

ISSN 1329-4377

AUSTRALASIAN MYCOLOGICAL NEWSLETTER

No. 17 (2)

June 1998

Publication of the Australasian Mycological Society, Inc.

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Australasian Mycological Newsletter

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The *Australasian Mycological Newsletter* is published quarterly by the Australasian Mycological Society. All manuscripts for publication in the *Australasian Mycological Newsletter* should be submitted as hard copy, and where possible as electronic copy. Discs will be returned to authors after publication of their article(s).

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This issue was published on 24 July 1998.

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OBITUARY: JACK WARCUP

Jack Warcup, Patron of the Australasian Mycological Society, died on 15 May 1998 after a long period of ill health. Born in 1921 in Auckland, New Zealand, Jack studied science at Canterbury University College (B.Sc.) and Wellington University College (M.Sc.). In 1945 he went to Cambridge University, U.K., where in 1949 he obtained his D.Phil. In 1965 he was awarded a D.Sc. In 1996 he was made a British Mycological Society Centenary Fellow. Two monotypic genera have been named in his honour: *Warcupia* (Otideaceae) and *Warcupiella* (Trichocomaceae).

From 1949 to 1951 he was employed by the U.K. Forestry Commission while working in the Botany Department, Cambridge University. In 1951 he moved to the Department of Plant Pathology in the Waite Agricultural Research Institute, University of Adelaide. Jack retired from the Waite Institute in 1986.

Throughout his career Jack had a passionate interest in soil-borne fungi and in symbiotic associations between plants and fungi. At Wellington University College he became interested in the fungi associated with the saprophytic prothalli of species of Lycopodiaceae. Later this interest was to develop into highly original studies of the mycorrhizal relationships of the Orchidaceae, Myrtaceae, Casuarinaceae, Mimosaceae and Asteraceae. His view that an ectomycorrhizal association did not need a complete mantle or Hartig Net on the rootlet was hotly contested by other workers. Comments by referees of the various papers on this topic stimulated further study and Jack's view is now generally accepted.

A study visit to the Waite Institute by Dr T. Terashita from Japan resulted in studies of the relationship between *Armillaria* and the saprophytic orchid genus *Gastrodia*. These and later studies of other orchids showed virulent plant pathogens such as *Armillaria luteobubalina* or *Thanatephorus cucumeris* could also be benign symbionts.

Jack was fortunate to have Dr Pat Talbot, an insightful fungal taxonomist, working in the same laboratories. The two formed a close relationship and published numerous joint papers on the identity of fungi isolated from soil, or orchids or ectomycorrhizas. To the occasional irritation of Pat, Jack was always senior author.

During his studies of propagules of soil-borne fungi, Jack developed a few standard media (*e.g.* NDY/7), and standard techniques based on meticulous observation and very careful isolation techniques. One is reminded of Louis Pasteur who laboriously separated by hand under the microscope dextro- and laevo-forms of crystals of ammonium tartrate for his fermentation studies. Not for Jack endless counting, huge data bases (though he did keep comprehensive, accurate and careful records), and complex statistical analyses. The result was that he knew and understood better than anyone I have known, the fungi with which he worked. As a field observer he was, in my experience, without peer.

In the first few years after moving to Adelaide he continued the studies of soil penicillia begun at Lackenheath Warren. Manuscripts were prepared and submitted to Australian journals only to be rejected. The result was that he henceforth published in overseas journals principally the *Transactions of the British Mycological Society*, *Mycological Research* and *New Phytologist*.

One wonders in what direction his career might have developed but for those anonymous referees. Later he was to make significant contributions to our knowledge of the taxonomy and biology of the teleomorphs of species of *Aspergillus* and *Penicillium*.

Jack was a skilled and scholarly writer, an excellent editor, a good speaker but most of all he was a really nice man. Usually quiet and reserved he had the most expressive eyes and a droll wit. He could also be blunt.

He is survived by his daughters Susan and Catherine, and his sons John and Andrew. To them we offer our sympathy.

J. A. Simpson

STRATEGIC PLAN FOR AUSTRALASIAN MYCOLOGICAL SOCIETY, INC.

At present the Australasian Mycological Society, Inc. does not have a Strategic Plan. The first step to developing such a plan is preparation of a Vision Statement and a Mission Statement. If the Society is to continue to grow and prosper both statements are desirable. This is especially so if we are to seek corporate support and sponsorship. Both Statements would appear on the inside cover of the *Newsletter*. The Statements could be reviewed and updated as necessary.

Financial members of the Australasian Mycological Society are invited to send comments on the Draft Statements to the Secretary by 1 September 1998. It is proposed that a Vision Statement and Mission Statement be presented for adoption at the next annual general meeting of the Society. The new Executive will then be able to develop Objectives and Performance Indicators for the Society compatible with the Vision and Mission Statements.

Vision

‘More people benefiting more often from the diversity of fungi in Australasia.’

Mission

‘The Australasian Mycological Society facilitates interaction and communication between mycologists, provides fora for discussion and debate on mycological topics, seeks to advance our knowledge and understanding of the diversity of fungi in the environment, and acts to help conserve the indigenous mycoflora of Australasia.’

J. A. Simpson
President

NORFOLK ISLAND MACROFUNGI: HISTORY AND BIBLIOGRAPHY

Norfolk Island is a sub-tropical island, at a latitude of approximately 29 degrees south, and is about halfway between New Zealand and New Caledonia. The island measures roughly 8 by 5 kilometres and there are two smaller islands nearby: Philip Island (about 2 by 2 kilometres), 6 kilometres to the south and Nepean Island, quite small and very close to Norfolk itself. The population is near 2000 but the island plays host to a large number of tourists each year and much of the island’s economy is dependent on tourism. Norfolk Island National Park (about 460 hectares) and a few smaller reserves hold remnants of the island’s sub-tropical vegetation, while much of the rest of the island is open to cattle grazing and so consists of grassy paddocks with scattered trees (with the Norfolk Island Pine, *Araucaria cunninghamii*, being very noticeable). There are several introduced plants which have created a weed problem, especially the Cherry Guava (*Psidium cattleianum*) which can form dense, monocultural stands in the National Park.

In this report I will summarise the history of studies of the island’s macrofungi. As I have an ongoing interest in the island’s fungi, I would welcome any additional bibliographic references, personal accounts or any other mycological information pertinent to Norfolk Island. Please send anything to me at:
Heino Lepp, PO Box 38, Belconnen ACT 2616, Australia.

Norfolk Island as a type locality

The type specimens of *Secotium fragariosum* G.H. Cunningham and *Gasteroagaricoides ralstoniae* Reid were collected on Norfolk Island. While the *Secotium* has also been collected on Lord Howe Island, *Gasteroagaricoides* is known only from Norfolk Island (despite the 8th edition of the *Dictionary of Fungi* recording it only for New Zealand!).

