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PERSOONIA *Reflections*

Editorial: Persoonia's 50th anniversary

Persoonia was established in 1959 as an international journal of mycology named in honour of Christiaan Hendrik Persoon, who is generally regarded as the 'Father of Systematic Mycology'. Since *Persoonia* was relaunched as a fast-track, open access, full colour journal in 2008, it has grown rapidly many ways. Whereas previously the journal catered mostly for papers focusing on fungal systematics of basidiomycetes (Bañares et al. 2007, Bas & Arnolds 2007, Clémençon 2007, Corriol & Moreau 2007, Gates & Noordeloos 2007, Moreno & Esteve-Raventós 2007, Moreno et al. 2007), this has become more balanced over the past two years with more papers being received on other topics of mycology such as fungi occurring in fresh and hypersaline water (Cai et al. 2008, Dugan et al. 2008), rocks (Ruibal et al. 2008), fruit trees (Damm et al. 2008a–c), forest trees (Cheewangkoon et al. 2008, Phillips et al. 2008, Zhou et al. 2008), soil (Nguyen & Seifert 2008), proteas (Crous et al. 2008a, Marincowitz et al. 2008), grapevines (Essakhi et al. 2008), cycads (Crous et al. 2008b) and bananas (Arzanlou et al. 2008). Other papers focused on yeasts (Groenewald et al. 2008) and basidiomycetes such as *Boletus* (Beugelsdijk et al. 2008), *Cyathus* (Zhao et al. 2008), *Cortinarius* (Vila et al. 2008) and smut fungi (Roets et al. 2008).

The next exciting step for *Persoonia* is to be listed in PubMed from 2009 onwards. Although all published papers are in a DOI repository, we believe that PubMed will give our authors even more exposure than presently achieved via the two independent online websites, www.IngentaConnect.com, and www.persoonia.org. This high level of exposure, which is also obvious from the thousands of full paper downloads per week, is further reflected in the rise of our impact factor, which jumped from zero to above 1 in just six months, and will continue to rise in the coming year, underlining the topical importance of biodiversity, molecular systematics and fungal evolution.

The year 2009 represents yet another milestone for *Persoonia*, as it is our 50th anniversary. To celebrate this wonderful occasion, the editorial board has decided to select the 50 most beautiful fungi published throughout the year, and compile their illustrations as a special poster, to be included in the December issue of *Persoonia*.

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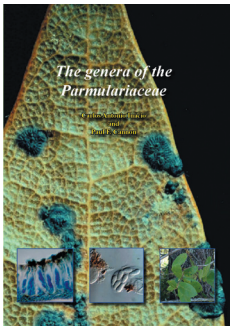
Book Review



Inácio CA, Cannon PF. 2008. *The genera of the Parmulariaceae*. CBS Biodiversity Series 8. Pp. 196; 12 colour plates, 52 black & white plates, 43 line drawings, hard cover. Price 65 €. CBS Fungal Biodiversity Centre, ISBN: 978-90-70351-72-4.

Understanding the many poorly studied families of *Dothideomycetes* is complicated, while identification of collections, especially of the many tropical leaf biotrophs is a very difficult task as they have been poorly studied and documented. This book on *Palmulariaceae* is therefore a much needed addition to the topic.

The book is no 8 in the CBS Biodiversity Series and is well laid out and well illustrated. A great deal of effort has gone into researching and compiling this book and the authors are warmly congratulated.

One important aspect is whether the family is clearly outlined and the authors start with a historical review. Certainly in this aspect the family is well documented and the difficulty in understanding the family is clearly stated. A precise diagnosis for the family is also provided although several other genera not mentioned in the book might well fit into this description. The family is also compared with similar families, i.e., *Asterinaceae*, *Schizothyriaceae*, *Polystomellaceae* and *Vizellaceae*, – but there are certainly more families that might have been included. The differences are objectively outlined and although as the authors admit – "there are many genera that may require transfer between the two families" (*Asterinaceae* and *Palmulariaceae*).

Because almost all attempts to isolate taxa of *Palmulariaceae* have failed and dried material is mostly inadequate the book focuses on careful morphological investigations and information management using important databases.

The main context of this book discusses each genus and this is most thorough and will be very useful for mycologists. The following inclusions are provided for each genus; history, differences between species, ecology, comparison with other genera, diagnostic features, detailed description, notes, and illustrations. In all the book deals with 34 accepted genera, two excluded genera and several doubtful genera. Descriptions of genera are very thorough and are based on the type species and all are very well illustrated (it would be nice if they had been in colour).

There are some nice Tables in the book, including Table 1.5 which lists host families on which the *Palmulariaceae* are found and Table 3.2 which provides a synopsis of ascospores of the type species of genera. There is also a key to all genera of the *Palmulariaceae*.

