

## AUSTRALIA'S FUNGI MAPPING SCHEME

# fungimapnewsletter 45

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### NEWS FROM THE FUNGIMAP COORDINATOR

Hello everyone! Well it is almost one whole year since I began at Fungimap as the coordinator and what a year it has been! My personal fungi journey has taken me from being concerned about the fluoro yellow mushrooms (perhaps a *Leucocoprinus*?) growing on one pot plant to joy on returning from a holiday to find some 'little brown mushrooms' loving life on another. Fungimap VI in Denmark went very well according to all reports, and I had a great time – it was especially wonderful to put faces to all the names I had heard so much about and to get to know what Fungimap really is. I found Fungimap's education model to be particularly engaging and learning about fungi and their ecological roles to be awe-inspiring.

Kevin Thiele from the Western Australian Department of Environment and Conservation opened the conference and his talk included a demonstration of the tools of the Atlas of Living Australia (ALA). Fungimap has since secured funding from the ALA to assist with upgrading Fungimap's data system so that it is compatible with the ALA's biodiversity mapping tools. While we haven't yet finalised the exact details of the final outcome, we do know that it will make access to,

and the use of, Fungimap data much more accessible to everyone. It will also allow us to upgrade our website to have species descriptions online, making Fungimappers' work easier. This of course ultimately means improvement in the conservation and management of Australian macrofungi which we are all very excited about.

Planning for Fungimap VII will begin shortly, however this year in the inter-conference year Fungimap, in partnership with NRM South, is holding a Tasmanian Fungi Festival (TFF) in Hobart, from April 26-30. The TFF includes a two day Fungi Conservation and Management Symposium; two days of lab based workshops at the University of Tasmania and of field based forays at Mt Wellington and Peter Murrell Reserve; and a light-hearted dinner debate discussing the serious and topical question 'Eating wild fungi: Fun or foolhardy?' A full program and registration form are available in this newsletter, and on the Fungimap website.

While in Tasmania, Fungimap is taking the opportunity to partner up with the North Central Field Naturalists and run some more activities the following weekend in the Tarkine. This weekend will be less formal than the TFF, and again, a program and registration form are included in this newsletter and on our website.

2011 was a great year for fungi in many parts of the country, being Australia's third coolest year on record thanks to La Niña conditions. However the average belies what was a year of extremes. In these times the data that Fungimappers collect will be very interesting and important indeed. La Niña is supposed to wear off in 2012, but I hope she sticks around long enough for me to see as much fungi in Tassie as possible!

*Blanche Higgins*

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### FROM THE EDITOR:

Happy New Year to all you Fungimappers! Here's hoping that 2012 brings a wonderful fungal season.

In Fungimap Newsletter 45 you will find an outline of the Tasmanian Fungi Festival in April. Registration forms are enclosed for the rich program of activities in Hobart and beyond. Importantly, there are also descriptions of some new Fungimap targets, with accompanying colour images to liven up this edition thanks to Blanche Higgins.

The next issue of the newsletter will include events for the forthcoming fungal season, so please get planning and let Pam Catcheside know the details (see box below). Please also send articles, news items, images or any fungi related material for the next newsletter by **Friday 2nd March 2012**.

Many thanks,

*Christina Hall.*

### Forthcoming events notices

As in previous years, the next issue of the Fungimap Newsletter will include lists of 2012's forthcoming fungal event and activities. Pam Catcheside will be compiling the lists, so please send information about your group's plans for fungal forays and meetings to Pam: [pam.catcheside@sa.gov.au](mailto:pam.catcheside@sa.gov.au)

## UNDER SIEGE!

Pam O'Sullivan & Nikki Bennetts

Little did I realise when Nikki Bennetts from Wyong Council (and Fungimap member) rang to ask if I'd like to come and have a look at some *Sphaerobolus stellatus* (Cannonball fungi/Artillery Fungus) that were causing problems for a local resident that I would be walking into a war zone!

A local family had called the Council in despair, desperately requiring help in combating an unexplainable bombardment of their front yard with little brown dots that quickly turned black and became almost impossible to remove. Their light coloured house, including their windows, gutters, front door, garage, paving, masonry fence and plants looked like chocolate freckles with only black freckles! They were totally intimidated by this bombardment, not daring to leave the front door open as these 'spots' began appearing on the light coloured internal tiles ... or risk leaving their cars parked on the driveway as they would also come under attack. Their time was being consumed by efforts to remove these spots and that was no easy task!