Collectors of Norfolk Island fungi

While Ferdinand Bauer collected extensively on the island from 1804–1805 and Allan Cunningham in 1830, there are no Norfolk Island fungal specimens from either of them. The earliest preserved fungal specimen from Norfolk Island is a collection, of what is now *Cymatoderma elegans* var. *lamellatum*, made in June 1855 by W.G. Milne, botanist on the *HMS Herald* expedition. This specimen (Milne, No. 34) is stored at Kew. In the latter part of the 19th century Isaac Robinson, a resident of the island and American consul, collected for Ferdinand von Mueller and included some fungi in his collections. J.H. Maiden visited the island in November 1902 and noted that he had collected several fungi including *Lentinus exilis*, which was new to the island. He also added that ‘*Hirneola* was regularly exported...the market being China’. Maiden’s collections were originally held at the herbarium of the Royal Botanic Gardens in Sydney before moving to DAR in the 1970s. Michael Priest, curator at DAR, has noted that for several decades before the move the fungi had not been

curated and many specimens had been destroyed by insects. No Maiden Norfolk Island collections could be found.

It seems there was no other fungal collecting on the island until 1947 when W. Cottier made several collections, including the type of *Secotium fragariosum*, and his collections are in Auckland, at PDD. In 1970 an island resident and naturalist, Mrs P. Ralston, collected the type of *Gasteroagaricoides ralstoniae* which is kept at Kew.

In preparation for an issue of postage stamps featuring fungi of the island, several fungi were collected in 1982 by islanders and sent to Kew for identification. During the 1980s/1990s H. Streimann, of the Australian National Botanic Gardens, visited the island several times to gather material for a monograph about the island's mosses and also made about 20 fungal collections which are stored at CANB. John Tierney (of the Queensland Department of Primary Industries) visited the island in 1989 to advise on *Phellinus noxius*, but no *Phellinus noxius* collections from the island could be found in the herbaria I contacted. J.H. Willis made a non-botanical visit to the island in October 1989, but managed to collect a small number of fungal specimens which are stored at MEL, while Marie Taylor collected a few fungi in September 1991 and deposited them at PDD.

From my 1994, 1995 and 1997 visits to the island I have accumulated around 400 herbarium collections (though not of 400 different species) and these are also stored at CANB where I am currently working on them.

The literature

Norfolk Island is distinguished by its virtual absence from the mycological literature and the few published accounts are mostly just short lists of species collected there, rather than detailed accounts of the mycoflora.

The first published account of any fungus from the island appears to be by James Backhouse who visited in 1835 and noted (without name) a small, luminous *Mycena*:

Being out after dark, we were interested by seeing numbers of a small species of agaric, or mushroom, so luminous as to reflect a shadow on substances near them. When held near a watch, the hour might be distinctly seen, or on being put near the face, the features might be discovered. This remarkable fungus has attained the name of Bluelight, though its radiance is rather green than blue; it grows from decaying sticks or straw, and is very abundant amongst the sugar-canes, as well as in the bush. Its cap is rather convex, covered with mucilaginous matter, and is less than an inch across; the stalk is slender, two or three often grow together; the whole plant is very watery. The brilliancy is greatest in the cap, which shines most on the underside.

As the remaining literature consists of simple species records, I'll summarise the bulk of it in the following table, in which the literature references are listed across the top (in chronological order) and taxa down the side. I have kept all taxonomic names as they appeared in the original references.

The following, cryptic bibliographic references should be the only ones needing explanations: C & C = Cleland and Cheel; GHC = G.H. Cunningham; C & T = Castellano and Trappe. Note that while von Mueller and Maiden simply record an *Aseroe* sp., Cleland & Cheel record *Aseroe rubra*. Edgcombe contains a colour photograph of *Cymatoderma elegans* var *lamellatum*.

In 1983 Norfolk Island issued a set of four postage stamps that featured coloured illustrations of *Coprinus domesticus*, *Cymatoderma elegans* var. *lamellatum*, *Marasmius niveus* and *Panaeolus papilionaceus*. While the occurrence of the *Cymatoderma* had already been recorded in print, this was the first printed record of the occurrence of the other three species on the island! Hence, the island also gets a mention in several philatelic publications (not seen by me) dealing with fungi on stamps [see Bentley; Molitoris; Moss & Dunkley].

	M u e l l e r	M a s s e e	M C o o k e	M a i d e n	C & C	G H C	G H C	W B C o o k e	G H C	G H C	R e i d	R e i d	H o r a k	M i l l e r	C & T	E d g e c o m b e	G u z m a n	J H W i l l i s	C r I b b	M a y & W o o d
<i>Aseroe</i>	x			x	x															
<i>Auricularia polytricha</i>																x				
<i>Coprinus domesticus</i>																				x
<i>Cymatoderma elegans</i> var. <i>lamellatum</i>											x					x				
<i>Gasteroagaricoides ralstoniae</i>												x		x						x
<i>Hirneola Auricula-Judae</i>	x			x																
<i>Hymenochaete purpurea</i>	x	x	x	x																
<i>Hypocrea fusarioides</i>	x			x																
<i>Lentinus exilis</i>				x																
<i>Lentinus sajor-caju</i>																				x
<i>Marasmius niveus</i>																				x
<i>Panaeolus papilionaceus</i>																				x
<i>Pleurotus djamour</i>																	x			x
<i>Peniophora vinosa</i>								x												
<i>Polyporus australis</i>	x			x																
<i>Polyporus hirsutus</i>	x			x																
<i>Polyporus sanguineus</i>	x			x																
<i>Schizophyllum commune</i>								x												x
<i>Secotium fragariosum</i>						x							x		x			x	x	x
<i>Stereum caperatum</i>								x												
<i>Stereum lamellatum</i>									x											
<i>Stereum lobatum</i>	x			x				x												
<i>Thelephora caperata</i>	x			x																
<i>Tremella lutescens</i>	x			x																
<i>Tyromyces gramocephalus</i>										x										
<i>Tyromyces lacteus</i>										x										
<i>Xylaria schweinitzii</i>	x			x																

Herbarium holdings

The following summarises the herbarium collections known to me:

400	Centre for Plant Biodiversity Research, Canberra (CANB)
48	Queensland Forest Research Institute, Brisbane (QFRI)
20	Royal Botanic Gardens, Kew (K)
19	National Herbarium, Melbourne (MEL)
10	Landcare Research, Auckland (PDD)

Note that these are counts of macrofungal collections, admittedly not a very precise term, and others could come up with numbers slightly different to mine. Some of the above herbaria (plus others) do hold collections of

Norfolk Island plant pathogenic microfungi, but those are beyond my area of interest and are therefore excluded from the counts.

