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Crustose lichens on dolerite

THE GREAT AUSSIE FUNGI HUNT 2024

Sarah Lloyd

THE GREAT AUSSIE FUNGI (and slime mould) HUNT was jointly organised by Fungimap—an Australia wide mapping project—and Planet Fungi, the dynamic duo of photographer Stephen Axford and filmmaker Catherine Marciniak, creators of the documentary Follow the Rain. I had read about the HUNT through Fungimap's enews, but it wasn't until I heard Steve and Catherine speak after the film in Launceston and encouraged participation that I decided to contribute. There were two prizes: one for the person with the most research grade observations, and the other for the rarest or most interesting observation.

Australia is a vast country, encompassing numerous different climatic zones, from the tropical far north to the sub-antarctic far south and everything in between—arid, semi-arid, temperate, alpine and sub-tropical. Therefore, scheduling THE HUNT is likely to favour some regions over others. In far North Queensland where fungal appearance coincides with the December to March rainy season, there are likely to be fewer fungi than anywhere else. Those of us in the southern states could also be disadvantaged by an event held in October because our main fungi season is late April to July. However, there is always the possibility of a 'spring flush' of fungi, and slime moulds, which are opportunistic organisms, and can appear at any time of the year depending on rainfall. Lichens are permanent features of many substrates, so it is not difficult to post many observations, although identification to 'research grade' is difficult if not impossible without specialist knowledge.

THE HUNT involves photographing fungi (including lichens) and slime moulds and posting them on inaturalist. To reach research grade, the observation must have two people

Marasmius perumbiculatus on litter, 24 Oct. 2024

Tarzetta jafneospora 27 Oct. 2024

Panellus stipiticus on small log, 28 Oct. 2024

Psathryella echinata 24 Oct. 2024

Coprinus disseminatus is now *Coprinellus* SECT. *Aureodisseminati* 19 Oct. 2024

Leocopaxillus eucalyptorum Tasmanian Arboretum 27 Oct. 2024

agree with the identification. This is not easy to achieve, especially with Australian species. It is believed that only about 10% of Australia's fungi have been scientifically described and named, or they are named after northern hemisphere 'twins' and recently found to be different. It was therefore unlikely that the majority of the fungi posted would reach research grade. The same applies to slime moulds. Like fungi, many were named because of their resemblance to northern hemisphere 'twins', most are not possible to identify without microscopy, and there are very few people on iNat who are familiar with slime moulds—let alone Australian species.

Just after posting my first photos, I checked the stats and was surprised to see that I was winning the research grade category, and that I had posted the most observations. This gave me impetus to continue, and brought out a hitherto hidden competitive streak.

Fungi

Gilled fungi were few and far between at Black Sugarloaf, but I did find several research grade species at home and at the Tasmanian Arboretum during a bird walk. I soon realised how out of touch I am with fungal names. What I knew as *Marasmius crinis-equi* (horse hair fungus) is now *M. perumbiculatus*, and what I thought would be several reliable research grade observations of *Coprinus disseminatus* is now *Coprinellus* SECT. *Aureodisseminati*. I also found several new records for Black Sugarloaf, including *Tarzetta jafneospora*.

Lichens

Lichens cover many natural and artificial surfaces and it is interesting to observe just how variable they are—and prolific depending on location and pollution levels. At home I found numerous crustose lichens on rocks

(front cover), plants and artificial surfaces including metal, ceramic and glass. Wandering around the town and cemetery in Westbury added another assemblage of lichens that had colonised cement fences and granite headstones—among other things.

The prevailing idea for over 150 years is that lichens are a fixed symbiotic partnership between a green alga and/or a blue green alga and a fungus. The algae contain chlorophyll and provide their fungal partner with sugars via photosynthesis; the fungus provides the alga with some nutrients and protection from harsh conditions, enabling the organisms to survive in some of the harshest regions of the planet, from salt-sprayed coastal areas to high alpine snowfields. Recent sequencing has challenged this long held belief, showing instead that three or more different species of fungi can be involved in the partnership, although their roles have not yet been established.