This is an excellent book and starts to deal with the immense complexity of the *Dothideomycetes*, many families of which are poorly understood. Of course had the authors been able to use DNA sequence data they could probably have derived better biologically defined families. However, isolates in culture collections are often wrongly identified, as are names with sequences in GenBank. Therefore the authors have achieved a magnificent task based on the material they had to work with (herbarium material). I strongly congratulate the authors on a job well done.

The book should be available in all universities and colleges where mycology is taught and where work on mycology is carried out, especially where there is a need to work with and identify plant pathogens.

K.D. Hyde

Errata in New Titles in Mycology in Persoonia 21

In Persoonia 21, Reflections unfortunately some typing errors ocurred in the following titles, for which we apologise. The correct entries are given below:

Douanla-Meli C. 2007. *Fungi of Cameroon. Ecological diversity with emphasis on the taxonomy of Non-gilled Hymenomycetes from the Mbalmayo forest reserve*. Bibliotheca Mycologica 202; J. Cramer, Berlin-Stuttgart. Pp 410; 172 line drawings. ISBN 978-3-443-59104-5. Price € 89.

Frisch A, Lange U, Staiger B. 2007. *Lichenologische Nebenstunden. Contributions to lichen taxonomy and ecology in honour of Klaus Kalb*. Bibliotheca Lichenologica 92. J. Cramer, Berlin-Stuttgart. Pp 343. ISBN 978-3-443-58075-9. Price € 74.

Kärnefelt I, Thell A. 2007. *Lichenological contributions in honour of David Galloway*. Bibliotheca Lichenologica 95. J. Cramer, Stuttgart. Pp 604; numerous illustrations. ISBN 978-3-443-58074-2. Price € 98.

M.E. Noordeloos

New proposals to amend the name of the Code, and its governance with respect to fungi

Previous proposals to change the name of the *Code* (Hawksworth 1993) were rejected at the Tokyo International Botanical Congress in 1993, and not considered again at subsequent congresses. However, the *Fungi* are now commonly accepted as being part of the 'superkingdom' Opisthokonta which also contains Animalia (Adl et al. 2005, James et al. 2006); plants are placed in the comparable super-group Archaeplastida. Mycologists as a community wish to be seen as independent from botanists, as reflected in an informal vote at the International Mycological Congress in Cairns in 2006 (Rossman 2006). Furthermore, there are also calls for the establishment of a separate code of fungal nomenclatural, similar to that used by bacteriologists (Samson et al. 2007), and questionnaires at mycological meetings in Russia, Spain and the USA have all been in favour of either a separate Code for fungi or modification in the Botanical Code (Hawksworth 2007).

To address these issues, new proposals were recently made by D.L. Hawksworth and colleagues and published in both Taxon and Mycotaxon (Hawksworth et al. 2009). Furthermore, a Nomenclatural Session will be convened during the IX International Mycological Congress in Edinburgh in 2010 that will both debate the issue of a separate Code and consider and vote on proposals made to change provisions in the current Code for fungal organisms made by that time. The Edinburgh Congress will also propose membership of the Committee for Fungi to serve after the Melbourne Congress. Decisions made at the Nomenclature Session in Edinburgh in 2010, which will be attended by the Rapporteur-general of the 2011 International Botanical Congress, will be transmitted to the Nomenclature Section meetings in Melbourne in 2011. If the above proposals are accepted in Melbourne, any future decisions relating only to fungal organisms made in Edinburgh would be available for adoption there.

A whole day is planned to be set aside for the Nomenclature Session in Edinburgh, and all full registrants at the Congress will be able to vote on all formal proposals made to that date, copies of which it is envisaged will be made available at the Registration Desk. Unlike International Botanical Congresses, no system of weighted 'institutional votes' will be allowed. Hawksworth (in litt.) suggests that the IMA Executive Committee to nominate a Chair, Vice-Chair, and Rapporteur for the Session for ratification or change by those present at the start of the Session.

In any event, it has been agreed that Mycotaxon will now publish all proposals relating to the nomenclature which are included in Taxon as simultaneously as possible, starting with the April–June 2009 volume.

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IMC9: The Biology of Fungi. Edinburgh, UK. 1–6 August 2010

Fungal biology has never been as important as it is today and this is undoubtedly the most exciting time to be studying the subject. The International Mycological Congress represents the greatest scientific forum to provide an up-to-date perspective of mycology in all its guises. The 9th International Mycological Congress (IMC9: the Biology of Fungi) will be hosted by the British Mycological Society in 2010 in Edinburgh, Scotland.