It is possible that the above herbaria have Norfolk Island macrofungal collections not included in the above, owing to some collections not yet being incorporated or databased. For example, curators of MEL, PDD and DAR have noted the definite or highly likely existence of small numbers of unincorporated Norfolk Island collections. However, I think it unlikely for there to be any additional significant collections, since there is very little mention of Norfolk Island in the mycological literature (especially in regional treatments of various taxonomic groups). G.H. Cunningham, in particular, searched for Australasian collections at Kew but recorded no island taxa other than those in the main table above.

Thus there are currently about 500 herbarium collections of Norfolk Island macrofungi and, while many of the herbarium collections have not yet been identified, they represent at least 300 species.

Acknowledgements

The Australian Nature Conservation Agency funded my 1994 and 1995 visits. The curators of the herbaria noted above supplied information concerning their holdings of Norfolk Island fungi. Ian Endersby brought the Bentley and Guzman *et al* references to my attention. J.H. Willis and Marie Taylor provided information about their 'mycologizing' on the island.

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The Landcare Research 'Invasive fungi in native ecosystems' programme (Johnston & Buchanan 1997) is a first attempt to measure the impact of introduced non-pathogenic fungi on New Zealand's indigenous communities. Although the consequences of such fungi invading indigenous ecosystems have not been considered in the past, they may be far-reaching, especially for a long-isolated island biota such as New Zealand's. Invading fungi could displace native fungi from the communities in which they occur, and disrupt natural fungal successions in these communities. Fungi are basic to many biological processes within forests. Flow-on effects from the displacement of native fungal species could include the disruption of food chains of indigenous insects and birds, and, for mycorrhizal fungi, changes to the vigour of host trees.

The fungal invaders programme aims to address the following questions:

- What is the extent of the invasion of native ecosystems by exotic fungi?
- What characteristics allow some exotic fungal species to invade indigenous ecosystems?
- What are the biological consequences of these invasions?

The programme has focussed initially on two invasive macrofungi, each with conspicuous sporocarps. The large ectomycorrhizal mushroom, the 'fly agaric' (*Amanita muscaria*), and the small wood-rotting 'orange pore fungus' (*Favolaschia calocera*), both introduced to New Zealand in historically recent times, are known to be invading indigenous forests at some sites.

Extent of invasion

A public survey was initiated to gather information on the distribution of *Amanita muscaria* and *Favolaschia calocera* in indigenous forests in New Zealand. Over the first six months of 1997 posters and leaflets publicising the programme, and requesting records of sightings of the two fungi, were distributed. This was achieved primarily with the assistance of the Department of Conservation (DOC), with many DOC visitor centres and field centres setting up displays on the programme. In addition, the Auckland Regional Authority visitor centres at Hunua and Arataki, and the Auckland Museum helped publicise the programme in the Auckland area.

Responses were received from over 200 people nation-wide, many reporting several records of one or both of the fungi. The first positive result from this programme is to show that public surveys by 'parataxonomists' provide a potentially useful way to gather information on the distribution of fungi. The ephemeral nature of fungal fruiting bodies means that without input from a large number of people over an extended period, even this most basic of information is often very difficult to gather (May 1997).

Amanita muscaria

Amanita muscaria, first reported from New Zealand in the late 1880s (Armstrong 1880), is now common throughout the country in human-modified habitats. As an ectomycorrhizal mushroom growing only in association with the roots of suitable trees, it is found under a wide range of introduced broad-leaved trees and conifers including oak, radiata pine, macrocarpa, and eucalypts. It has long been known to have the ability to form mycorrhizae with *Nothofagus* trees established in nurseries and subsequently planted into gardens or parks. Stevenson (1958, 1962) first reported it from natural stands of *Nothofagus* from the Nelson Lakes National Park. Since then it had been found at other sites in the Nelson Lakes area (Johnston & Buchanan 1997), but prior to the Fungal Invaders survey had not been reported from *Nothofagus* forest in other areas. The survey revealed *A. muscaria* to be widespread in *Nothofagus* forests in the northern half of the South Island, and also that it occurs in a few sites in the central North Island (Figure 1). In contrast to the numerous records from *Nothofagus*, there is only a single, unconfirmed record from *Leptospermum scoparium* and *Kunzea ericoides*, the other native ectomycorrhizal trees in New Zealand, this from the Bay of Islands area in the northern North Island.

To date, all information on the distribution of *A. muscaria* is based on observations of the sporocarps. We plan to investigate how the presence of individual sporocarps relates to the frequency of *A. muscaria* mycorrhizae on *Nothofagus* roots at a micro-site scale. This will provide some of the basic data needed to understand the biological consequences of such invasions. This study will involve both morphological and molecular characterisation of *A. muscaria* mycorrhizae on *Nothofagus* roots. This base-line information will be useful to estimate whether the presence of *A. muscaria* affects the diversity of indigenous ectomycorrhizal species at the invaded sites.

In most localities where it occurs, *Amanita muscaria* is present at numerous separate sites within a few kilometres of each other. The inset maps in Figure 1 show examples of local distributions at a larger scale for the Wangapeka Track area in Nelson and the Bealey River area in Canterbury. The same kind of distribution was evident in Abel Tasman National Park and the Pelorus Bridge area. Such a distribution pattern might be explained by some local feature of the environment, or the fungus, or the host in these localities. Alternatively, it may represent local spread subsequent to a single invasion. If we can determine which of these possible explanations is valid, then it should be possible to predict which kinds of sites are likely to be invaded by this mushroom in the future. At several of the invaded sites a second introduced mycorrhizal associate of Pinaceae, *Suillus piperatus*, was also found. This might suggest that, in some cases at least, features of the site at which invasion is occurring may be more important than features of the host or fungus population at that site.

Favolaschia calocera

Favolaschia calocera, a saprobic wood-decayer, has been known in New Zealand for about 30 years. The first herbarium specimen is dated 1969, suggesting that it was first introduced during the 1960s. Although the individual fruiting bodies of this fungus are small, it fruits in large swarms and this, together with its bright orange colour, means it is unlikely to have been missed by the several field mycologists active in the 1940s and 1950s, if it had been present. Hood (1992) considered *F. calocera* may have been present in New Zealand as early as 1906, based on a report by Masee (1906, as *F. thwaitesii*). However, Masee's description does not match *Favolaschia* in several respects. Unfortunately Masee's collection can not be found in the herbarium at Kew. *Favolaschia calocera* is thought to be native to Madagascar, the type locality, and has otherwise been recorded only from New Zealand and Norfolk Island. The report from Norfolk Island is recent (Heinno Lepp, pers. comm.), and probably represents a range extension from New Zealand.