**Figure 1. The tiny culprit on a fingertip**  
Photo: Pam O'Sullivan

Our site visit to this tranquil area with sporting fields and green areas on one side of the street, and beautifully tended houses and gardens on the other, showed no signs of the battle going on. We were met by the friendly resident who was able to see the funny side of the situation, though I did detect a slight hint of hysteria in his laugh (maybe I was imagining a slight nervous twitch!) There was definitely was a fierce underlying determination and unflinching ruthlessness in the planned extermination of his opponent to end the siege his family were under.

We looked more closely at the fungus that was lurking in what looked like an innocuous and rather sparsely scattered manner among the woodchip and Nikki could hear the clicking discharge of the peridioles (the black spots in which the spores are packaged). My glasses had started to become spotted – so you can imagine my trepidation at getting my camera out to take photos! A collecting box came in handy as a shield and it was just a case of quickly point and shoot followed by a careful inspection of the lens for any offending spots. We too were

starting to feel the unrelenting bombardment from this army of little organisms and realising it is not the size of your enemy but the impact of the attack that is important!

I had never experienced the ferocity of such an unrelenting discharge of peridioles from this species. In the natural environment, it is usually in a lovely thick nest of pale mycelium in decaying litter and wood. It was the distance some of these peridioles travelled, often over 6m upwards that interested me. Maybe the extra force that was required to break through this woody substrate resulted in the peridioles travelling so far. This fungus is phototropic and thus its peridioles are attracted to light – such as a pale coloured house.

Paul Marynissen, the Council's Noxious Weeds and Pest Species Officer gave Nikki the following account of the outcome –

“Council got involved as the affected house is opposite the new playing fields at Woongarra and the people suspected that the little brown dots over the front of their house came from something being done at the oval. The Parks and Reserve Supervisor Bill Rose looked at it and referred it to me. I investigated and was completely vexed. I did not believe that it came from the oval because the pattern occurred right up to under the eaves. Also, the residents scrubbed it off and it reoccurred the next morning when there had been no work at the oval for the previous two days. I had seen two previous houses with the same problem in Berowra from my time at Hornsby and it was just as much of a mystery then. Bill contacted me not long after my visit - he had come across the 'Artillery Fungus' in a Google search. So I went back out to the site and found the little fruiting cups.

To control it chemically would have meant repeated sprays with fungicide (not desirable) so the recommendation was to remove the woodchip on which the fungus was living (wearing eye protection against the flying artillery) and replace with pebbles or scoria, which is what they did and the problem was cured. I contacted Hornsby to let them know for future reference.”

How many other gardens received woodchip from the same batch and were others terrorised as well!? Is this fungus going to quickly become more widespread with increased use of mulch? These questions show why this is a great new Fungimap Target Species. We can all contribute to the tracking of its spread and raise awareness of its potential impact on light coloured structures!

(*Sphaerobolus stellatus* is one of the new Fungimap targets nominated in this newsletter - See Plate 2 for detailed images of this intriguing fungus).

## NEW TARGETS FOR FUNGIMAP

Compiled by Pam Catcheside, Pam O'Sullivan, Tom May & Paul George

D = description; P= photograph; CP= colour photograph; I= illustration)

*Elaeomyxa cerifera* (G. Lister) Hagelst.

(Plate 1)

**Common Name:** Wax-producing Oily Slime

*Elaeomyxa cerifera* appears as clusters of small black and yellow fruit bodies usually found on bryophyte-covered logs. It has stalked, slightly iridescent dark brown or black sporangia (spore cases) on waxy stalks, sometimes with a conspicuous yellow or white collar at the apex. The peridium (outer covering of spore mass) is globose, thin, transparent and somewhat iridescent. As it ages, the peridium splits, with remnants attached to the top of the stem forming transparent petal-like 'pennants'. The interior spore mass is black. The stem is pale, becoming yellowish brown or black, sometimes with a slimy or waxy appearance when young or moist, swollen at the apex to form a bright yellow (or white), waxy 'collar' which becomes black and less conspicuous with age. The sporangia are typically 1-2 mm tall and 1 mm diameter, and lack lime.

**Look-alikes** Many small dark sporangia are difficult to distinguish in the field, but the conspicuous yellow waxy swollen collar (when present) is distinctive.

**Distribution** Probably cosmopolitan. Australia: NSW, VIC, TAS. Considered rare in Europe and the Americas, it seems relatively common in Tasmania.

### References

Martin GW and Alexopoulos CJ (1969). *The Myxomycetes* (University of Iowa Press: Iowa) (D, I)  
*Fungimap Newsletter NL 43*

*Geastrum pectinatum* Pers.