Scientific themes

- Cell biology, biochemistry and physiology
- Environment, ecology and interactions
- Evolution, biodiversity and systematics
- Fungal pathogenesis and disease control
- Genomics, genetics and molecular biology

Keynote speaker

John Taylor (UC Berkeley, USA) – The poetry of mycological accomplishment and challenge

Plenary speakers

Alastair Fitter (York University, UK) – Nutritional and evolutionary ecology of mycorrhizal fungi
Joseph Heitman (Duke University, USA) – Microbial pathogens in the fungal kingdom
David Hibbett (Clark University, USA)
Nancy Keller (UW Madison, USA)
Gero Steinberg (Exeter University, UK)
Nick Talbot (Exeter University, UK)

Important information

For information about field trips, workshops, symposia, jobs, studentships, bursaries, visit this website for regular updates: www.imc9.info

Fungal Planet henceforth also in Persoonia*l R*eflections

The concept of biodiversity brings images of adorable animals ('charismatic megafauna') and beautiful plants to the mind of the average person. Many people are concerned about endangered species, and in general about the negative effects of human economic activities on wild plants and animals. Those who fund biodiversity research often have similar perspectives. These viewpoints are understandable, but in terms of real biology, unrealistically narrow.

Few people, for example, ever think of fungi in these terms. Fungi are rarely considered organisms that can be threatened, or whose activities can be essential to the health of ecosystems. A major aim within biology these days is to link fungi to their environment, i.e. to the ecosystems where they occur. Mycologists know that there are more than 1.5 million species of fungi, of which we currently know only around 7 %. The Fungal Planet project is intended to facilitate the description of new fungal species. At the same time, it aims to stabilize the nomenclature of known species, and very importantly, to develop non-technical material on fungal diversity that might resonate with politicians, decision makers and other biologists.

With this initiative, we aim to highlight the world's incredible fungal diversity, and thus emphasize the importance of supporting fungal biodiversity research. Although not all fungi can be cultivated, we intend to make cultures or DNA extracts of all species included in the Fungal Planet available to international initiatives such as AFToL (Assembling the Fungal Tree of Life), and CBoL (Consortium for the Barcode of Life). Contributors must ensure that cultures or DNA are deposited in major international collections to facilitate further research on these taxa.

Fungal Planet is expected to be one of several kingdom-based, consortium-style projects aimed at facilitating the discovery and description of our planet's biodiversity. You and other mycologists are invited to contribute to this venture.

A major aim of Fungal Planet is to remove the bottleneck obstructing species description: it provides a rapid, simplified outlet for researchers to describe species that they might never have time to describe in regular scientific journals because of the time and effort required to write a full scientific paper. Each published species description will consist of two pages, namely a technical page, and a colour illustration page. Additional information (including phylogenetic trees) can be included, if necessary, in supplementary pdf or MSWord files available on-line in MycoBank (www.MycoBank.org).

The colour page will include colour photos of the fungus in vivo and in vitro (if available). The inclusion of a high quality colour photograph portraying the ecology of the organism, either as a background for the plate, or as one element of the plate, is strongly encouraged.

The editors expect excellent descriptions, and illustrations that meet or exceed the state of the art for the taxonomic group in question. Authors must convincingly demonstrate to the editors and peer reviewers that a) their species are indeed novel; b) that they are being appropriately classified; and c) that they are described and illustrated with sufficient detail and comprehensiveness that they can be identified reliably by other taxonomists (organisms such as root endophytes for which morphological identification is not recommended can be included, but should also be given a standard description). If these items exceed the two page limit, the elements in excess can be developed, along with additional discussion and notes on methods, as supplementary material deposited in MycoBank as MSWord or pdf documents, accessioned alongside the species description.

Species descriptions will be published twice a year (June and December). A link to MycoBank will connect with a system allowing mycologists to receive alerts if species have been described in genera of special interest to them. To facilitate clarity in citation, and streamline the link to GenBank, Fungal Planet description sheets will henceforth also appear in Persoonia/ *R*eflections, giving them a journal volume and page citation.

Fungal Planet, the book

A major initiative of this project will be to produce a visually arresting, scientifically compelling, large-format book targeted at a non-specialist audience. This book will highlight the morphological and phylogenetic diversity of fungi, presenting as much information as possible on the importance of fungi to planet Earth. We will attempt to portray the full range of ecological niches and roles associated with fungi, as well as the full spate of economic and health impacts. Dramatic colour photos will show familiar landscapes and habitats in a context that will emphasize their 'invisible' fungal dimension. To the greatest extent possible, the 1 000 species presented in this book will be selected by the editors from the new and epitypified species presented in the other parts of the Fungal Planet. Therefore, authors of new or epitypified species are encouraged to submit several additional colour photographs that will not necessarily appear in their original papers, but that can be selected for the alternative published versions of the project. These photographs might include the collection sites of the fungi, spectacular habit photographs, or even pictures of mycologists collecting fungi. Imagination, attention to aesthetics, and careful photography are key aspects for these non-technical photographs that are intended to highlight the fungal world.

Our goal is to produce a book that features compelling design and stimulating concepts, so that it can be used to market the fungal kingdom as an important, intrinsically fascinating, and often surprisingly beautiful component of biodiversity.