First recorded from both Auckland City and Mt Pirongia in 1969, *F. calocera* was reported as far south as Nelson, Punakaiki (Paparua National Park), and the Chatham Islands in 1986, 1992, and 1993, respectively, and we expected the survey to reveal a continued southward spread. However, although the survey greatly increased the number of sites from which this fungus was known, its southern limit was extended by only a few kilometres. The southern-most record in last year's survey was from near Hokitika, only about 60 km further south than Punakaiki.

Several fungal species of tropical origin show a similar geographic range in New Zealand. We tested whether further spread of *F. calocera* is being limited by climate, using a climate-matching programme.

Favolaschia calocera was reported from over 200 sites (black dots on Figure 2) throughout most of the North Island, and the northern part of the South Island. GIS databases were used to estimate values for a range of environmental variables for each of these sites. These included: mean annual temperature; average minimum temperature of the coolest month; mean annual solar radiation; minimum humidity (lowest mean monthly humidity); and, minimum rainfall/PET ratio (lowest mean monthly ratio of rainfall to potential evaporative transpiration). Across the complete set of distribution records the extreme values for each of the environmental variables were noted, and these were mapped across New Zealand as a whole. The separate layers were combined to generate a map which acts as a predictive model of the environmental conditions in which *F. calocera* is able to grow, and hence the limits of its geographic range (Figure 2). These results suggest that the distribution of *F. calocera* is close to its climatic limit in New Zealand, probably reflecting its putative tropical origin.

However, when we compared the growth rate on agar plates of *F. calocera* with that of several indigenous saprobic wood-rotting basidiomycetes, the results were unexpected. Compared with most of the indigenous species tested (*Bjerkandera adusta*, *Gloeoporus dichrous*, *Pycnoporus coccineus*, *Schizopora* sp., and *Trametes versicolor*), *F. calocera* had a lower optimum growth temperature for growth, and a lower tolerance to temperature extremes. This appears to be inconsistent with the hypothesis that it is a tropical species at the limits of its climatic tolerance in New Zealand. Future observations on its distribution both in New Zealand and Madagascar will test the validity of our climate-matching model. The environmental variables selected were those found to be most useful in similar studies on plant distributions in New Zealand. Whether or not a different set of variables may be more appropriate for New Zealand fungi has yet to be investigated.

Characteristics allowing some exotic fungal species to invade indigenous ecosystems

As noted above, an understanding of the features which allow some fungi to become invasive will allow us to predict the likely sites of future invasion by these fungi. Some of these features are likely to reflect the rate of production and viability of propagules, degree of substratum specificity, rate of hyphal growth, and competitive interactions in confrontations between hyphal fronts.

The abundance of *Favolaschia calocera* fruiting bodies at some sites suggests that it may be displacing the native wood-rotting species normally expected at these sites. The sporocarps of *F. calocera* in New Zealand are known to contain strobilurans (Gillian Nicholas, Canterbury University, pers. comm.), compounds with anti-

fungus properties. The production of these compounds may be one mechanism giving it a competitive advantage over native fungi; possibly excluding them from, or displacing them from wood in which they are normally found.

We tested the competitive ability of *F. calocera* against a range of native wood-rotting basidiomycetes on both agar plates and a sawdust medium at 20°C, the optimum growth temperature for *F. calocera* on agar. In most cases, when the colonies of the two competing species met deadlock ensued, with each fungus maintaining exclusive colonisation of its part of the medium. In almost all cases the amount of substratum colonised by *F. calocera* was less than that of the native species, reflecting its generally slower rate of growth. This *in vitro* experiment found no evidence that *F. calocera* has a particular competitive advantage over native wood-rotting fungi in terms of capture of substratum resource.

Possible explanations for this unexpected result are that the experimental conditions we used do not adequately reflect the situation in nature; that *F. calocera* produces strobilurans in sporocarps but not in vegetative mycelium; that the fungi against which we tested *F. calocera* are not those with which it is competing in nature; or that the presence of large numbers of fruiting bodies of this fungus on hosts does not reflect the colonisation of large volumes of wood. Another possibility is that *F. calocera* is not out-competing other fungi, but that it is filling an empty niche. *F. calocera* appears to be particularly common in highly modified bush remnants. It may be that native fungi have difficulty in adapting to such human-modified habitats. In this case, the presence of *F. calocera* in a given habitat may be an indicator of a depauperate microbial biota. It is also possible that *F. calocera* has a competitive advantage in its ability to fruit and disperse spores more quickly than native species, and that it thus has a greater chance of occupying substratum as it becomes available.

Biological consequences of invasions by non-pathogenic fungi

We will further investigate whether these fungi are having any effect either on biologically similar native fungi occurring at invaded sites, or on the trees, shrubs and other organisms found at these sites. We plan to determine the impact of *Amanita muscaria* on the diversity of native ectomycorrhizal species using PCR-based molecular techniques. Mycorrhizal species diversity will be compared genetically using mycorrhizal root samples taken from *Nothofagus* trees at both invaded and non-invaded sites.

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Figure 1. Distribution of *Amanita muscaria* in native forest, based on results of the Fungal Invaders public survey.

Figure 2. Map predicting the maximum geographic range of *Favolaschia calocera* in New Zealand. The map is based on a set of environmental variables being estimated for each of the distribution records from the Fungal Invaders public survey, with the extreme range for all of the variables being mapped across the country as a whole (see text).

ABRS REVIEW

The AMS made a detailed submission to the ABRS Review Committee as did numerous other Societies. The Review Committee has completed its report and copies are available gratis from Ms Liz Visser, ABRS, GPO Box 636, Canberra 2601.

In so far as the document goes we would support the recommendations. At a meeting with Senator Robert Hill on 13 May in Canberra that was the view expressed by Dr Andy Austrin (ASSB), Dr Tim Entwistle (ASBS) and Mr Jack Simpson (AMS). That meeting took place the afternoon after the Federal budget was brought down. In the Budget, funding for ABRS for 1998/99 was reduced by \$1.3m compared with the 1997/98 figure. Following our representations, Senator Hill agreed to guarantee the 1997/98 level of funding for the present year. Since that meeting, Senator Hill has appointed a new Chairman to the ABRS Advisory Board, Professor Hugh Possingham from Adelaide University. This is a significant development as Professor Possingham is a taxonomic user rather than provider.

From a purely mycological standpoint the review document is very disappointing. The concerns of AMS and the Australian Society of Microbiologists were ignored and are not addressed in the Review Document.

J. A. Simpson

SYSTEMATIC STUDIES IN *DERMOCYBE* (AGARICALES: CORTINARIACEAE)

At a time when biological diversity is being lost at an unprecedented rate, the need for sound, scientific research on the diversity of and relationships between different organisms has arguably never been so important.

