



FUNGI FORAGERS

No. 5, October 2017

OUR PURPOSE: TO RAISE AWARENESS AND INTEREST IN FUNGI OF THE CAIRNS REGION

This newsletter is not formally published and is not associated with any club or organisation, but is emailed free of charge to anyone who may be interested. Anyone who wishes to contribute to the newsletter with observations, anecdotes, corrections, comments or photographs is welcome to do so. Although this “newsletter” is science-based we try not to make it too “scientific”. We recognise that there are school children, bush-walkers and others just interested in fungi, and we hope this leaflet will become a medium for furthering that interest.

Barry Muir, editor Jenn Muir

Great News

The Queensland Mycological Society (QMS) (<http://qldfungi.org.au/>) released last year two little fan-fold brochures called “Fungi of the Sunshine Coast” and “Mushrooms of the Sunshine Coast”. Each contains



about 100 pictures of common representatives of each fungal type. The brochures are waterproof, indicate the size of the fungus, what type of substrate (soil, wood), etc. that they grow on, and whether they are symbiotic “mates” (i.e. mycorrhizae) with vegetation, are decomposers or parasites. The brochures are very useful as field tools to help put the fungi in groups, in many cases to recognise genera and in some obvious cases, even to species – very useful, and just for a few dollars each. For copies contact info@qldfungi.org.au.

While this news is interesting in itself, it goes further. **The Queensland Mycological Society is seeking support for a “Building Community Capacity for Study of Tropical Queensland Fungi”.** The QMS wants to build community capacity through a series of workshops to teach how to contribute to local fungus identification resources and to increase understanding of the importance of fungi. If you would like to support this initiative write a letter and email it to franguard@icloud.com by **mid October**. **If you need**

some ideas on what to say in the letter some guidelines are attached at the end of this newsletter.

There are other spinoffs as well. Many of the fungi we get here are not described, and, in the process of the study many specimens will be collected and forwarded to the Queensland Herbarium for identification and storage. Discussions have commenced and I will keep you up to date as things progress. Exciting times ahead – watch this space and get your letter off to Fran Guard ASAP!

Article in “Green Space Our Place”

“Green Space Our Place” is an excellent magazine produced by the Cairns Regional Council to keep its many volunteer groups informed. Groups include “Tracks ‘n’ Trails (Mt Whitfield), Jalarra Park, McLeod Street Cemetery, open community gardens, Sugarworld, Down ‘n’ Dirty (at the Botanic Gardens), Cattana Wetlands, Cairns Seed Library and more. The volunteers have monthly education sessions and even a group for the kids called “Little Taccas”. If you think you might be interested in any of these groups contact the Cairns Regional Council and they will pass you on to the appropriate contacts. What has that got to do with fungi foraging? Well, the last issue of Green Space Our Place (September 2017) has a 3-page article on the major fungi groups. How do you get a copy – easy – become a volunteer and have fun and get fit at the same time.



Did you know?

The largest organism on Earth may not be the Blue Whale or the Giant Sequoia trees of the USA, but a fungus. A giant *Armillaria solidipes* fungus, a species of honey mushroom in the Malheur National Forest in Oregon, USA, was found to span 8.9 square km (2,200 acres), which would make it the largest organism on Earth by area. Whether or not this is an individual organism is disputed because some tests suggest it may be a clonal colony of numerous smaller individuals, but if it is one organism it's pretty impressive.

Making the best of it

In Cairns Fungi Foragers (CFF) No. 3 newsletter was an article called **Climate and Fungi near Cairns**. This was followed in CFF No. 4 with another discussing mesoclimate (= medium-scale climate) especially in relation to valley rainfall. At risk of pushing the interest too far, here is a final article which goes down to an even smaller scale in an attempt to explain the weird and wonderful distribution and occurrence of fungi.

Fungi compete! Where wood, litter or soil has been previously colonised, combat and antagonism are used by fungi to obtain and defend territory. This can be done at a distance by releasing toxic chemicals (some of which are now used by us as antibiotics) into the wood or soil. “Fighting” can also occur following contact between species at the hyphal level. Hyphae of one species may interfere with or parasitise another species.