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Oedocephalum adhaerens

Fungal Planet 31 – 30 June 2009

Oedocephalum adhaerens E.M. Davison & R.G. Shivas, *sp. nov.*

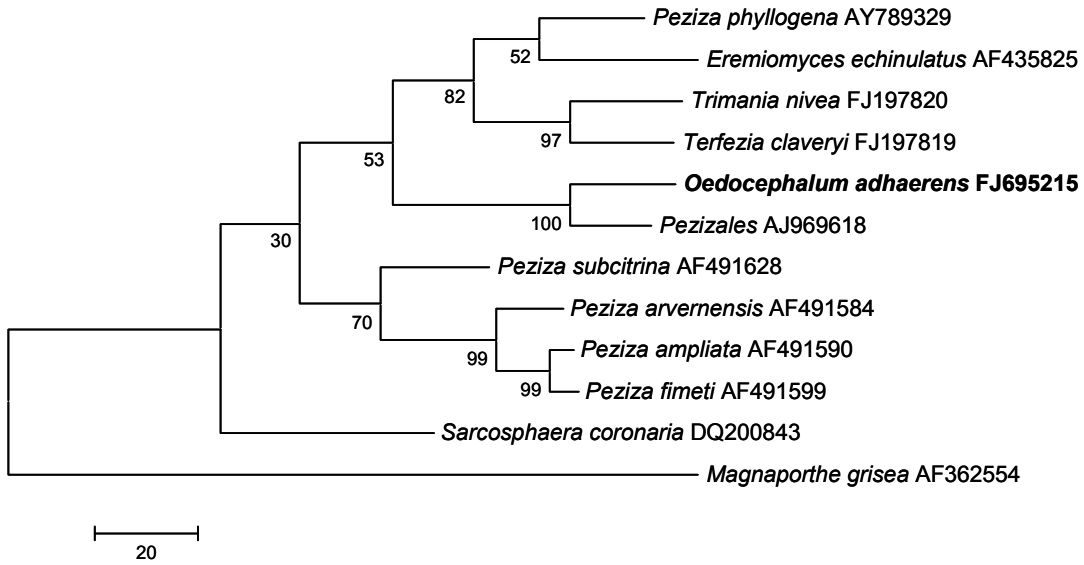
Hyphae hyalinae, tenui-tunicatae, 8 µm diam. Conidiophorae erectae, hyalinae, non ramosae, vesicula terminali conidiogena denticulata cum 70–180 sporis. Denticuli ad 2 µm longi. Conidiogenesis holoblastica. Secessio schizolytica. Conidia adhaerens in capitulo, unicellulata, (sub)globosa, rugosa, primo alba, deinde brunnea, (42–)47–88(–95) µm diametro.

Etymology. Derived from the Latin *adhaerens*, in reference to the conidia that cling together to form spore balls.

Mycelium superficial, hyphae hyaline, septate, thin-walled, with chains of intercalary ellipsoidal cells up to 20 µm wide. *Conidiophores* erect, solitary, unbranched, hyaline with a terminal, spherical conidiogenous vesicle delimited by a septum; conidiogenesis holoblastic synchronous, with localised wall building occurring simultaneously at different loci over the entire surface, with each locus forming one conidium. Delimitation of conidia by one septum, secession schizolytic, and no proliferation of conidiogenous cell. After secession, the conidiogenous cell and conidiophore collapse. *Conidia* aseptate, 12–15 × 10–14 µm; the outermost wall ornamented with prominent golden brown tubercles, up to 2 µm diam; tubercles largest where adjacent conidia touch, and fit together like teeth of a zipper, forming tightly adherent conglobate spore balls. *Conidial spore balls* initially white, becoming pale brown and finally brown to dark brown, (42–)47–88(–95) µm diam, composed of approximately 70–180 spores. After 2 wk in daylight at 20 °C on 2 % potato-dextrose agar, colonies pinkish to salmon, about 4 cm diam, with adpressed mycelium and irregular to undulate margins.

Typus. Australia, Northern Territory, Simpson Desert, 24° 17' 19" S, 137° 27' 44" E, developed in moist chamber (PJND & EMD 522) on fresh bark of *Eucalyptus coolabah* ssp. *arida*, 4 July 2007, *E.M. Davison*, BRIP 52200, holotype; PERTH 07930437, D 189869 isotypes; PERTH 07930445, D 190016 paratypes; culture ex-type BRIP 52200, GenBank FJ695215, MycoBank MB512926.

Notes — *Oedocephalum adhaerens* fits within the concept of this genus as defined by Stalpers[1]. It differs from described species[1,2] in having balls of brown conglobate conidia that develop from conidiogenous cells that collapse after secession. *Oedocephalum adhaerens* is widespread in arid areas of Australia, being found in the Northern Territory and Western Australia. It has developed in moist chamber cultures of bark from living trees of *Erythrina vespertilio* and dead trees of *Atalaya hemiglauca* and *Acacia aneura*.