(Plate 1)

**Common Name:** Beaked Earth Star/Grooved Earth Star

*Geastrum pectinatum* is a small, initially globose fungus which, when mature, may reach 70 mm across x 40 mm tall. Like all earth stars it has two main sacs or cases, the exoperidium (outer case) is grey and on maturity splits into 6 to 12 star-like rays which bend downwards. The globose to depressed-globose endoperidium (internal spore sac) is mid to dark grey, its base has furrowed striations and it sits on top of a very distinct pedicel (stalk) measuring to 6 mm and arising from the centre of the inner layer of the exoperidium. At the apex of the endoperidium is a raised, conical, furrowed or pleated peristome, a beak-like structure that surrounds the stoma (mouth) through which the spores are released. The downward and outward extension of the outer spore case raises the inner spore case above the litter, resulting in more effective spore release.

This species is easily recognised by its stalked inner spore sac with grooves (striations) at its base and the protruding peristome whose comb-like grooves give it the name of *pectinatum* (Latin: *pectin, pectinus*: a comb). The spores are dark brown in mass. It is saprotrophic and grows in humus and organically rich soils in a variety of vegetation communities and gardens. It is usually found in summer to autumn and may be solitary or in small groups.

**Look-alikes** *Geastrum fornicatum* lacks the striations at the base of the spore sac and the conical grooved pore at its apex. Its three-layered exoperidium splits in two; the outer layer forms a hollow cup, the inner fibrous and fleshy layers bend upward into an inverted bowl. The tips of the rays of the inner layers are attached to four upward pointing rays of the cup. *G. fornicatum* has only 4-5 rays. *Geastrum pectinatum* has 6 to 12 rays which do not split to form a lower cup. Other small 'necked' species of *Geastrum*, lack the striations on the base of the endoperidium.

**Distribution** Cosmopolitan. Australia: QLD, NSW, ACT, VIC, TAS, SA, NT.

### References

Aberdeen JEC (1979). *Introduction to the mushrooms, toadstools and larger fungi of Queensland*. Queensland Naturalists Club. Page 16 (I)  
 Breitenbach J and Kränzlin F (1986). *Fungi of Switzerland Vol. 2 Non gilled fungi*. Verlag Mykologia, Lucerne. Pages 382-383 (D, I, CP)

- Cleland JB (1934-1935). *Toadstools and mushrooms and other larger fungi of South Australia*. Part I and II. Government Printer, Adelaide [Reprinted 1976] Pages 312-313 (D)
- Grgurinovic CA (1997). *Larger fungi of South Australia*. Botanic Gardens of Adelaide and State Herbarium and The Flora and Fauna of South Australia Handbooks Committee, Adelaide. Pages 617-619. (D, I)
- McCann IR (2003). *Australian fungi illustrated*. Macdown Publications. Page 96 (CP)
- Phillips R (1994). *Mushrooms and other fungi of Great Britain & Europe*. Macmillan References London. Page 254 (D, CP)
- Young AM (2005). *A field guide to the fungi of Australia*. UNSW Press Pages 207-208 (D, I)
- Atlas of Living Australia <http://www.ala.org.au>
- <http://www.indexfungorum.org/names/Names.asp> (Species Fungorum)

***Melanophyllum haematospermum*** (Bull.) Kreisel

(Plate 1)

**Common Name:** Redspored Dapplerling (as in the Atlas of Living Australia)

*Melanophyllum haematospermum* is an inconspicuous fungus 20- 60 mm tall, with a dull dirty grey to mid-brown finely granular, fragile, hollow stipe and a cap with conspicuous pale, triangular veil remnants around its incurved margin when young. The cap is usually about 20 mm wide, initially conical, expanding to plane with age. However it surprises the observer as, when turned over, it has distinctive scarlet coloured, adnexed young gills that mature to a brown/red colour and its olive-green spore print that dries to a red-brown.

*M. haematospermum* is saprotrophic in organically rich, damp soils, in grasses and amongst bark litter. It has also been reported on burnt ground. It is gregarious or solitary in native bushlands and forests and also with pines. It may fruit in summer and autumn. Note: some sources list it by its synonym *Melanophyllum echinatum*.

**Look-alikes** Some species of *Cystolepiota* and *Cystoderma* may have granular to powdery cap surfaces and cap margins with veil remnants, however one look at the gills will show they lack the distinctive red colour of *Melanophyllum haematospermum*. The spore print is also distinctive.

