brunneolae, leves, 10–35 × 2.5–4 µm. Conidia obclavata ad subcylindracea, curvata ad flexuosa, apice rotundato, basi truncata vel paulum obconice truncata, 2–12-septata, 50–110 × 2.5–4 µm, brunneola, levia; hila nec crassata nec fuscata.

Etymology. From the name of the host plant *Microsorum* (*Polypodiaceae*).

Frond spots amphigenous, scattered to confluent, often covering much of the frond surface, circular to irregular with distinct, uneven margins and chlorotic haloes, limited by the main veins, 5–15 mm diam, dark reddish brown with centres becoming grey. *Conidiomata* reddish brown, amphigenous, fasciculate, arise from a well-developed substomatal stroma, 20–60 µm wide. *Conidiophores* 5–30 in dense or loose fascicles, geniculate to sinuous, unbranched, reddish brown, paler towards apex, 1–5-septate 30–65 × 3–5 µm. *Conidiogenous cells* terminal on conidiophore, integrated, subcylindrical, pale brown, smooth, 10–35 × 2.5–4 µm. *Conidia* obclavate to subcylindrical, curved to flexuous, apex rounded, base truncate to slightly obconically truncate, 2–12-septate, 50–110 × 2.5–4 µm, pale brown, smooth; hila not thickened nor darkened.

Typus. Australia, Queensland, Brisbane, West End, Doris Street, on fronds of *Microsorum pustulatum*, 6 Aug. 2010, *B.C. McNeil*, BRIP 53617, holotype; cultures ex-type BRIP 53617, ITS sequence GenBank HQ624985, MycoBank MB517678; Indooroopilly Research Centre, Indooroopilly, 26 Aug. 2010, *B.C. McNeil*, BRIP 53618, paratype.

Notes — Although several *Pseudocercospora* spp. have been recorded on ferns, *P. microsori* is the first on the genus *Microsorum*. Other *Pseudocercospora* spp. with fasciculate conidiophores that have been recorded on ferns include: *P. adianti*[1], *P. arachniodis*[2], *P. athyrii*[2], *P. christellae*[3], *P. cyatheae*[4], *P. lonchitidis*[1], *P. nephrolepidis*[5], *P. phyllitidis*[1], *P. plagiogyriae*[2], *P. pteridicola*[6], *P. pteridophytophila*[2] and *P. thelypteridis*[2]. *Pseudocercospora microsori* is morphologically distinct from these species with its combination of moderately wide (2.5–4 µm) and curved to flexuous conidia. A megablast search of NCBIs GenBank nucleotide database using the ITS sequence revealed high identity to *P. lythri* (GenBank EF535713; Identities = 496/498 (99 %), Gaps = 0/498 (0 %)), *P. humuli* (GenBank EF535685; Identities = 495/498 (99 %), Gaps = 1/498 (0 %)), *P. crousii* (GenBank GQ852756; Identities = 497/502 (99 %), Gaps = 2/502 (0 %)) and *P. araliae* (GenBank EF535717; Identities = 495/499 (99 %), Gaps = 1/499 (0 %)). Genomic DNA of *P. microsori* (holotype) is stored in the Australian Biosecurity Bank (www.padil.gov.au/pbt/).



Maximum Likelihood Tree obtained using the General Time Reversible Model from an ITS sequence alignment generated with MUSCLE in MEGA4. The bootstrap support values from 1 000 replicates are shown at the nodes. Bar represents number of substitutions per site. The species described here is printed in **bold** face. The tree was rooted to *Cercospora zebrinae* CBS 118790 (GU214657).

Colour illustrations. Microsorum pustulatum in a garden, Brisbane with a frond (right) severely infected with *P. microsori*; frond with lesions caused by *P. microsori*; stroma with conidiophores; conidia. Scale bars (left to right) = 1 cm, 10 µm, 10 µm.