The most parsimonious tree (TL = 557; CI = 0.599; RI = 0.576) was obtained from a max-mini branch-and-bound search of an ITS sequence alignment using MEGA4[3]. The scale bar shows 20 changes, and bootstrap support values from 1 000 replicates are shown at the nodes. The species described here is printed in **bold** face. The tree was rooted to *Magnaporthe grisea* (GenBank AF362554).

Colour illustrations. The *Eucalyptus coolabah* ssp. *arida* tree that yielded the type collection: mature spore balls on bark in moist chamber; immature conidiogenous cell and conidiophore (stain: 3 % erythrosine in 10 % NH_4OH); mature spore ball; delimitation of conidia and collapsed conidiogenous cell (stain: 1 % Congo Red). Top left inserted image has scale bar = 1 mm; other scale bars = 25 µm.

Acknowledgements EMD thanks Lindsay Bookie, the traditional owner, for permission to collect on his land, and the Australian Geographic Society for the opportunity to be part of its expedition to the Simpson Desert. Mr Don Barrett (University of Queensland) is thanked for preparing the Latin translation.

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Dothiorella thripsita

Fungal Planet 32 – 30 June 2009

Dothiorella thripsita R.G. Shivas & D.J. Tree, *sp. nov.*

Conidia cylindracea ad clavata, recta, ambo extrema late rotundata, 20–25 × 8.5–11.5 µm, aseptata et pallide brunnea ubi sunt iuvenia, orientia septata et brunnea ubi sunt matura, saepe cum guttula in quaque cellula, paries dense et minute verruculosus, facies levis in LM, verruculosa in SEM.

Etymology. Named after the insect that feeds on this fungus.

Conidiomata pycnidial, solitary, immersed, partially erumpent when mature, dark-brown, globose to ellipsoidal, up to 300 × 200 µm diam, uniloculate, wall composed of an outer layer of dark brown, thick-walled textura angularis, and an inner layer of thin-walled hyaline cells. *Ostiole* central, circular, papillate. *Conidiophores* absent. *Conidiogenous cells* 10–15 × 3–6 µm, holoblastic, discrete, cylindrical, hyaline, smooth, indeterminate. *Conidia* cylindrical to clavate, straight, both ends broadly rounded, 20–25 × 8.5–11.5 µm, aseptate and pale brown when young, becoming septate and brown when mature, often with a guttule in each cell, wall densely and minutely verruculose, profile smooth under light microscope, verruculose in scanning electron microscope, in vitro on Sachs' agar supporting sterilised pieces of maize leaf and in vivo.

Culture characteristics — Colonies on 10 % potato-dextrose agar (Difco) grew up to 65 mm diam after 5 d in the dark at 23 °C; after 3 wk in the dark followed by 5 d under black light, colonies covered the entire plate and were olivaceous-black to charcoal, with sparse aerial mycelium; reverse greyish black to charcoal; colonies sterile. Abundant conidia produced on Sachs' agar supporting sterilised pieces of maize leaf.

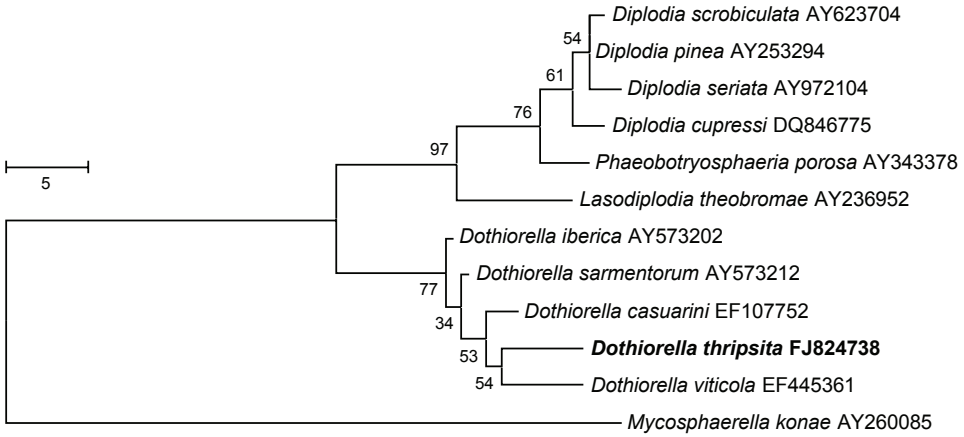
Typus. Australia, Queensland, Tallegalla, 27° 35' 40" S, 152° 33' 01" E, alt. 160 m, on dead stems and phyllodes of *Acacia harpophylla* F. Muell. ex Benth. 24 Mar. 2008, *D.J. Tree & C.E.C. Tree*, isol. D.J. Tree, BRIP 51876, holotype; cultures ex-type BRIP 51876, GenBank FJ824738, MycoBank MB513166.