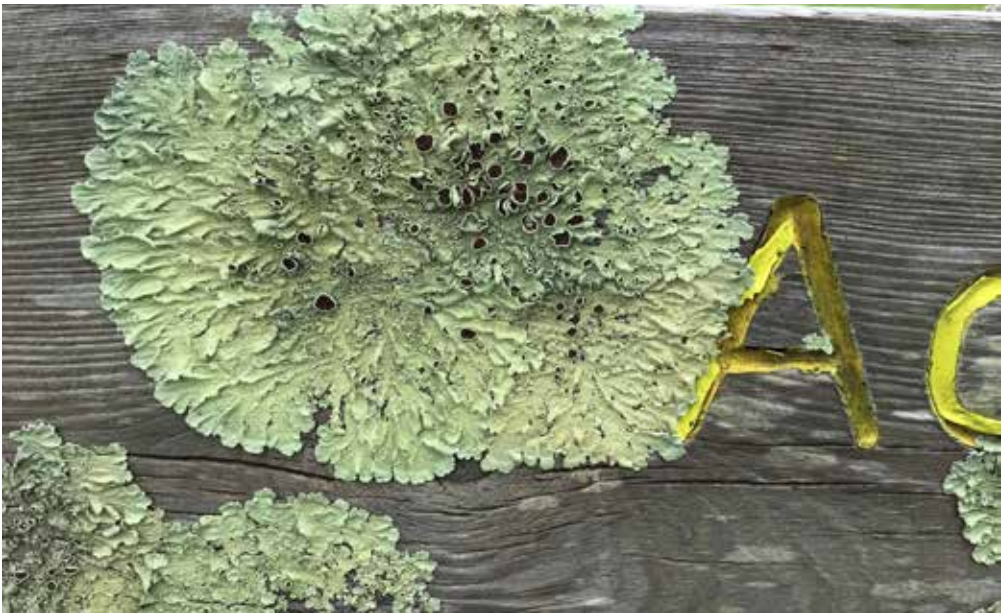
Lichens have several important ecological roles. They are early colonisers and are involved in the weathering of rocks and creating soil. They physically break down rocks via their small filamentous, root-like threads that anchor the lichen to the rock and force their way into minute spaces. They also chemically dissolve the rock minerals. Some species quickly colonise bare soil and are therefore important in preventing soil erosion and aiding in the retention of moisture. Lichens that are blown from tree tops during strong winds add nutrients to the soil as they decompose on the forest floor. Some species of lichens fix atmospheric nitrogen and others trap nutrients from rain and mist. Many animals use lichens. Some birds (e.g. Pink Robin) decorate their nests with lichens which helps to camouflage them, and some invertebrates, e.g. moths, have patterns and colours that render them almost invisible as they rest on lichens.

Lichens are known to be very sensitive to pollutants, although I am not aware of any particular 'indicator' species. I did notice numerous *Usnea* (old mans beard) at home and at the Tasmanian Arboretum, but few in Westbury and none during a brief visit to Launceston. Another interesting observation was the many species in Westbury that were bright yellow with bright yellow apothecia (the fungal component) but none of these occur at home in the forest at Birralee.

Usnea sp. on 44 gallon drum. 10 Oct. 2024

Coenogonium implexum on *Pomaderris apetala*, Tasmanian Arboretum. 26 Oct. 2024

A visit to the cemetery in Westbury was productive, with headstones supporting a range of different lichens, especially on the roughened 'back side', or the area with engraving - e.g. top right. 8 Oct. 2024



Flavoparmelia, a foliose lichen on the wooden sign at the entrance to the Aoteroroa (New Zealand) section at the Tasmanian Arboretum. 26 Oct. 2024

Slime moulds

October can be favourable for slime moulds in Tasmania, and proved so this year.

