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Australasian Mycological Newsletter

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WHY DON'T MORE BIRDS EAT MORE FUNGI?

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Only one species of bird in Australia, the southern cassowary *Casuarius casuarius*, is known to have fungi as a regular and significant part of the diet (Barker & Vestjens 1989a, b). Admittedly one has concerns about the reliablity of the mycological data in these books as 'mushrooms' and 'bracket fungi' are listed as ALGAE in Appendix 1 (Barker & Vestjens 1989a). Cassowaries eat fruit of many species of plants digesting only the pericarps and excreting the seeds whole. However, it is known they also eat bracket fungi, as these were found in the droppings throughout the year (Crome 1976). The fungi were not identified. It is likely cassowaries also eat species of Agaricales and Pezizales though they were not observed in droppings. Soft fleshy fungi would disintegrate in the gizzard and not be identifiable without examination of the spores in the faeces.

Contrast that situation with the behaviour of the native vertebrates of Australia. Many small mammals (rodents and marsupials) and some larger ones, including grey kangaroos and swamp wallabies (Simpson unpublished), have macrofungi as a component of the diet. The significance of fungi in the diet varies with species but in some of the smaller mammals they are a major component. More than 100 different species of macrofungi, predominantly with hypogeous fruiting bodies, have been identified from faecal pellets from small mammals in Australia (Claridge & May 1994) and the number increases each year as new discoveries are reported.

So why don't birds eat fungi? For many birds they would not be difficult to find or browse upon. One might expect species of emus (Dromidae) that feed on leaves, seeds and fruits of diverse plants to also feed on fungi such as agarics and puffballs. Adult *Dromaius novaehollandiae* swallowed immature basidiomata of species of *Lycoperdon* and *Bovista* presented to them near Canberra. Brush turkeys *Alectura lathami* swallowed basidiomata of *Mycena* sp. presented to them near Atherton. This suggests that species of Megapodiidae might opportunistically feed on macrofungi. Zwart (1973) working in Sherbrooke Forest near Melbourne, observed pilotbirds *Pycnoptilus floccosus*, to 'feed rarely on small mushrooms'. These ground feeding warblers live on the 'moist leaf-strewn floor of dense forest' (Slater 1983) using their bills to find food under the litter (Zwart 1973). Again the fungi were not identified and the observation seems not to have been followed up. Superb lyrebirds *Menura superba*, scratch up large areas of forest floor in their search for invertebrates for food Slater 1983). Basidiomata of hypogeous fungi are often to be found in the scratchings of lyrebirds examined in late autumn and winter near Sydney and Goulburn. Their presence is perhaps an indication that the birds do not eat fungi. However, the scratchings of small mammals also often include basidiomata that are inadvertently buried or pushed to one side in the urge to gorge on an abundant fruiting.

One possible explanation for the absence of mycophagy amongst birds may be the kinds of sugars fungi accummulate. Most fruits are rich in short chain sugars such as glucose and fructose. Fungi tend to store trehalose or sugar alcohols. Are these compounds unpalatable or toxic to birds?

The data of Barker & Vestjens (1989a, b) were obtained by examining the stomach contents of a large number of birds collected and studied over a period of almost three decades. It is surprising that only one species of bird was recorded as having ?mould in the stomach (*i.e.* oesophagus, crop or gizzard) namely the white plumed honeyeater *Lichenostomus penicillatus*. Foliage infested with sap sucking insects commonly supports also a large population of sooty moulds. It was surprising that sooty mould was not recorded from the stomachs of bell miners *Manorina melanophrys*. These communal birds appear to help maintain large populations of Psylloidea on living leaves in quite extensive patches of eucalypts. Commonly the insect colonies develop sooty mould colonies about them. Do birds avoid insects with sooty mould? Does sooty mould afford protection from predatory birds?

Many insects are mycophagous (Kukor & Martin 1987, Lawrence & Milner 1996). Decomposing fungi of all kinds, putrescent and perennial, commonly contain large populations of larvae and adult invertebrates. Yet this large resource seems not to be directly exploited by birds. Rather than breaking basidiomata or ascomata apart to obtain the invertebrates birds seem to prefer to wait until they emerge and disperse. Is this an accurate observation? If not then why do birds ignore this source of readily available food? Further studies may indicate that Australian birds are not as mycophobic as the literature currently suggests.

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A FUNGUS AS THE CAUSE OF FROG DECLINES

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In recent decades it has been observed that populations of frogs and other amphibians have declined dramatically in parts of Australia, North America and Europe. Numerous causes for this phenomenon have been suggested including increased solar radiation resulting from destruction of the ozone layer and invasion of rainforests in Australia by camphor laurel trees. None of those claims has been substantiated.

Recently a new species of Chytridiales has been found on sick and dying amphibians in Queensland, Panama and the United States of America (Berger *et al*. 1998, Pessier *et al*. 1999). Under experimental conditions the fungus has been observed to be a virulent pathogen able to infect and cause thickening of the keratised epidermis of living adult anurans (Berger *et al*. 1998). This can impair cutaneous respiration and osmoregulation; the disease is often fatal (Berger *et al*. 1998). The fungus can infect tadpoles but does not cause mortality because tadpoles have only localised areas of keratised epidermis. This is apparently the first report of parasitism of a vertebrate by a species of Chytridiomycota.

In early conference reports it was suggested the amphibian parasite was a species of *Perkinsus* (Protoctista) but ultrastructural and DNA sequence data have shown this to be not the case (Berger *et al*. 1998). The frog chytrid, which in some respects resembles a species of *Rhizophydium*, is to be described as a new species and genus (Longcore 1998).