Notes — Thrips (Thysanoptera) are an order of insects that includes many plant pests. Approximately 10 % of the 6 000 known species of thrips feed on whole fungal spores[1]. *Mecynothrips hardyi* (Priesner 1928) has only been found on dead leaves of brigalow (*Acacia harpophylla*) that are still attached to the plant. Larvae and adults of *M. hardyi* feed almost exclusively on conidia of *Do. thripsita*.

The conidia of *Do. thripsita* become dark and septate prior to discharge from the pycnidium, which distinguishes it from species of *Diplodia* and other anamorphic *Botryosphaeriaceae* that have morphologically similar conidia[2]. There are three species of *Diplodia* reported on *Acacia* (*Mimosaceae*) in Australia, namely *D. acaciarum* (type on *Acacia decurrens*), *D. lichenopsis* (type on *Acacia complanata*), and *D. phyllodiorum* (type on *Acacia* sp.). According to the type descriptions, *Do. thripsita* has narrower conidia than *D. acaciarum* (18–24 × 11–15 µm) and has conidia that are longer and wider than those of *D. phyllodiorum* (6–10 × 4–5 µm). *Diplodia lichenopsis* has conidia that measure 20–25 × 8–10 µm, which are similar in size to those of *Do. thripsita*. However, *D. lichenopsis* has conidia with smooth walls, which differs from the verruculose walls of *Do. thripsita*.

The type specimen of *D. lichenopsis* was collected by Bailey in c. 1890, near the Brisbane River and forwarded to Cooke and Massee. Two isotype specimens were retained in Australia (BRIP 074 and VPRI 1394). Two further specimens of *D. lichenopsis* were collected in 1906 (BRIP 4999) and 1910 (BRIP 5000) by Tryon in Brisbane on *Acacia complanata*. Another specimen was collected by Bailey (BRIP 075) without further collection details. These specimens were examined for the presence of diplodia-like conidia. All of these specimens consist of several phyllodes of *Acacia complanata* exhibiting irregular pale grey leaf lesions, 5–10 mm diam, containing small dark spots less than 1 mm diam. On close examination these were found to be acervuli of *Pestalotiopsis* and no diplodia-like conidia were seen. It appears that no material of *D. lichenopsis* is extant.

The most parsimonious tree (TL = 112; CI = 0.725; RI = 0.855) was obtained from a max-mini branch-and-bound search of an ITS sequence alignment using MEGA4[3]. The scale bar shows 5 changes, and bootstrap support values from 1 000 replicates are shown at the nodes. The species described here is printed in **bold** face. The tree was rooted to *Mycosphaerella* (GenBank AY260085).



Colour illustrations. *Acacia harpophylla* with dead leaves harbouring *Mecynothrips hardyi* and *Do. thripsita* from the type locality; adult male *M. hardyi*; conidia; pycnidia; SEM of conidia. Scale bar = 1 mm for adult male *M. hardyi*; other scale bars = 10 µm.

References. [1]Mound LA. 2007. New Australian spore-feeding Thysanoptera (Phlaeothripidae: Idolothripinae). Zootaxa 1604: 53–68. [2]Wet J de, Slippers B, Preisig O, Wingfield B, Tsopelas P, Wingfield M. 2009. Molecular and morphological characterization of Dothiorella casuarini sp. nov. and other Botryosphaeriaceae with diplodia-like conidia. Mycologia doi:10.3852/07-180. [3]Tamura K, Dudley J, Nei M, Kumar S. 2007. MEGA4: Molecular Evolutionary Genetics Analysis (MEGA) software v4.0. Molecular Biology and Evolution

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Tilletia micrairae

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Tilletia micrairae R.G. Shivas, M.D. Barrett, R.L. Barrett & McTaggart, *sp. nov.*

Sporae globosae, subglobosae, ovoideae vel late ellipsoideae, 24–33(–37) × (22–)24–32 µm, luteolae ad atras-rubellas vel fuscas, subopaceae vel opacaeae, paries 1.5–6.5 µm densus, cum verrucis dense sitis, (1–)1.5–6 µm altis, altioribus in sporis luteolis brunneis quam in sporis fuscioribus; verrucae in sporis luteolis brunneis acutae vel subacutae, spiniformes; in sporis fuscis verrucae sunt obtusae vel clavicipites, sub-hyalinae, superficiali aspectu visae maculae irregulares, subpolyangulares, 10–15(–20) µm per sporam diametro, segregatae vel fusae in ordines vel greges breves, irregulares, 40–55 in sporae ambitu, facies sporae levis propter vaginam in qua verrucae sunt inclusae.