References. [1]Crous PW, Braun U. 2003. Mycosphaerella and its anamorphs: 1. Names published in Cercospora and Passalora. CBS Biodiversity Series 1: 1–571. [2]Guo YL, Liu XL, Hsieh WH. 1998. Pseudocercospora. Flora Fungorum Sinicorum, Vol. 9. Science Press, Beijing. [3]Phengsintham P, Chukeatirote E, McKenzie EHC, Moslem MA, Hyde KD, Braun U. 2010. Two new species and a new record of cercosporoids from Thailand. Mycosphere 1: 205–212. [4]Nakashima C, Inaba S, Park JY, Ogawa Y. 2006. Addition and re-examination of Japanese species belonging to the genus Cercospora and allied genera. IX. Newly recorded species from Japan (4). Mycoscience 47: 48–52. [5]Kirschner R, Chen CJ. 2007. Foliicolous hyphomycetes from Taiwan. Fungal Diversity 26: 219–239. [6]Braun U, Melnik VA. 1997. Cercosporoid fungi from Russia and adjacent countries. Proceedings of the Komarov Botanical Institute, Russian Academy of Sciences.

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Upcoming Meeting: CBS symposium 1F=1N

Fungi are the only Kingdom where single species are allowed to have more than one valid scientific name. Is this solution to dealing with fungal pleomorphy still appropriate?

Does DNA sequencing make dual nomenclature superfluous?

Can the International Botanical Code be modified to enable this process, or would a MycoCode be more effective?

How can the mycological community get rid of the legacy of dual nomenclature and Article 59 without nomenclatural chaos?

These fundamental questions in modern fungal taxonomy are the focus of this three day meeting organised by the CBS-KNAW Fungal Biodiversity Centre on the theme "One Fungus = One Name".

Keynote speakers are **John Taylor**, **Mike Wingfield, Scott Redhead** and **David Hawksworth**. The 'One Fungus = One Name' concept will be discussed by various speakers in the following sessions:

- Nomenclature in Applied and Industrial Mycology
- Nomenclature and Fungal Databases
- Names of Fungi in Medical Mycology
- Nomenclature in Plant Pathogenic and saprobic Fungi
- 'One Fungus = One Name', and the International Code of Botanical Nomenclature
- Election of the International Commission on the Taxonomy of Fungi (ICTF)

Date and Venue: The symposium will be held in Amsterdam from 19–21 April 2011 at the Trippenhuis, Royal Netherlands Academy of Arts and Sciences (KNAW).

Presentations: The meeting will consist of invited and offered presentations, and posters.

Celebrations: 40-years CBS, Rob Samson, Joost Stalpers and Sybren de Hoog.

Book launches: *The Yeasts, a Taxonomic Study*, 5th edition (CP Kurtzman, JW Fell & T Boekhout, eds) and *Genera of Hyphomycetes* (KA Seifert, G Morgan-Jones, W Gams & B Kendrick).

Fungal barcoding workshop: Finding the best fungal gene: 17–18 April, at CBS (schoch2@ncbi.nlm.nih.gov for details) see http://connect.barcodeoflife.net/.

Registration: Euro 250,– (includes lunches, coffee and tea for three days and two cocktail parties).
Updated information can be found at http://www.cbs.knaw.nl.