Some of the log and stump dwelling species, especially *Oligonema verrucosum*, can be recognisable even after years in the field, and I was at an advantage knowing the locations of suitable logs – while being careful not to include observations already posted on iNat. *Ceratiomyxa fruticulosa,* a species that loves sodden wood, was widespread on small diameter branches and large bryophyte-covered logs. Of particular interest to me were two hitherto unknown colonies of *Calomyxa* 'stipitata', another new species that I am currently describing with a northern hemisphere colleague. There were many *Tubifera glareata*, but only one reached research grade after being confirmed by someone who I could see knows nothing about slime moulds. This calls into question other research grade observations on iNat, but is unavoidable on a public platform.

Of course, other tiny inhabitants of the forest were encountered during THE HUNT, and a couple of snails were identified by Dr Kevin Bonham on iNat (see p. 10).

Lycogala epidendrum exemplifies the difficulties of slime mould identification. It was the first slime mould ever to be described and illustrated in 1654 and it is common throughout the world. However, because of the variation in the colour of the early stage, which can be bright pink or orange or even whitish or yellow, it has long been considered a species complex. DNA sequencing is indicating that it now known to be over 60 different species, with several from Black Sugarloaf soon to be described.

The genus *Arcyria* is another example of taxonomic uncertainty. Coincidentally, a paper describing the genus was published just as THE HUNT began. This cast doubt on the identification of all *Arcyria* spp, which were

Didymium squamulosum, a 1 mm tall slime mould found on leaf litter on the crown of *Dicksonia antarctica*, which I have discovered to be a hotspot in the forest. 16 Oct. 2024

Elaeomyxa cerifera is one of the beautifully iridescent slime moulds found in Australia. 6 Oct 2024

Numerous fruiting bodies of newly formed and old specimens of *Oligonema verrucosa* were found on logs and stumps. 7 Oct. 2024

common here in October. The hitherto easily identifiable *Arcyria obvelata*, is now *Heterotrichia obvelata*, or more likely, the yet to be formally described and named Australian version, with provisional name *H*. 'obvelatoides'.

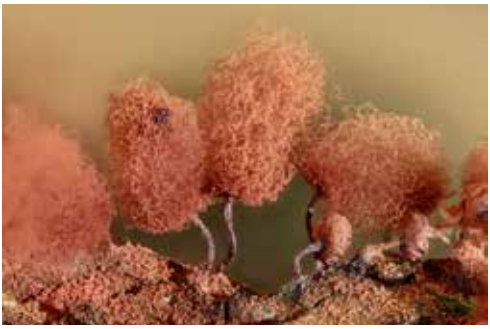
My efforts meant that I did win the Re-

search Grade category, thanks to US myxophile and macro photographer extraordinaire, Alison Pollack, who confirmed many of my species. (Alison has recently been added to Nikon's 'masters of microscopy' - link below.)

Trish Fordham received an honorable mention in the Fungimap e-news for her observation of *Callistoporium,* which may turn out to be a different genus, and my photo of the fungus, *Polycephalomyces tomantosa* on *Trichia botrytis* slime mould, was also mentioned 'for the little fungi aficionados'.

While I have reservations about including slime moulds in a fungi hunt, (slime moulds are amoebae not fungi) doing so raised the profile of these often overlooked and extremely small organisms with some people finding delightful treasures that they may have otherwise overlooked had it not also been their ambition to win THE HUNT.

Clastoderma debaryanum has a small gland on its stalk which makes it easy to identify. 28 Oct. 2024



Arcyria spp. were common, but most are impossible to identify without microscopy. 5 Oct 2024

Callistosporium sp.photographed by Trish Fordham

Polycephalomyces tomentosis is a fungus that infects members of the Trichiales. 16 Oct. 2024

https://www.inaturalist.org/projects/the-great-aussie-fungi-hunt-2024
https://mailchi.mp/2f0a1f2ca7a0/fungimap-enews-31-april-8329013?e=[UNIQID]
https://www.nikonsmallworld.com/masters-of-microscopy/alison-pollack

Developing Stemonitis

Sarah Lloyd

This article was prompted by a photo in the October enews of a yellow 'blob', that was misidentified *Fuligo septica*, probably because of its colour. The species photographed was in fact the young yellow stage of a *Stemonitis*, a genus known as 'chocolate tube slimes' because of the shape of the mature fruiting bodies (see photo p. 9).