I am fortunate to now find myself in a position to make a positive contribution to our knowledge on the diversity of Australian agarics. Having completed an Honours year in systematics under the joint supervision of Assoc. Prof. N. Prakash and Dr Jeremy Bruhl at the University of New England, I was offered, and accepted, the Australian Biological Resources Study-Postgraduate Scholarship-1998. Commencing in June 1998, the PhD will be undertaken through the University of Melbourne under the joint supervision of Prof. Pauline Ladiges and Dr Tom May.

The project will involve a systematic study of *Dermocybe* (Agaricales: Cortinariaceae). Multivariate analysis, based on traditional morphological characters as well as other characters of potential taxonomic value, will be used to investigate the delimitation of Australian taxa. Results will be compiled in a monograph on the genus.

A comprehensive monograph requires examination of all available collections from across Australia in order to adequately record the range of variation within and between taxa. To achieve this I will be approaching directors of State and Regional herbaria to access material, but would also be grateful to hear from mycologists willing to allow me access to personal herbaria or to send me relevant collections. It is my intention to develop an information package to distribute to those interested in participating, and some form of assistance and reciprocation on my part would obviously be in order.

Rod Jones
National Herbarium of Victoria
Birdwood Ave
South Yarra, Vic. 3141

Telephone: 03 9252 2328
Email: rjones@rbgmelb.org.au

TROPICAL MYCOLOGY RESEARCH CENTRE (TMRC)

Plans are ahead for Australia to have its very own Tropical Mycology Research Centre. This is a private venture sponsored by Dr Kevin D. Hyde and it is hoped to start operations in early 1999. The Centre will be based in north Queensland on the Atherton Tablelands and premises are presently being sort. The Director of the Centre will be Ceri Pearce and it is hoped to develop a centre for fostering research in mycology over the next decade. Setting up the Centre will be costly and we are much in need of literature. Anyone having reprints or duplicate copies of books are requested to post them to the centre.

It is hoped to take on a student to study a group of microfungi in the north Queensland wet tropics as part of a PhD program (probably registered in The University of Hong Kong). If anyone is interested or knows of anyone who is interested they should contact Ceri Pearce or Kevin Hyde.

We will keep you informed of the progress in future issues.

Mission statement

Our mission is to increase the understanding of mycology in the Australian tropics by fostering high quality scientific research. Providing research facilities is central to the achievement of this mission.

Post Graduate Studies

We are expecting to have a place for one post graduate student to work on microfungi. Please contact Dr Hyde or Ceri Pearce with an expression of interest.

Ceri Pearce: email: Ceri.Pearce@tfr.csiro.au
Kevin D Hyde: email: kdhyde@hkucc.hku.hk

MINUTES

AUSTRALASIAN MYCOLOGICAL SOCIETY Annual General Meeting

Held at the Botany School, University of Adelaide, 1 October 1997.

Meeting opened at 5.15 pm.

Present: Jack Simpson (chair), Peter Buchanan, Cheryl Grgurinovic, Heino Lepp, Tom May, David Moore (President, British Mycological Society) and 14 others.

1. Treasurer's Report.

Heino Lepp reported that audited accounts were included in *Australasian Mycological Newsletter* 16. *Newsletter* costs have increased, reflected in an improvement in the quality of the *Newsletter*. There is consequently a need to increase subscriptions. It is also recommended that the student membership category be expanded to cover retirees and those on Government pensions.

MOTION 1. That the words 'student member' in Note 1 of Section 2 of the AMS Constitution be changed to 'concessional member' Moved Peter McGee, Seconded Kevin Hyde. Carried.

MOTION 2. That 'concessional membership' be extended to any person who is (i) a retiree, or (ii) receiving a government pension. Moved Peter McGee, Seconded Heino Lepp. Carried.

MOTION 3. That all membership fees be increased by 50% of their current amounts. Moved: Cheryl Grgurinovic, Seconded Neale Bougher. Carried.

MOTION 4. That a category 'Sustaining Member' be created, with annual fee to be three times the ordinary membership fee. Moved Fiona Benyon, Seconded Neale Bougher. Carried.

New Zealand Payments. New Zealand members can pay Peter Buchanan in \$NZ, who will make a once yearly payment to the Treasurer. Peter McGee commented on extending this arrangement to other regions.

2. Report on election of office-bearers

Tom May reported that one nomination was received for each vacant position and therefore the following were elected unopposed:

President: Jack Simpson
 Vice-President: Cheryl Grgurinovic
 Treasurer: Heino Lepp
 Secretary: Tom May
 Councillors: Peter Buchanan and David Ellis

Ken Thomas is the Public Officer.

3. Reports of Special Interest Groups

Fungal Poisoning Network. Mary Cole reported that Tony Young is sorting out indemnity. Even for mycologists with 'Honorary' status at Hospitals or Poisons Information Centres, legislation is not tested as far as advice to other parties. Tony Young is developing a LUCID key to poisonous fungi.

Education Special Interest Group. Peter McGee discussed the WWW package currently under development. In 5–10 years it is planned to develop a multifaceted education package for fungi, suitable for use by classes or individuals, and to cope with different levels of interest and expertise.

Conservation Subcommittee. This newly created subcommittee will also act as the IUCN, Species Survival Commission, Committee for Fungi, Australasian Regional Committee.

Promoting Mycology Group. This group is yet to be formed, but the intention is to start up a discussion in the *Newsletter* and via email on the promotion and funding of mycology.

4. Conferences

IMC 2006 Committee. Chaired by Eric McKenzie, this group is preparing a bid to hold IMC 2006 in Australia.

IUMS Congress of Mycology, August 1999, Sydney. The 1999 Scientific Meeting of AMS will be held in conjunction with the IUMS Congress.

In general discussion about conferences, Neale Bougher commented that it was good to hold the AMS meeting along with systematics meetings (such as ASBS); it was also agreed that there should be regular co-ordination with plant pathology meetings; Kevin Hyde inquired why there was no meeting of the Society planned for 1998—the feeling is that the Society could hold a viable scientific meeting about every two years; Tom May explained that in years where there is no scientific meeting, an ad hoc AGM will be organised at a convenient place and time; according to the constitution the AGM must be held in the second half of the year, so where the scientific meeting is in the first half of the year, an ad hoc AGM would also need to be arranged, although a General Meeting could be held at the time of the Scientific meeting to allow members to discuss issues.

5. Other business

Patron. It was agreed that the Society should have an honorary patron, and that Jack Warcup would be an excellent choice.

Web page for the Society. Cheryl Grgurinovic will be able to accept files for a proposed AMS web page, and include links to relevant sites.

Vote of thanks. Jack Simpson thanked British Mycological Society president David Moore for attending and the BMS for supporting his visit.

Meeting closed 5.45 pm.