Taxonomic novelties in this issue

Species	Gene loci sequenced
Anthostomella pinea Crous, *sp. nov.* (p. 127)	ITS
Devriesia fraseriae Crous & R.G. Shivas, *sp. nov.* (p. 151)	ITS
Devriesia xanthorrhoeae Crous, Pascoe & Jacq. Edwards, *sp. nov.* (p. 155)	ITS, LSU
Exophiala encephalarti Crous, *sp. nov.* (p. 137)	ITS, LSU
Fusicladium eucalypti Crous & R.G. Shivas, *sp. nov.* (p. 149)	ITS, LSU
Fusicladium peltigericola Crous & Diederich, *sp. nov.* (p. 129)	ITS
Graphium adansoniae Cruywagen, Z.W. de Beer & Jol. Roux, *sp. nov.* (p. 67)	ITS, EF, SSU
Graphium fabiforme Cruywagen, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 69)	ITS, EF, SSU
Graphium madagascariense Cruywagen, Z.W. de Beer & Jol. Roux, *sp. nov.* (p. 69)	ITS, EF, SSU
Lasiodiplodia citricola Abdollahzadeh, Javadi & A.J.L. Phillips, *sp. nov.* (p. 4)	ITS, EF
Lasiodiplodia gilanensis Abdollahzadeh, Javadi & A.J.L. Phillips, *sp. nov.* (p. 5)	ITS, EF
Lasiodiplodia hormozganensis Abdollahzadeh, Zare & A.J.L. Phillips, *sp. nov.* (p. 6)	ITS, EF
Lasiodiplodia iraniensis Abdollahzadeh, Zare & A.J.L. Phillips, *sp. nov.* (p. 8)	ITS, EF
Leptographium altius Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 106)	ITS2-LSU, TUB, EF
Leptographium celere Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 100)	ITS2-LSU, TUB, EF
Leptographium conjunctum Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 99)	ITS2-LSU, TUB, EF
Leptographium curviconidium Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 104)	ITS2-LSU, TUB, EF
Leptographium gracile Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 103)	ITS2-LSU, TUB, EF
Leptographium latens Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 104)	ITS2-LSU, TUB, EF
Leptographium manifestum Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 102)	ITS2-LSU, TUB, EF
Leptographium pistaciae Paciura, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 104)	ITS2-LSU, TUB, EF
Nectriella rusci Lechat, Lowen & Gardiennet, *sp. nov.* (p. 121)	–
Ophiostoma fuscum Linnakoski, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 85)	ITS, TUB
Ophiostoma pallidulum Linnakoski, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 86)	ITS, TUB
Ophiostoma rachisporum Linnakoski, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 83)	ITS, TUB
Ophiostoma saponiodorum Linnakoski, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 88)	ITS, TUB
Ophiostoma tapionis Linnakoski, Z.W. de Beer & M.J. Wingf., *sp. nov.* (p. 84)	ITS, TUB
Phaeothecoidea melaleuca Crous & R.G. Shivas, *sp. nov.* (p. 143)	ITS, LSU
Phytophthora capensis C.M. Bezuidenhout, Denman, A. McLeod & S.A. Kirk, *sp. nov*. (p. 45)	ITS, EF, CO1, TUB, NADH
Pseudocercospora casuarinae Crous & R.G. Shivas, *sp. nov.* (p. 153)	ITS, LSU
Pseudocercospora microsori R.G. Shivas, A.J. Young & B.C. McNeil, *sp. nov.* (p. 157)	ITS
Pseudocercospora nephrolepidicola Crous & R.G. Shivas, *sp. nov.* (p. 139)	ITS, LSU
Pseudophloeospora Crous & R.G. Shivas, *gen. nov.* (p. 141)	ITS, LSU
Pseudophloeospora eucalypti Crous & R.G. Shivas, *sp. nov.* (p. 141)	ITS, LSU
Pythium camurandrum Bala, de Cock & Lévesque, *sp. nov.* (p. 26)	ITS, CO1
Pythium emineosum Bala, de Cock & Lévesque, *sp. nov.* (p. 25)	ITS, CO1
Pythium oopapillum Bala, de Cock & Lévesque, *sp. nov.* (p. 23)	ITS, CO1
Salisapilia Hulvey, Nigrelli, Telle, Lamour & Thines, *gen. nov.* (p. 112)	ITS, LSU
Salisapilia nakagirii Hulvey, Nigrelli, Telle, Lamour & Thines, *sp. nov.* (p. 113)	ITS, LSU
Salisapilia sapeloensis Hulvey, Nigrelli, Telle, Lamour & Thines, *sp. nov.* (p. 113)	ITS, LSU
Salisapilia tartarea (Nakagiri & S.Y. Newell) Hulvey, Nigrelli, Telle, Lamour & Thines, *comb. nov.* (p. 114)	ITS, LSU
Salisapiliaceae Hulvey, Nigrelli, Telle, Lamour & Thines, *fam. nov.* (p. 112)	ITS, LSU
Sphaceloma freyliniae Crous, *sp. nov.* (p. 125)	ITS
Sphaerographium nyssicola Minnis, Rossman & D.F. Farr, *sp. nov.* (p. 123)	ITS
Strelitziana albiziae Crous & H.D. Shin, *sp. nov.* (p. 133)	ITS, LSU
Strelitziana eucalypti Crous & R.G. Shivas, *sp. nov.* (p. 145)	ITS, LSU
Toxicocladosporium banksiae Crous, R.G. Shivas & McTaggart, *sp. nov.* (p. 147)	ITS, LSU
Toxicocladosporium protearum Crous & Roets, *sp. nov.* (p. 135)	ITS, LSU
Xenopolyscytalum Crous, *gen. nov.* (p. 131)	ITS, LSU
Xenopolyscytalum pinae Crous, *sp. nov.* (p. 131)	ITS, LSU