**Distribution** Cosmopolitan. Australia: TAS, WA, VIC.

**References**

- Breitenbach J and Kränzlin F (1995). *Fungi of Switzerland Vol. 4 Agarics 2<sup>nd</sup> part*. Verlag Mykologia, Lucerne. Pages 220-221(D, I, CP)
- Fuhrer B (2005). *A field guide to Australian fungi*. Blooming Books, Melbourne. Pages 124-125 (D, CP)
- Fuhrer B and Robinson R (1992). *Rainforest fungi of Tasmania and south-east Australia* CSIRO Tasmania. (*Melanophyllum echinatum*) Page 49 (D, CP)
- Griffiths K (1985). *A field guide to the larger fungi of the Darling Scarp & South West of Western Australia*. Kevn Griffiths (*Melanophyllum echinatum*) Page 31 (D, I)
- Phillips R (1994). *Mushrooms and other fungi of Great Britain & Europe*. Macmillan References London. (As *Melanophyllum echinatum*) Pages 30-31, 254 (D, CP)
- Young AM (2005). *A field guide to the fungi of Australia*. UNSW Press Pages 207-208 (D, I)

***Simocybe phlebophora*** E. Horak

(Plate 2)

**Common Name:** Wrinkled Simocybe

*Pileus* 10–30 mm in diameter, olive brown to olive, convex, moist, hygrophanous, with fine, raised wrinkles forming a network in the centre, translucent-striate and paler yellowish brown at margin. *Lamellae* crowded, adnexed, greyish yellow then yellowish brown, edge paler and very finely toothed. *Stipe* to 35 mm long and 1–3 mm in diameter, central, cylindrical, straight or often curved from point of attachment, equal, pale brown to olive brown, surface pruinose above, fibrillose to smooth below, lacking veil remnants. *Odour* not distinctive. *Spore print* dull brown.

*Simocybe phlebophora* was originally described from New Zealand. In south-eastern Australia it favours wetter forests, growing in small groups on dead wood, usually stumps and larger logs. It is not uncommon, but easy to overlook due to its small size and drab colours. However, the moist, wrinkled cap surface in combination with the olive tones of the fruit-body are very characteristic.

*Simocybe phlebophora* makes an interesting subject for microscopic study: spores (smooth and somewhat bean-shaped), cheilocystidia (abundant and fusoid-capitate) and pileipellis (chains of globose elements) are all very characteristic.

**Look-alikes** Species of *Psathyrella* can have wrinkled caps, but they do not have olive tones, and the spore print is black. There are some small greenish species of *Entoloma*, but if the cap surface is rough it is merely velvety, and they grow on the ground and have pinkish lamellae.

#### References

- Fuhrer B (2009). *A field guide to Australian fungi*. Revised edn. Bloomings Books, Melbourne. (CP, D)  
 Horak E (1980). Fungi agaricini Novaezelandiae X. *Simocybe* Karsten, *New Zealand J. Bot.* 18: 189–196. (Description of macro- and micro-characters, B&W illustration of fruit-body and micro-characters)  
 New Zealand's Virtual Mycota: *Simocybe phlebophora*.  
 <[http://virtualmycota.landcareresearch.co.nz/webforms/vM\\_Species\\_Details.aspx?pk=18868](http://virtualmycota.landcareresearch.co.nz/webforms/vM_Species_Details.aspx?pk=18868)> (Descriptions and colour illustrations. Note that some of the illustrated collections have much redder fruit-bodies than Australian material)

***Sphaerobolus stellatus*** Tode: Pers.

(Plate 2)

**Common Name:** Cannonball Fungus

The fruit bodies of *Sphaerobolus stellatus* are minute, 1-1.5 mm diam., globose, sessile (stalkless) and whitish to orange. As the fungus matures, the outer peridium (spore case) splits into 6-8 stellate rays which form the margin of a tiny cup-like structure with a smooth white lining. Inside the cup is a solitary, globose, shiny, dark brown peridiole (spore containing body) embedded in mucilage. The cup lining is suddenly everted, forcibly ejecting the peridioles to a distance of 6 m. Plate 2 shows plants that have been peppered with the catapulted peridioles of nearby *Sphaerobolus* fruit bodies.

Fruit bodies are clustered, often in large groups and partly immersed in a white mycelial mat on decaying, wet wood, herbivorous dung and bark.

**Look-alikes** *Sirobasidium brefeldianum* (Figure 454 in Fuhrer, page 293), is a similar size, colour and has a similar habitat but does not develop a stellate margin or a peridiole.