AUSTRALASIAN MYCOLOGICAL SOCIETY BUSINESS

Scientific Meetings

1998: There will be no scientific meeting.

1999: The scientific meeting of the Society will be held jointly with the IUMS Congress of Mycology in Sydney in August 1999.

2000: The scientific meeting of the Society will be held jointly with the New Zealand Fungal Foray. This will be in the South Island, most likely in May in the Te Anau area. Lawre Taylor is co-ordinating the Foray, and can be contacted for further details (mushroom@ihug.co.nz). There will be a day to present papers and posters. Student assistance will be available. This will be an excellent opportunity to collect, catch up with colleagues, and present your latest research, all in a beautiful location—so mark this in your diary now. There will be further details in the next *Newsletter*.

Annual General meeting

The 3rd Annual General Meeting of the Australasian Mycological Society will be held in Sydney later this year. It is anticipated that the AGM will be held in November at the University of New South Wales, along with a half day symposium where a number of student and newly graduated members will present seminars. Details of date and place will be included in the next *Newsletter*. Members wishing to place items on the agenda should contact the Secretary.

Call for nominations

Nominations are requested from members of the Australasian Mycological Society for the following positions in the Society:

President, Vice-President, Secretary, Treasurer, and two Councillors.

Nominations should be submitted in writing, signed by two financial members of the Society and accompanied by the written consent of the candidate. Nominations should be received by the Secretary by 14 August 1998. Objects and rules of the Society can be found in the *Newsletter* for March 1995, or can be obtained on request from the Secretary.

According to the constitution of the Society, the President and Vice-President must stand down after three years.

Please consider nominating as an Office Bearer or Councillor

The founding council has served unchanged for three years—it would be great to have some fresh faces on council.

Payment of subscriptions by New Zealand members

To help members avoid costly currency conversion charges, it was resolved at the last AGM that New Zealand members could, if they wish, pay subscriptions to a New Zealand member of Council, who would then forward the bulk amount each year to the Treasurer. Subscriptions paid in this way will be the same amount in \$NZ as the current \$AUS subscription. New Zealand members may direct their payments in \$NZ to Peter Buchanan at Landcare Research, Private Bag 92170, Auckland, New Zealand. *Please make cheques payable to 'Foray account'.*

New membership categories—Concessional Member/Sustaining Member

The Concessional Member category replaces the Student Member, and now covers students, retirees, and those receiving a government pension. The rate for this category is the same as the old Student Member category.

The new Sustaining Member category will have an annual fee three times the ordinary membership fee. Sustaining Members will be listed in each *Newsletter*.

Tom May
Secretary, Australasian Mycological Society

BOOK REVIEWS

Protocols for an All Taxa Biodiversity Inventory of Fungi in a Costa Rican Conservation Area by Amy L. Rossman, Rodham E. Tulloss, Thomas E. O'Dell and R. Greg Thorn (1998). 195 pp. (Hardcover.) ISBN 1-887905-05-7. Parkway Publishers, Inc. Box 3678, Boone, NC 28607, USA. Email: aluri@netins.net; <http://www.netins.net/showcase/alurir>. Price \$US35.00

For the past 25 years, my fungal studies have mainly concerned the identification of the higher fungi and their systematic relationships—principally agarics. Whilst some ecological aspects do play a role in systematics, the dynamics of fungal biodiversity are not usually considered other than in subjective or intuitive 'feelings' about species richness of particular habitats or the requirements of a species for one or more very well defined environments. It was therefore with a great deal of interest that I examined this book which considered the world of mycology from a very different perspective. The book sets out a series of protocols which allow the user to conduct a biodiversity survey of all fungi in a given region, and in addition, provides standardised procedures for sampling, storing and culturing the various fungi as well as the practical aspects of funding, staffing and equipping such a project.

The introductory chapter of the book commences by reinforcing the concept of biological wealth of the fungi: 'Fungi constitute the most diverse group of eukaryotic organisms on earth' and continues by stressing the critical importance of these organisms in the biosphere both ecologically and economically. Each sentence is

chosen to display as forcefully as possible the impact of fungi on the world's (and by extension, human) existence.

The book concentrates on sampling methods applicable to the forest ecosystems of Costa Rica, but within these ecosystems are found so many variations that the Costa Rican ecosystems are more or less immediately transportable to any other geographical location. The authors are to be congratulated on their integrity in enumerating the immense difficulties involved in measuring fungal biodiversity. They recognise that the ephemeral nature of most fungal fruiting bodies, their associations with many kinds of substrates, their seasonal appearances and the problems of obtaining many species in pure culture means that fungi cannot be sampled with a single class of techniques and satisfy the reader as to the reasons for the series of later chapters on sampling protocols.

The protocols themselves are set out as an ordered sequence of steps and the directions contained in each step make it virtually impossible for a mistake to be made. Whilst the book's protocols cover all organisms which may be considered as fungi (including lichenised fungi and myxomycetes), any biological survey of a subset of the fungi can be completed by using only the protocols written for that subset.

The thoroughness with which the book approaches all aspect of its surveys is readily seen in chapters 6 and 7. In chapter 6, the protocols for herbarium storage of all dried fungal material are defined, while in chapter 7, the various media formulations and culture procedures are set out in a step-by-step procedure together with directives for managing the resulting culture collection. One of the most difficult areas of study is the sampling of mycorrhizae which requires meticulous planning in sampling and identifying the relevant fungi. The instructions contained in the protocols are so simple and detailed that relative novices should be able to conduct the procedures given minimal training in laboratory techniques. Indeed, the structure of this chapter could almost be equated with a student's manual detailing the isolation and culturing of mycorrhizal fungi. Similar statements could also be made regarding the chapters on soil, rock and aquatic fungi as well as that on fungi associated with animal products.

Of necessity, a full fungal biodiversity survey requires considerable resources and the final chapters of the book address the staff required for the survey, the equipment and the funding required. While the scope of the book's project is much larger than many projects envisaged by most readers, the book's details of various project areas would nevertheless be useful in setting up cost analyses of smaller projects.

The book's bibliography is extremely large and is a miniature resource for the fungal biodiversity survey in itself. All the various aspects of the book have been sectioned in the bibliography so that the user needs only to go to the relevant section to find the references relevant to the topic rather than wade through a single, large list of cited authors and books. There is also a very good general index to the many headings and topics of the book. The book is well bound and the setting out is crisp and simple to follow.

My initial pleasure with this book has not been diminished after examination and if anything, increased. Indeed, I would go so far as to say that the initial chapter of this book would have great value as required reading for any student of the fungi, and would also be of immense benefit as a politician's guide to the importance and usefulness of the fungi in world health and economics. It is rare to see a book in which the desired outcomes (or products) of a fungal biodiversity survey are carefully listed and then elaborated upon in order to show how each outcome can provide benefits to the organisation/country conducting the survey.