Fuligo septica and *Stemonitis* spp. are relatively common and are fun to watch developing if you get the opportunity. On 11 September 2024 I noticed that a plasmodium of a *Stemonitis* had formed on a leaf in easy walking distance from home. I set up the camera on a tripod to capture the changing colours and shapes as it developed, an aspect of slime moulds that can add to the difficulties of their identification.

Active plasmodia of a range of different species are often observed on logs, stumps or on the ground, but is quite rare to see plasmodia of *Stemonitis* and related genera (*Lamproderma*, *Comatricha* etc.) This is because they usually dwell inside logs or stumps and only come to the surface when they are about to produce fruiting bodies. Members of the family Stemonitidales are known to be able to negotiate the minute micropores in woody subtrates, and some of the logs where they live are so hard that I have had to ask Ron to bring hammer and chisel to help me remove the fruiting bodies for study.

The photos on page 10 capture the immature and mature stages of *Fuligo septica.*

11 Sept 2024 0818

1110

1632

12 Sept 659

1052

1331

1714

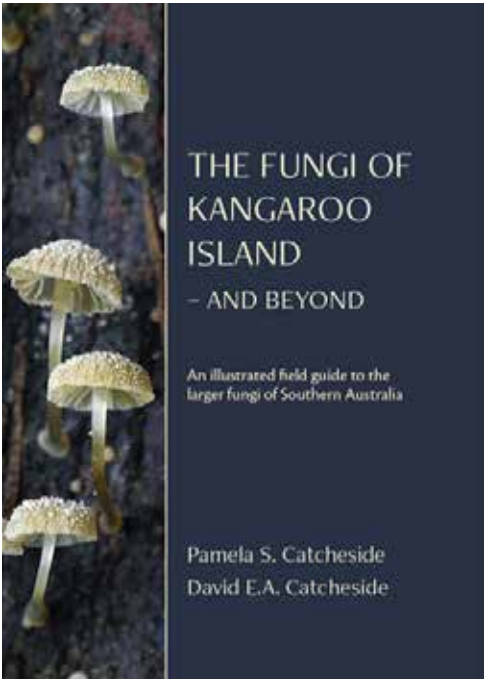
13 Sept. 1538

Mature *Stemonitis*

The early stage of a *Fuligo septica* has finger-like projections. Its common names include dog vomit slime mould, scrambled egg slime mould, caca de luna, or in Tasmania, snake poo.

The outer surface of *Fuligo septica* (cortex) is an intricate structure. *Fuligo* species come in a range of colours including white, burnt orange and pink.

These two tiny snails encountered while searching for fungi were identified by Dr Kevin Bonham on iNat. Left: *Stenacapha hamiltoni* Right: *Kannaropa subrugosa*



Book Review: *The Fungi of Kangaroo Island - and beyond: an illustrated guide to the larger fungi of Southern Australia*, by Pamela S. Catcheside & David E.A. Catcheside
State Herbarium of South Australia: Adelaide.
RRP: $75.00

It is not often I read a field guide with a smile on my face or a brief chuckle, but such was the case when I started reading the introductory chapters of the magnificent book "*The fungi of Kangaroo Island - and beyond*" by Pam and David Catcheside.

I have had the privilege of knowing Pam and David through our association with Fungimap, and during several expeditions to the Tarkine region of northwest Tasmania and the Blue Tier in the northeast; both trips supported by Fungimap and CNFN Inc.

Pam has had a lifelong interest in plants encouraged by her mother. Together they would collect plants from parks and gardens around Twickenham (England) and, during bedtime reading about British Wildflowers, Pam would insist her mother read the latin names, common names and descriptions of what they had found.

Pam went on to study science at Imperial College, London with fungi being her favourite subject in the botany degree programme.

David Catcheside likewise, had an early interest in fungi since his first foray with his father at aged 5. He started photography before he had a camera, pressing plants against photographic paper in the sun. David also completed a botany degree at Imperial College, London and later studied fungal biochemistry and genetics for his PhD.