**Distribution** Cosmopolitan. Australia: NSW, QLD, SA, TAS, VIC, WA.

#### References

- Buller AHR (1933). *Researches on fungi*, vol. 5. Longmans, Green and Co., London.  
 Cleland JB (1934-1935). *Toadstools and mushrooms and other larger fungi of South Australia*. Part I and II. Government Printer, Adelaide [Reprinted 1976] Page 323 (D)  
 Fuhrer B (2005). *A field guide to Australian fungi*. Blooming Books, Melbourne. Page 222 (D, CP)  
 Ingold GT (1972). *Sphaerobolus*: the story of a fungus. *Transactions of the British Mycological Society* 58: 179–195. (D, I)  
 (This is a very full account of the fungus, the factors that stimulate peridiole discharge and the discharge mechanism itself.)  
 Pegler DN, Laessle T, Spooner BM (1995). *British puffballs, earthstars and stinkhorns*. Royal Botanic Gardens, Kew. Pages 74-75 (D, I, CP)  
 Tom Volk's Fungus of the Month for July 2005: [http://botit.botany.wisc.edu/toms\\_fungi/jul2005.html](http://botit.botany.wisc.edu/toms_fungi/jul2005.html)

## Observations on *Phellorinia herculeana* ssp. *herculeana* in South Australia

Thelma & Phil Bridle

*Phellorinia herculeana* ssp. *herculeana* is a large stalked puffball found singly or in small groups in mallee and desert habitats. The white, fertile, ellipsoid head grows to 85 x 70 mm and is covered with large, smooth, shiny overlapping scales which extend down the solid, stout stipe. The stipe grows to 50 x 35 mm above soil level and 95 mm below, where it tapers to 45 mm. The spore mass is initially cream-coloured, maturing to orange-brown by the time the 5 mm thick exoperidium begins to rupture. Spores are dispersed by raindrops splashing onto the gleba and being carried away by wind. The spores are globose, approx. 7 µm diam., and covered with small spines.

We have been observing this fungal species over the past seven years at Mount Bryan, 30 km NNE of Burra in the mid-north of South Australia. Visits have normally been made in late July, mid-November and early January as these times coincide with monitoring of a rare dryland orchid, *Pterostylis despectans*.

Fresh *Phellorinia herculeana* ssp. *herculeana* fruit bodies have been found only in years where Dec – Aug rainfall has been 320 mm or more. Summer rainfall of at least 70 mm followed by good rainfall in either autumn or winter appears critical to emergence of the fungus from late September to mid-November. Whilst this rainfall pattern is not historic, over the past seven years it has occurred in 2005, 2007, 2009 and 2011. In each of these years we have found fruit bodies, which tend to grow on the eastern side of medium to large *Eucalyptus odorata* (Peppermint Gum). Fungi break through hard and shallow stony clay-loam in sections of paddocks with little grassy growth, fenced from stock in order to protect orchids.

The tough exoperidium generally begins to rupture in December and if rainfall over the following 12 months is <175 mm with no significantly high rainfall months (>35 mm) erosion of the endoperidium and dispersal of spores is gradual over a 20 month period, eventually leaving the lower part persistent as a cup-shaped, dark, stalked structure (Plate 3). Higher rainfall causes fruit bodies to rot and collapse early.

### New Fungimap target species

Pam Catchaside

Since publication of *Fungi Down Under* in 2005, Fungimap has launched a number of new target species. These include: *Badimiella pteridophila*, *Ceratiomyxa fruticolosa*, *Dermocybe canaria*, *Entoloma viridomarginatum*, *Favolaschia calocera*, *Filoboletus manipularis*, *Fuligo septica*, *Gyrophragmium inquinans*, *Hemitrichia serpula*, *Heterodia muelleri*, *Lycogala epidendrum*, *Marasmiellus affixus*, *Nephroma australe*, *Panellus longinquus*, *Phlebopus marginatus*, *Podaxis beringamensis*, *Porodisculus pendulus*, *Psora decipiens*, *Xanthoparmelia semiviridis* as well as the five new target species in this newsletter: *Elaeomyxa cerifera*, *Geastrum pectinatum*, *Melanophyllum haematospermum*, *Simocybe phlebophora* and *Sphaerobolus stellatus*.

Fungimap is planning a second edition of *Fungi Down Under*. This will include many new target species as well as a possible update of the original 100 species.

**We are seeking good quality photographs of the initial 100 and of the more recent target species. Images should be high resolution (at least 300 dpi). Files greater than 2MB should be sent on CD-ROM rather than by e-mail.**

**We would also like your suggestions for new targets. Please send images and suggestions to me at [pam.catchaside@sa.gov.au](mailto:pam.catchaside@sa.gov.au), State Herbarium of S.A., PO Box 2732, Kent Town, SA 5071 and/or to the Fungimap office.**

## NEWS ABOUT FUNGAL CONSERVATION & BIODIVERSITY

Tom May, Royal Botanic Gardens Melbourne

Following on from the report in *Fungimap Newsletter 44* on how fungi were treated in Australia's Biodiversity Conservation Strategy 2010-2030 (not particularly well!), below are notes on some further publications and events that include at least a mention of fungi from the point of view of conservation or biodiversity management, as well as details of the newly formed Fungimap Conservation Subcommittee.