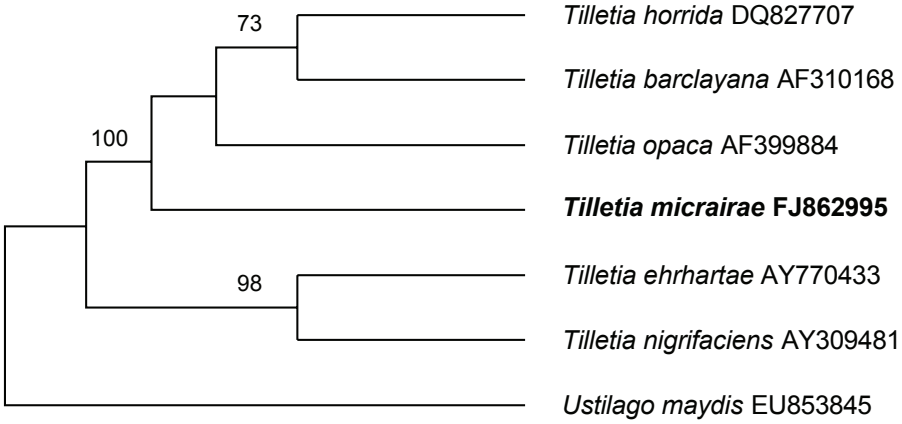
Etymology. Derived from the name of the host plant *Micraira*.

Sori in some ovaries of an inflorescence, obovoid, more rarely broadly ellipsoidal or lemon-shaped, 0.5–1 × 0.7–1.2(–1.5) mm, covered by a thin greyish brown pericarp that ruptures irregularly, exposing the black powdery mass of spores mixed with numerous sterile cells. *Spores* globose, subglobose, ovoid or broadly ellipsoidal, 24–33(–37) × (22–)24–32 µm, yellowish to dark reddish or chocolate-brown, sub-opaque or opaque; wall 1.5–6.5 µm thick, including the densely situated warts, (1–)1.5–6 µm high, higher in yellowish brown spores than in darker spores; warts in yellowish brown spores acute or subacute, spiniform, in dark spores the warts are blunt or nail-headed, sub-hyaline, in surface view appearing as irregular subpolyangular spots, 10–15(–20) per spore diam, isolated or fusing into short, irregular rows or groups, 40–55 on the spore circumference, spore profile smooth due to the sheath in which the warts are embedded. *Sterile cells* globose, subglobose, broadly ellipsoidal to slightly irregular, 12–33(–40) × 12–26 µm, sub-hyaline, content homogenous or usually with droplets; wall 1.5–7 µm thick, smooth.

Typus. Australia, Western Australia, Morgan River near 'Cypress Valley', c. 4 km SE of Theda Station Homestead, 14° 48' 52" S, 126° 30' 51" E, *Micraira dunlopii*, 28 Jan. 2007, *M.D. & R.L. Barrett*, BRIP 52433, holotype; HUV 21566, PERTH 08018987, isotypes; GenBank FJ862995, MycoBank MB513234.

Notes — Thirty-seven species of *Tilletia* have been reported from Australia[1,2] of which 13 are endemic to northern Australia. The host plant *Micraira* is the only member of its tribe (*Micrairreae*) in the small subfamily *Micrairoideae*[3] (along with the tribes *Eriachneae* and *Isachneae*). All *Micraira* spp. are resurrection plants that are endemic to Australia with limited distributions. The genus *Micraira* is currently under revision and there are several undescribed species that are restricted to sandstone pavements. There are no previous records of smut fungi on *Micraira*.

BLASTn results of the ITS sequence of *T. micrairae* (GenBank FJ862995) had high identity to sequences of *T. opaca* on *Spinifex littoreus* (AF399884, 93 % identical), *T. barclayana* on *Paspalum distichum* (AF310168, 93 % identical) and *T. horrida* strain JA1 on *Oryza sativa* (DQ827707, 93 % identical). Genomic DNA of *T. micrairae* (holotype) is stored in the Australian Biosecurity Bank (http://www.padil.gov.au/pbt/).



Majority-rule consensus tree (TL = 319; CI = 0.900; RI = 0.660; RC = 0.5930) obtained using parsimony in a heuristic search with 100 random taxon additions from an ITS sequence alignment using PAUP v4.0b10. The bootstrap support values from 1 000 replicates are shown at the nodes. The species described here is printed in **bold** face. The tree was rooted to Ustilago maydis (DC.) Corda (GenBank EU853845).

Colour illustrations. *Micraira dunlopii* near Theda Station Homestead, Western Australia; plants infected with *T. micrairae*; sori in ovaries of *M. dunlopii*; spores and sterile cells; spore wall seen in SEM. Scale bars (from left to right) = 1 cm, 1 mm, 20 µm, 20 µm.

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References. [1]Vánky K, Shivas RG. 2008. Fungi of Australia: The smut fungi. ABRS, Canberra; CSIRO Publishing, Melbourne. [2]Shivas RG, McTaggart AR. 2009. Three new species of Tilletia on native grasses from northern Australia. Australasian Plant Pathology 38: 128–131. [3]Sánchez-Ken JG, Clark LG, Kellogg EA, Kay EE. 2007. Reinstatement and emendation of subfamily Micrairoideae (Poaceae). Systematic Botany 32: 71–80.