This is certainly not a volume for the general taxonomist whose only concern is identifying fungi, however, for applied work on the fungi, this volume allows the user to plan systematic inventories of the fungi of an area and then suggest ways in which this information can be utilised. Aspects of this book might be very useful to the leaders of such projects as Fungimap and would be of interest to persons involved in fungal population ecology where standardised protocols are required if samples are to be compared. Certainly the contents of chapter one would be of value to anyone in the various environmental departments of Australia. I have pleasure in recommending this book.

Tony Young
Honorary Research Associate
State Herbarium, Queensland

Fungi of Southern Australia by Neale L. Bougher and Katrina Syme (1998). 391 pp. (Hardcover). ISBN 1 875560 80 7. University of Western Australia Press. Price \$75.00

The authors' aim for this book was 'to improve awareness of Australian fungi in a wide range of people' and to 'introduce a broad sample of fungi in Australia to the reader'. They succeed admirably in their task, as the book is of interest to both the amateur and the professional mycologist.

The introductory chapter includes broad aims and an outline of the book, the geographical focus of the book, and a brief introduction to the Kingdom Fungi and the larger fungi. Although most of the species in the book occur throughout Australia, the specimens described and illustrated were collected from the South-West Botanical Province of Western Australia. The second chapter, Australian fungi, and the South-West region covers the climate, geology, vegetation and the history of studies on fungi of the south-west region; on an Australian basis it then gives very brief outlines of previous literature, level of knowledge about biodiversity and identity, past and present mycogeography, fungi introduced into Australia, rare and endangered fungi, management and conservation value, roles of fungi in ecosystems, and fungal influences on human existence. These brief outlines serve to provide the non-specialist with some basic mycological knowledge.

The third chapter gives a brief introduction to scientific names and synonyms, very useful for the beginner, and an outline of the way species in the book are described and documented. Chapters 4 and 5 are of great value to the beginner, outlining the basics of finding, collecting and processing fungi, and the identification of fungi. The descriptions of characters and character states and associated illustrations are very useful. An excellent glossary is also included at the back of the book. Chapter 6 gives a brief outline of the major groups of fungi starting at the Kingdom level, with tables 7–14 providing useful illustrations and short descriptions of the groups. The authors acknowledge that keys to species are not provided because only a representative portion of fungi known to be present in the region are included and many Australian fungi are yet to be discovered and named. I would have liked to have seen a key to included genera, but this is more a personal opinion than a criticism of the book.

The descriptions of species and watercolour illustrations are in Chapter 7. This chapter is beautifully laid out. Each species receives a two page treatment; the left page has the Division, species' name and author, place of publication, synonyms, habitat and mode of life given in a coloured box in the top left hand corner. Important microscopic characters are illustrated. The introductory paragraph gives useful information, for example, noting the species' distinguishing characteristics, derivation of the common name, *etc.* Detailed descriptions of the fruiting body and and microscopic features are given. The right hand page has the watercolour illustration by Katrina Syme. Watercolour illustration of fungi as part of taxonomic study has a long tradition in other countries, but in Australia has been sadly neglected. Katrina Syme's pictures are exquisite and are a wonderful vehicle for introducing the macrofungi to a wider audience in Australia. Each painting illustrates fruiting bodies from immature to mature and often gives a cross section; habit and substratum is also illustrated. These paintings are excellent examples of botanical illustrations that are both visually beautiful and botanically accurate.

The study of fungi in Australia has been greatly neglected compared with the study of vascular plants. This book introduces fungi and their importance to a wider audience, as well as being a scientific reference book for professional mycologists.

Cheryl Grgurinovic

Edible and Poisonous Mushrooms. An Introduction by I. Hall, P. K. Buchanan, W. Yun & A. L. J. Cole. (1998). 189 pp. (Softcover.) New Zealand Institute for Crop and Food Research Limited, Christchurch, New Zealand.

At the outset one must emphasise this is a beautifully presented book. It includes 170 full page or half page colour photograph figures of excellent quality of the fungi discussed in the text. There is no available comparable book dealing with the Australasian edible macrofungi. For those people in New Zealand or Australia interested in eating macrofungi from the wild or in commercial cultivation of macrofungi this book is essential.

After a short introductory chapter on edible macrofungi, including interesting information on the size and value of the commercial mushroom market in New Zealand and the world, the next two chapters deal with techniques for cultivation of Saprobic Mushrooms and Mycorrhizal Mushrooms. The discussion of commercial cultivation of saprophytic mushrooms includes a short discussion of conservation and quarantine considerations; *Pleurotus ostreatus* is not permitted into New Zealand, or *Hypsizygus marmoreus* into Australia. However, there is no discussion of these issues in the chapter on mycorrhizal mushrooms although species such as *Amanita muscaria* are known to be invading native plant communities in Australasia. The information provided on cultivation techniques is probably not sufficient for a novice mushroom grower but further references to more detailed information are cited for each genus or in some cases species. Details are provided of the Mushroom Growing Societies in New Zealand and Australia, plus worldwide internet addresses.

The major portion of the book (Chapters 4 & 5) deal with wild mushrooms. Surprisingly, these chapters deal at length with exotic ectomycorrhizal fungi symbiotic with exotic trees in New Zealand and Australia. Chapter 3 could better have been titled 'Cultivation of truffle fungi'. Rules are listed to help determine if a collection is likely to be of an edible species. Two novel and interesting pie-charts should be very helpful to those trying to identify to genus macrofungi with 'Caps with stems' and those 'not cap-shaped with stems'.

The hyperparasitic fungus *Hypomyces lactifluorum* that grows on white species of *Russula* and *Lactarius* in North America, and on *Boletus edulis*, is illustrated and discussed. It is not clear from the information provided if it is established in New Zealand. It is not clear why *Lamperomyces japonicus* is included. Both *H. lactifluorum* and *L. japonicus* would seem to pose a significant threat to the indigenous Australasian fungi and their introduction to Australia should not be encouraged. In fact the information presented on many of the taxa in Chapter 5 reads as if prepared as background notes on fungi that might be introduced to New Zealand for commercial purposes rather than as accounts of fungi already growing in Australasia.

The book has three tabular appendices. Appendix 1 lists some macrofungi with reputed medicinal properties. Appendix 2 lists the scientific, English and Chinese common names for many edible or medicinal macrofungi. Poisoning syndromes, and the classes of toxins present, are listed in Appendix 3.

Some of the naming is curious, for example, *Naematoloma* is used in preference to *Hypholoma*. The large, orange-coloured, 'big laughing gym' in New Zealand is referred to *Gymnopilus spectabilis* while the Australian species is called *G. pampeanus*; there is no mention of *G. junonius*. Only one species of *Laccaria* is discussed, the exotic *L. laccata* although there are numerous indigenous species. The fungus shown in Figure 59 does not look like *Armillaria novae-zelandiae*.