### Climate Change and Brisbane Macrofungi

A.M. Young and N.A. Fechner (2008). A report for the Brisbane City Council.

The authors published a short summary of this report in *Fungimap Newsletter 39*. Although prepared in 2008, the report has only recently been released. The Brisbane City Council website has no specific links to the report, but it can be obtained on request from the Council.

This is the first report commissioned by any level of government in Australia to specifically address the issue of climate change in relation to fungal biodiversity in native ecosystems. The macrofungi report complements two other reports to Brisbane City Council, by Tim Low: *Climate Change and Brisbane Biodiversity* (2007) <[http://www.brisbane.qld.gov.au/documents/plans\\_strategies/tim\\_low's\\_report\\_on\\_biodiversity.pdf](http://www.brisbane.qld.gov.au/documents/plans_strategies/tim_low's_report_on_biodiversity.pdf)> and *Climate change and Brisbane's threatened species and communities* (2009).

Following a brief introduction about macrofungal biology and lifecycles there is a substantial section on the 'essential role of macrofungi in Brisbane ecosystems' that emphasises the variety of roles of macrofungi as saprotrophs, pathogens and in mutualisms such as mycorrhizas, and also as food for insects and mammals. The following section deals with effects of climate change on macrofungi in Brisbane's forests and woodlands. Predicting the effects of climate change on fungi is complex, particularly due to (1) the mix of direct (CO<sub>2</sub> increase) and indirect (change in mean and pattern of temperature and rainfall) effects combined with (2) disentangling direct effects on fungi and indirect effects on mutualistic partners, such as the forest trees that associate with ectomycorrhizal fungi, and on ecosystem processes such as fire. The report summarises available knowledge and it is clear that there is a lack of both baseline data and specific studies on fungi and climate change.

Climate change models predict that on average Australia will become drier. In southeast Queensland, it is likely that there will be longer periods of drier weather during winter, and this could well be associated with increased evaporation due to increased temperature. Possible negative effects on the autumn flush of fruit-bodies of ectomycorrhizal fungi (such as *Cortinarius* and *Russula*) are highlighted. In Victoria, there has certainly been a significant reduction in average autumn rainfall over the last decade and a half. Anecdotal evidence is that it is much less likely in these drier autumns to see mass fruiting of macrofungi, especially ectomycorrhizal mushrooms. Whether Australian macrofungi are already adapted to long periods without fruiting, and what is the maximum tolerable interval between fruiting, needs to be investigated. Increased frequency and severity of wildfire is another likely outcome of climate change.

The authors conclude that there is insufficient data to model the responses of Australian macrofungi to climate change. A section on 'key proposals' about protecting and conserving fungi includes a range of suggestions (that are of wider application than just in relation to climate change). The importance of education, monitoring and research is emphasised. There is clearly an urgent need for long term monitoring plots (as suggested in *Fungimap Bulletin 1* <<http://www.rbg.vic.gov.au/fungimap/fungimap-bulletin>>) to record the appearance of fungal fruit-bodies from one year to the next and the relation of this to weather.

There is a substantial appendix 'Forest, reserve and park summary' which focuses on ten sites representative of habitats in the Brisbane area. Some good points are made about retaining fallen wood as fungi habitat, but very few fungi are mentioned. Overall, this is a landmark report and the authors and Brisbane City Council are to be congratulated on tackling the subject.

For recent fungi/climate change research see:

Gange AC, Gange EG, Sparks TH and Boddy L (2007) Rapid and recent changes in fungal fruiting patterns. *Science* **316**, 71.

Kauserud H, Stige LC, Vik JO, Okland RH, Høiland K and Stenseth NC (2008) Mushroom fruiting and climate change. *Proceedings of the National Academy of Sciences of the United States of America* **105**, 3811–3814.

Kauserud H, Heegaard E, Semenov MA, Boddy L, Halvorsen R, Stige LF, Sparks TH, Gange AC and Stenseth NC (2009) Climate change and spring-fruiting fungi. *Proceedings of the Royal Society B: Biological Sciences*. **277**, 1169–1177.

### The Value of Fungi

*Land for Wildlife Queensland: Note S2*. Download at <<http://www.seqcatchments.com.au/LFW.html>>

This four page document is a useful source of information about fungi and fungal ecology; nicely laid out and presented in language suitable for a general reader. There are colour illustrations of fungi such as *Aseroe rubra* and *Omphalotus nidiformis*, and it is good to see some information promoting Fungimap.