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Taxonomic novelties in this issue

Species	Gene loci sequenced
Albugo laibachii Thines & Y.J. Choi, sp. nov. (p. 126)	ITS, Cox2
Brycekendrickomyces Crous & M.J. Wingf., gen. nov. (p. 141)	ITS, LSU
Brycekendrickomyces acaciae Crous & M.J. Wingf., sp. nov. (p. 141)	ITS, LSU
Byssochlamys laguncullariae (C. Ram) Samson, Houbraken & Frisvad, comb. nov. (p. 18)	ITS, CAL, TUB
Ceratocystis larium M. van Wyk & M.J. Wingf., sp. nov. (p. 80)	ITS, EF, TUB
Chalastospora ellipsoidea Crous & U. Braun, sp. nov. (p. 145)	ITS, LSU
Chalastospora gossypii (Jacz.) U. Braun & Crous, comb. nov. (p. 144)	ITS, LSU
Chalastospora obclavata Crous & U. Braun, sp. nov. (p. 146)	ITS, LSU
Cladosporium chubutense K. Schub., Gresl. & Crous, sp. nov. (p. 116)	ITS, ACT, EF
Cladosporium colombiae K. Schub. & Crous, sp. nov. (p. 120)	ITS, ACT, EF
Cladosporium pini-ponderosae K. Schub., Gresl. & Crous, sp. nov. (p. 118)	ITS, ACT, EF
Cyphellophora eugeniae Crous & Alfenas, sp. nov. (p. 147)	ITS, LSU
Dictyosporium strelitziae Crous & A.R. Wood, sp. nov. (p. 150)	ITS, LSU
Didymella clematidis Woudenberg, Spiers & Gruyter, sp. nov. (p. 60)	ITS, LSU, TUB
Dothiorella thripsita R.G. Shivas & D.J. Tree, sp. nov. (p. 169)	ITS
Geoglossomycetes, *Geoglossales* Zheng Wang, C.L. Schoch & Spatafora, cl. & ord. nov. (p. 131)	EF, mSSU, nLSU, nSSU, RPB1, RPB2
Oedocephalum adhaerens E.M. Davison & R.G. Shivas, sp. nov. (p. 167)	ITS
Paecilomyces brunneolus (N. Inagaki) Samson & Houbraken, comb. nov. (p. 21)	ITS, CAL, TUB
Paecilomyces divaricatus (Thom) Samson, Houbraken & Frisvad, comb. nov. (p. 21)	ITS, CAL, TUB
Paecilomyces formosus (Sakag., May. Inoue & Tada) Houbraken & Samson, comb. nov. (p. 21)	ITS, CAL, TUB
Paecilomyces saturatus (Nakaz., Y. Takeda & Suematsu) Samson & Houbraken, comb. nov. (p. 24)	ITS, CAL, TUB
Passalora intermedia Crous & M.J. Wingf., sp. nov. (p. 88)	ITS, LSU
Phytophthora multivora P.M. Scott & T. Jung, sp. nov. (p. 6)	ITS, Cox1
Phytophthora plurivora T. Jung & T.I. Burgess, sp. nov. (p. 102)	ITS, Cox1, TUB
Pseudocercospora madagascariensis Crous & M.J. Wingf. (p. 88)	ITS, LSU
Teratosphaeria dimorpha (Crous & Carnegie) Crous & Summerell, comb. nov. (p. 42)	ITS, LSU
Teratosphaeria gauchensis (M.-N. Cortinas, Crous & M.J. Wingf.) M.J. Wingf. & Crous, comb. nov. (p. 47)	ITS, LSU
Teratosphaeria hortaea Crous & M.J. Wingf., sp. nov. (p. 89)	ITS, LSU
Teratosphaeria juvenalis Crous & M.J. Wingf., sp. nov. (p. 44)	ITS, LSU
Teratosphaeria ovata (H.J. Swart) Crous & Summerell, comb. nov. (p. 44)	ITS, LSU
Teratosphaeria veloci Crous & Summerell, sp. nov. (p. 46)	ITS, LSU
Teratosphaeria verrucosa Crous & M.J. Wingf., sp. nov. (p. 46)	ITS, LSU
Teratosphaeria zuluensis (M.J. Wingf., Crous & T.A. Cout.) M.J. Wingf. & Crous, comb. nov. (p. 47)	ITS, LSU
Tilletia micrairae R.G. Shivas, M.D. Barrett, R.L. Barrett & McTaggart, sp. nov. (p. 171)	ITS
Toxicocladosporium chlamydosporum Crous & M.J. Wingf., sp. nov. (p. 90)	ITS, LSU
Toxicocladosporium rubrigenum Crous & M.J. Wingf., sp. nov. (p. 91)	ITS, LSU
Toxicocladosporium veloxum Crous & M.J. Wingf., sp. nov. (p. 92)	ITS, LSU
Verrucisporota grevilleae Crous & Summerell, sp. nov. (p. 155)	ITS, LSU