The book originated from a series of six reports produced from 1999 to 2005 to document the fungi of South Australia. This was an ambitious project that has resulted in this book. Although it has a focus on the fungi of Kangaroo Island, where the wetter western end was the most productive location the authors' encountered, many of the fungi can also be found in other areas in southern Australia.

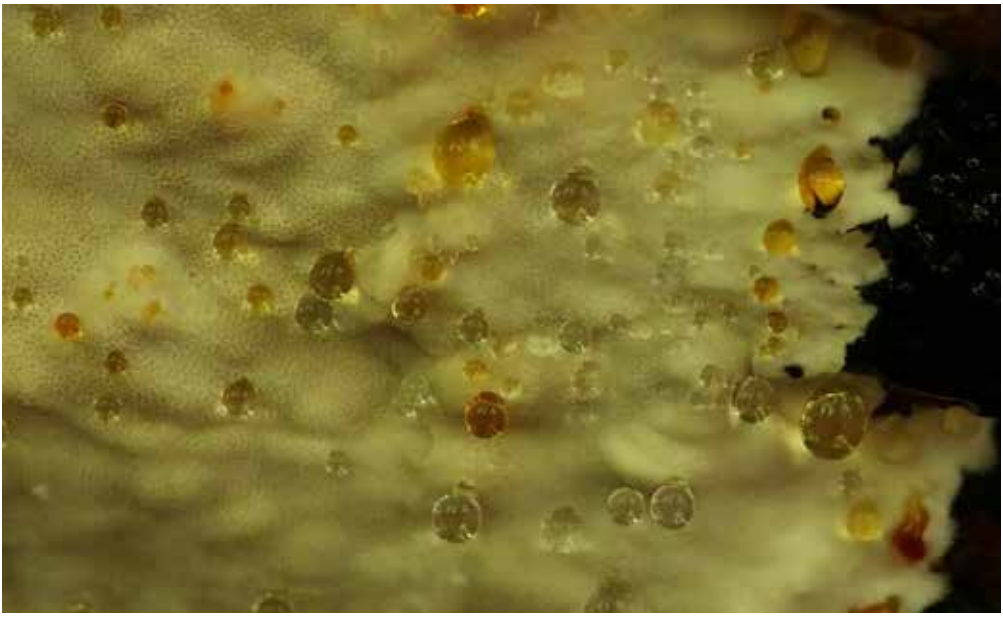
The comprehensive text covers basic information describing what fungi are and how they differ from plants and animals; the classification of fungi and their roles in the environment. It also covers how to collect, describe, photograph and document fungi, and the main groups of fungi, e.g. gilled fungi, boletes, polypores, corals and jellies.

David's photographs are superb. I can imagine the difficulties with the layout, given the variations in the shape and size of the different species depicted. I can also relate to David's tales of leeches, mud, and tennis elbow when carrying heavy equipment i.e. a Bruce Fuhrer-style tripod and light weight rake for exposing truffle-like fungi and for "helping lever the photographer off the ground after taking a picture".

It is not only the full page detailed descrip-

tions of 206 fungal species that make this book such a pleasure to read, but also the interesting facts contained within. I loved learning about the liquid droplets (also known as guttation) and the compounds they contain (see photo below). I have seen this phenomenon very occasionally on slime moulds including *Fuligo septica* and developing *Stemonitis*, but I am unaware if they have the same function in slime moulds.

This is an informative and superbly illustrated book and a welcome addition to any naturalist's library—even those whose passion for fungi has been overtaken by an obsession with slime moulds!



During the Great Aussie Fungi Hunt, I photographed a waxy polypore that was exuding numerous droplets of amber coloured liquid. I now know what they contain and their possible role thanks to the new book. *"Liquid droplets are produced by many fungi and are known to contain a diversity of biomolecules that may include insecticides, antiviral, antibacterial and antifungal compounds protecting the mycelium [and larger fungi], as well as enzymes involved in digestion".*

Please note that high resolution PDFs of previous editions of The Natural News are available on the National Library of Australia's website: https://nla.gov.au/nla.obj-2992856342