### Noosa Climate Action Plan

This Climate Action Plan for the Noosa Biosphere has been produced by SEQ Catchments in partnership with Noosa Biosphere Ltd, Noosa Residents & Ratepayers and the University of the Sunshine Coast. The draft version (September 2001) of the Action Plan is available at <http://www.seqcatchments.com.au/media/draft-noosa-climate-action-plan-out-for-comment>>

As is usual in such documents biodiversity is mostly defined narrowly as fauna and flora—there is, however, at least some mention of fungi. Under 4.1 'Data and information' there is mention of the 'lack of knowledge about local biodiversity that impedes effective action for ... species impacted by climate change'. A specific action to address this issue is 4.1.1: "Fund more research on the 'web of life', to understand integrated ecosystem health and function (more focus on invertebrates, fungi and microbes)". Sapphire McMullan-Fisher (pers. comm.) attended one of the community meetings during the development of the Climate Action Plan, and suggested that there be specific mention of fungi. The challenge is how to follow up such recommendations.

The Action Plan includes a picture of fungus (un-named) accompanying a useful statement on ecosystem services, which are 'the benefits people obtain from ecosystems' (*Millennium Ecosystem Assessment*, 2005: p.53, <http://www.maweb.org/en/index.aspx>). According to Daily *et al.* (1997) [*Ecosystem services ... Issues in Ecology*, Issue 2, <http://cfpub.epa.gov/watertrain/pdf/issue2.pdf>]: 'Human societies derive many essential goods from natural ecosystems, including seafood ... timber, and pharmaceutical products. These goods represent important and familiar parts of the economy. What has been less appreciated until recently is that natural ecosystems also perform fundamental life-support services without which human civilizations would cease to thrive. These include the purification of air and water, detoxification and decomposition of wastes, regulation of climate, regeneration of soil fertility, and production and maintenance of biodiversity, from which key ingredients of our agricultural, pharmaceutical, and industrial enterprises are derived.' Of course, fungi play important roles in many of these ecosystem processes, particularly as partners in symbioses and in decomposition.

### Fire and Biodiversity Symposium

The Victorian National Parks Association and the Royal Society of Victoria recently held a Fire and Biodiversity Symposium attended by 120 scientists, land managers and other interested people. The focus of the symposium was (1) assessment of current knowledge about fire and biodiversity, (2) critique of management (control) burn targets in relation to managing biodiversity, and (3) discussion of the design of research and monitoring to improve management of fire and biodiversity. Sapphire McMullan-Fisher presented a talk on 'Fungi and fire'.

Phil Ingamells, writing about the Symposium in the VNPA magazine *Park Watch* (No. 247, Dec. 2011: p. 20) neatly sums up the importance of fungi while highlighting their neglect: 'There are many tens of thousands of species of native fungi ... their responses to fire are highly varied. Some love fire; others don't, and some have complex fire relationships. Things get even more complex when you realise that most fungi have ... relationships with ... plants, and also with a range of insects. In many ways, fungi are the lynchpins of ecological systems. We ignore them at our peril, yet no public land management agency in [Victoria] employs a mycologist'. Apart from DEC in Western Australia, it is indeed a sobering fact that no state management agency (such as those that manage National Parks or carry out ecological research) employs a fungal ecologist. Even one such position in each state would make a big difference to improving knowledge of native fungi and how to better manage and conserve them.

### Urban fungi

Recent publications about fungi in Australian cities:

Bougher NL (2010) History of the study of fungi at Kings Park, Perth, Western Australia. *The Western Australian Naturalist* **27**, 61–90.

May TW (2011) An overview of the fungi of Melbourne, *The Victorian Naturalist* **128**: 183–197. [Includes data on Fungimap records from Melbourne area]

Newbound M, McCarthy M and Lebel T (2009) Phenology of epigeous macrofungi found in red gum woodlands. *Fungal Biology* **114**, 171–178.

Newbound M, McCarthy M and Lebel T (2010) Fungi and the urban environment: a review. *Landscape and Urban Planning* **96**, 138–145.

Newbound M, Bennet LT, Tibbits J and Kasel S (2011) Soil chemical properties, rather than landscape context, influence woodland fungal communities along an urban-rural gradient. *Austral Ecology* (in press).

### Fungimap Conservation Subcommittee

Fungimap has recently formed a Conservation Subcommittee. Membership is Tom May (chair), Sapphire McMullan-Fisher and Alison Pouliot. Further members are welcome (contact [tom.may@rbg.vic.gov.au](mailto:tom.may@rbg.vic.gov.au)). The main roles of the subcommittee will be to prepare submissions on government biodiversity and conservation policy documents; promote formal listing of fungi species on conservation schedules; and keep Fungimap members in touch with the latest developments in fungal conservation.