The geographic origin of the frog chytrid and the mode of international dispersal are not yet known. Berger *et al*. (1998) suggested it could be an introduced pathogen spreading through naive populations or it could be a widespread organism that has become more virulent because of unidentified amphibian stress factors. If the frog chytrid is an exotic to Australia it will be interesting to see if it was introduced on imported amphibians for the aquarium trade or if it came in on the collecting gear of students of amphibians. This has the attributes to be a challenging case for those interested in quarantine risk analysis.

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INTERNATIONAL UNION OF MICROBIOLOGICAL SOCIETIES
DRAFT PROGRAM
SYDNEY, AUGUST 1999

MYCOLOGIST POSITION AT ROYAL BOTANIC GARDENS MELBOURNE

There is currently a vacancy in the Plant Sciences and Biodiversity Division at the Royal Botanic Gardens Melbourne, and it has been decided to fill the position with a Mycologist, to complement the existing mycological research programs at the RBG. The position will require a Ph.D. or equivalent experience, and suitable candidates will have research interests in the taxonomy or ecology of Australian fungi. The position will be advertised shortly in the *Weekend Australian*. For further details contact Dr Marco Duretto (Plant Sciences Manager RBG), 03 9252 2313 (duretto@ rbgmelb.org.au) or Dr Tom May, 03 9252 2319 (tmay@rbgmelb.org.au).

ANNUAL GENERAL MEETING OF THE AUSTRALASIAN MYCOLOGICAL SOCIETY

The AGM will be held on 13 November 1998 at the Biological Sciences Building at the University of New South Wales (4th floor). All welcome.

Agenda
18.30 AGM
19.00 Bettye Rees: *Gymnopilus*
19.35 Cheryl Grgurinovic: *Mycena*
21.10 Tom May: Fungimap
20.45 Close of meeting
21.00 Dinner at local pub

NEW OFFICE BEARERS

The nominations for the Executive of the Australasian Mycological Society have closed. A single nomination has been received for each position; the following will take office at the AGM on 13 November 1998.

President: Cheryl Grgurinovic
Vice-president: Wieland Meyer
Treasurer: Heino Lepp
Secretary: Tom May
Councillors: Peter Buchanan, Ceri Pearce

Retiring council members:
Jack Simpson: President
David Ellis: Councillor

Tom May
Secretary

RETIREMENT OF DR JOHN ALCORN

Dr John Alcorn, retired from Herbarium BRIP, on 28 August 1998. John had a long and valued career as taxonomic mycologist with the Queensland Department of Primary Industry at Indooroopilly. He made many contributions to taxonomic mycology especially with members of the *Helminthosporium s.l.* group and their teleomorphs. We wish John well in his retirement. No decision has been made about a replacement taxonomist.

J.A. Simpson

NEW MEMBERS

Student members:

Ceridwen A Pearce, Atherton, Qld
Gavin Smith, Dept of Ecology and Biodiversity, University of Hong Kong
Barbara Paulus, Petone, Lower Hutt, New Zealand

Full members:

Dr Vanessa Brake, AQIS, Qld
Julie Mackie, CRC Tropical Plant Pathology, University of Queensland

Members who have joined the Society in 1998
Could members who joined the Society this year and have not received back issues of the *Newsletter* (17(1) or 17(2)) please contact me at the address on the verso of the front cover and I will send you copies.

Cheryl Grgurinovic

CONFERENCES AND WORKSHOPS

23–27 November 1998	Perth	Biodiversity, Biotechnology & Biobusiness	C/- Congress West Pty Ltd ACN079 098 829 PO Box 1248, West Perth, WA 6872 Tel.: +618 9322 6662 or +618 9322 6906 Fax: +618 9322 1734 Email: conwes@congresswest.com.au
26–30 November 1998	IMI, Egham	Isolation & Identification of Fungi from Natural Habitats	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.)
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
9–12 February 1999	Grand Mercure Hotel, Gold Coast, Qld	First Australasian Soilborne Disease Symposium	ASDS Secretariat PO Box 717 Indooroopilly, Qld 4068 Ph.: 07 3878 9242 Fax: 07 3878 9530 Email: yrdpco@ozemail.com.au
4–6 March 1999	Aix-en, France	Fifth International Congress for the Science and Cultivation of *Tuber* and other edible hypogeous mushrooms	courvoisier@wanadoo.fr for registration information

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	–
21–25 September 1999	University of Alcalá, Madrid, Spain	The XIII Congress of European Mycologists	http://www.cicom.es/fundacion/micolog.htm
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 new internet site of the **Mycorrhizal Research Group, School of Biological Science, The University of New South Wales** is: http://bioscience.babs.unsw.edu.au/fungus/

Details of the **APPS Conference in Canberra 1999** are now available on the web at:
http://www.ozemail.com.au/~williap/Canberra.htm
or
http://www.ozemail.com.au/~williap/

The University of Tennesse Mycology Group (http://fp.bio.utk.edu/mycology/) has opened two new web sites. A 'Botanical Nomenclature Tutorial' was created by Ron Petersen and is cross-linked to sections of the International Code of Botanical Nomenclature on the web. The suffix for the tutorial is nom-intro.htm

A workbookof fungal molecular techniques has been posted by Karen Hughes. The suffix for this site is mt-index.htm

Also available at the UT web site is Ron Petersen's new colour concordance for Ridgway and Methuen. A text version of the concordance can be downloaded by opening and saving it with your browser.

Cheryl Grgurinovic

DEADLINE FOR NEXT ISSUE

Articles for the next *Newsletter* are due by Friday 4 December 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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