A book of this nature cannot provide all the answers. The two page, multi-lingual disclaimer in the preface shows the authors are fully aware of the difficulties associated with macroscopic identification of macrofungi. However, as an introductory guide this book will be invaluable to Australasian mycophages. It is worth noting too that by today's standards the price is very reasonable.

J. A. Simpson

WEB PAGE FOR THE AUSTRALASIAN MYCOLOGICAL SOCIETY

A web page is currently under development. The Australian National Botanical Gardens' server will host the page. It will include a short history of the Society, a list of office holders and their addresses, a subscription form, the contents page of the most recent *Newsletter* and information about collecting permits. If you have any other ideas for the web page please contact Cheryl Grgurinovic at the address on the verso of the front page.

NEW MEMBERS

Full members:

Ann Bell, Victoria University, New Zealand
Jocelyn Eskdale, Australian Quarantine & Inspection Service, ACT
Ann Holden, Australian Quarantine & Inspection Service, ACT
Steven Stephenson, Fairmont State College, WV, USA

CONFERENCES AND WORKSHOPS

9–14 August 1998	Halifax, Nova Scotia, Canada	Microbial Biosystems: New Frontiers. 8th International Symposium on Microbial Ecology	Dr Colin R. Bell Microbial Ecology Laboratory Department of Biology Acadia University, Wolfville, Nova Scotia Canada B0P 1X0 <isme8@acadiau.ca>
9–16 August 1998	Edinburgh, Scotland	7th International Congress of Plant Pathology	ICPP98 Congress Secretariat, c/o Meeting Makers 50 George Street, Glasgow G1 1QE, Scotland, UK
10–15 August 1998	Universiteit van Amsterdam. The Netherlands	International Organization of Plant Biosystematists VIIth International Symposium: Evolution in Man-made Habitats	Dr Hans den Nijs VIIth IOPB Symposium ISP-Hugo de Vries Laboratory Kruislaan 318 1098 SM Amsterdam The Netherlands Fxa: +31 20 5257662 Email: <IOPB98@bio.uva.nl>
10 August–18 September 1998	IMI, Egham	International Course on the Identification of Fungi of Agricultural & Environmental Significance	Mrs Stephanie Groundwater, International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TY, UK Ph.: +44 (0) 1784 470111 Fax: +44 (0) 1784 470909 Email: s.groundwater@cabi.org (Please give your postal address.)
17–21 August 1998	IMI, Egham, UK	8th International Fusarium Workshop	David Brayford, International Mycological Institute, Bakeham Lane, Egham, Surrey, TW20 9TY, UK <d.brayford@cabi.org>
18–20 August 1998	Nairobi, Kenya	African Mycological Conference	The Organising Committee RMC4 C/- Department of Botany PO Box 30197 University of Nairobi Nairobi, Kenya
19–30 October 1998	IMI, Egham	Modern Techniques in the Identification of Bacteria and Filamentous Fungi	Mrs Stephanie Groundwater (Address, <i>etc</i> given above.)
23–28 August 1998	Jerusalem, Israel	6th International Mycological Congress	Secretariat 6th International Mycological Congress PO Box 50006, Tel Aviv 61500, Israel
9–12 September 1998	Fargo, North Dakota	10th International <i>Sclerotinia</i> Workshop	http://www.ndsu.nodak.edu/ndsu/news/ 1998/090998.sclerotinia_ppth.html 1998
26–30 November 1998	IMI, Egham	Isolation & Identification of Fungi from Natural Habitats	Mrs Stephanie Groundwater (Address, <i>etc</i> given above.)

11–15 January 1999	Stellenbosch, South Africa	Inaugural Conference of the Southern African Society of Systematic Biology	Peter Linder Bolus Herbarium University of Cape Town Rondebosch 7700 South Africa plinder@botzoo.uct.ac.za
10–12 February 1999	Grand Mercure Hotel, Gold Coast, Qld	First Australasian Soilborne Disease Symposium	Your Registration Desk PO Box 717 Indooroopilly, Qld 4068 Ph.: 07 3878 9242 Fax: 07 3878 9530 Email: yrdpco@ozemail.com.au
26–30 July 1999	Beltsville, Maryland, USA	The Third International Congress on the Systematics and Ecology of Myxomycetes	Lafayette Frederick Biology Department Howard University Washington, DC 20059 or Steve Stephenson Department of Biology Fairmont State College Fairmont, WV 26554, USA <sls@fscvax.wvnet.edu>
1–7 August 1999	St Louis, MO, USA	XVI International Botanical Congress	http://www.ibc99.org/
16–20 August 1999	Sydney	IXth International Congress of Bacteriology & Applied Microbiology	—
27 September–1 October 1999	Canberra	APPS 12th Biennial Conference	Philippa Rowland Conference Secretary Ph. 6272 3443; Fax: 6272 4896; email <pcr@brs.gov.au>
6–10 December 1999	Perth, WA	Society of Australian Systematic Biologists, Australian Systematic Botany Society, Invertebrate Biodiversity and Conservation 1999 joint conference: 300 years in New Holland and Old Australia	—
9–14 July 2000	University of Hong Kong	2nd Asia-Pacific Mycological Conference on Biodiversity and Biotechnology	Kevin Hyde Email: kdhyde@hkucc.hku.hk
August 2002	Oslo, Norway	7th International Mycological Congress	—

If you know of any other conferences, symposia, workshops, *etc.* that may be of interest to members, please send us the details so the information can be included in the next *Newsletter*.

Cheryl Grgurinovic

MYCOSURFING ON THE WORLD WIDE WEB

The Mycological Society of America 98 program and abstracts are available on the internet. Please spread the

word to your colleagues and collaborators. Here are the sites:

Program:

<http://nt.ars-grin.gov/msapr/>

Search the abstracts:

<gopher://nmnhgoph.si.edu:70/77/.index/inocmeet98>

Browse the abstracts:

gopher://nmnhgoph.si.edu:70/00/.docs/inoculum_data/abstrac4

MSA home page with links to other sites:

<http://www.erin.utoronto.ca/~w3msa/>

See Phil Arneson's "On-line Glossary of Technical Terms in Plant Pathology":
<http://ppathw3.cals.cornell.edu/Glossary/Glossary.htm>.

Cheryl Grgurinovic

DEADLINE FOR NEXT ISSUE

Articles for the next *Newsletter* are due by Friday 11 September 1998. If articles are more than half a page long, the editors would appreciate a copy on disc. **Please note that *journal and book titles are given in full in the references*. The editors request that authors adhere to the *Newsletter* style of citing references.**

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