## FUNGAL NEWS

For a list of **Fungi events** and activities around Australia, see the [calendar of fungi events](#) on the Fungimap website, where you can also find contact details of the various [regional fungi groups](#).

## NEWS FROM SA

*Pam Catcheside*

In August the Adelaide Fungal Studies Group celebrated its tenth anniversary. At our first meeting in 2001, Dr Teresa Lebel, Senior Mycologist at the National Herbarium of Victoria, Melbourne, had spoken to us about Australia's native truffles and we were very lucky to have her talk to us ten years later. The theme of Teresa's talk this year was 'mycophagy', the eating of fungi. She spoke on fungal nutrition, the diversity of truffle-like fungi and explained that, for every truffle there is a sister mushroom, cup or bolete. We were fascinated to hear of a potential weedy truffle, *Tuber sinensis*, and to learn about the relationship between samphires, a fungus, midges, parasitic wasps and the orange-bellied parrot.

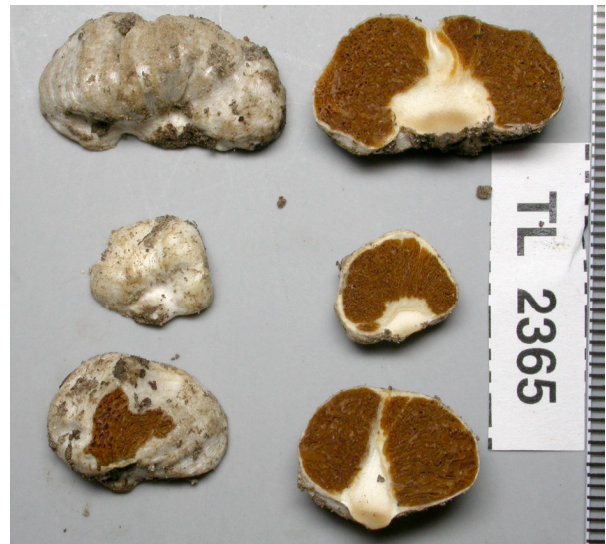
At our meeting we were delighted to welcome the new Chief Botanist at the State Herbarium of SA, Dr Michelle Waycott and her husband, Ainsley Calladine. Members of AFSG had brought food with a fungal theme and a celebratory cake was cut (Figure 1).



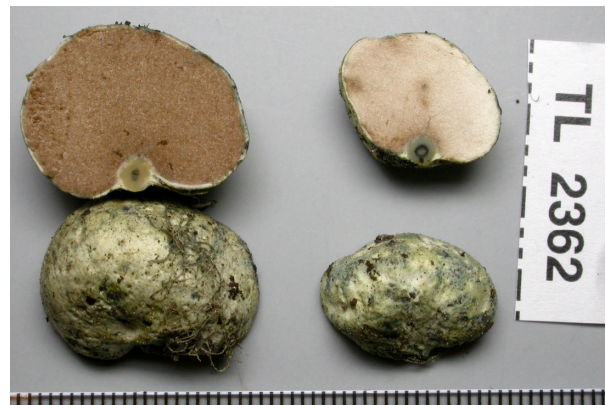
**Figure 1.** Cutting the AFSG 10th anniversary cake.  
Photo: Yvonne Maher.

Teresa was able to join us for our foray to Stringybark Walking Trail, Deep Creek Conservation Park. This is a fungal hotspot and we always find interesting fungi there. This year we were rewarded with a magnificent, though cryptic, display of *Trichoglossum*s (Bridle 2011). Forty-seven fruit bodies of *Trichoglossum hirsutum* were

counted. Teresa made a number of collections of truffles, ranging over the genera *Hymenogaster* (Figure 2), *Hysterangium*, *Stephanospora*, *Zelleromyces*, *Macowanites* (*Russula*), *Aroramycetes* and *Rossbeevera* (Figure 3) (previously *Chamonixia*), also *Dermocybe globuliformis* and *Hydnangium carneum* for the State Herbarium of SA.



**Figure 2.** *Hymenogaster* sp.  
Photo: David Catcheside.



**Figure 3.** *Rossbeevera* sp.  
Photo: David Catcheside.

## Reference

Bridle T, (2011). *Trichoglossum* from SA. *Fungimap Newsletter* 43:4-5.

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<b>AUSTRALIA</b> (by email)		Pamela Catcheside	1	Ivan Margitta	43
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