This competition may influence annual, seasonal or local abundance of fruiting bodies, with the “balance of power” varying from one time to another and resulting in a different suite of species, or smaller numbers of a given species, than was observed to occur previously. This can be one of the reasons we may find a fungus species abundant one year and absent the following year.

This group of fungi is so densely packed they probably exclude all other species.

In company with competition between the fungi themselves, is the effect of predation on the fungal hyphae by insects and snails and perhaps even by animals such as Eastern Yellow Robin and the Brush-turkey. In natural systems, patchy distributions of snails, slugs and insects exert unequal grazing pressure on competing fungi in the same way as zebra and wildebeast forage on different grasses on what appears to be an unvarying savanna.

Pigments that can detect light have evolved in fungi to sense light intensity, light direction, whether it is direct or reflected light, etc. These then trigger processes that control the fungal biology and behaviour and enable them to develop a sense of space and time. Ultra-violet (UV) light can damage some fungi but is also commonly involved in starting fruiting-bodies. Field observations by the author suggest that some gilled fungi favour locations that receive direct sunlight for a short period each day but that this does not seem to apply to the bracket fungi. Likewise, there appears to be a greater number of decomposer species occurring under sparser rainforest canopy cover (and in rainforest gaps) than occurs under denser, darker canopy rainforest.



The sort of light penetration found in medium density rainforest (left) contrasts strongly with that under very dense forest canopy which can be very dark.

The presence of moisture is an obvious requirement for fungal survival. We have made observations that suggest the following factors may be involved in determining the exact location where fungal fruit bodies develop:

- Small depressions in the soil surface forming shallow pools, especially on clayey soils;
- Seepage from underlying soils where they are banked behind rocks or fallen

timber;

- Rainfall runoff creating wetter sides to tree trunks (determined by the shape of the tree) and locally wetter soil patches at the base of trees;
- Rainfall capture by decay state of the wood on which they grow. Advanced wood decay soaks up a great deal of water (up to 70% by weight).
- Structure of log surfaces where small depressions or cracks hold water after rainfall, and hollow tree trunks or storm damage in standing trees that capture water;
- Rainfall capture by vegetation structures. Large-leafed forest sheds more rainwater than does small-leafed forest when the rain is not heavy. On the other hand, when it is misty but not raining small-leafed forest strips more water from the mist than does large-leafed forest (a process known as “cloud-stripping”);
- Rain “shadows” creating artificially dry sites under slanting fallen trees or beneath logs that are raised above the ground by a few centimetres;
- The opposite to the above where rain running over logs may cause “drip-lines” where abundant water drips from the underside of the log;

This group of *Mycena* are growing out of a crack (arrowed) that holds water in a rotting log



- Bed roughness (big rocks or cascades) in nearby streams where water tumbling over rocks creates a mist within the stream valley. Some fungi specialise in these very humid habitats. The unusual assemblage of fungi found near the base of waterfalls is an extreme case of this;
- Steep-sided valleys that remain more humid during the day because they reduce sunlight penetration. They are also cooler at night;

- The presence of natural or artificial wet conditions such as occur around the margins of lakes, surrounding flooded roadside verges and near wet depressions in paddocks, gardens and parklands;
- Artificial environments such as irrigation of gardens. This is, we believe, a significant feature of the fungal species which occur all year round in the Cairns Botanic Gardens



Great Piccy



This weird looking little guy is *Macrotyphula fistulosa* variety *contorta*. It stands about 10 cm tall and is a type of coral fungus. Assuming the identification is correct it appears to be widespread in the Northern Hemisphere where it occurs on dead branches on living trees, suggesting it is a parasite which kills the branch. Fay Adams from Port Douglas found it in Mowbray National Park in January this year. It was identified by Dave Largent in the USA. There is an article about it in <http://www.mykoweb.com/misc/Omphalina/O-III-1.pdf>

This prompts me to think of having a gallery page in each edition and containing YOUR pictures. How about sending me a couple of good ones together with your name, where the photos were taken, and an identification, if you have one, and the date.

Disclaimer: we have tried to use only our original material in preparation of this newsletter. Any text, photographs or other material used herein, and from other sources, is for research, educational and/or non-profit purposes only and is thus not limited by copyright. References have been provided where appropriate.

Editorial Contacts:

Barry Muir, correspondence PO Box 15003, Edge Hill, Queensland 4870; or email unit57.may@gmail.com