



9th November 2020

Dear AMS Member,

We're getting closer to Christmas and the country is finally able to plan some much-needed (socially distanced) holiday celebrations, and I'm sure you're all looking forward to the end of 2020.

We'd like to introduce you to the format of our repurposed AMS newsletter. After feedback from our membership and some discussions at Council meetings, we're aiming to send out a bi-monthly (that's every second month) newsletter, with editorial responsibilities rotating within the council. This gives each of us on the council a chance to reach out to you as members with insights and stories in the mycological space, as well as providing regular updates about events and news. As we have a mixture of expertise onboard the council, this will hopefully also ensure that we promote a range of research areas over the year. Each newsletter will include at least one feature article from a researcher.

If you would like to feature, if you have research or news to share, or mycological events to promote, or if you've taken a great photo of a fungus, please get in touch with our secretary Laszlo Irinyi: geza25@gmail.com.

News from the AMS Council

The council endeavours to hold a virtual meeting every month. At our last council meetings, we ran through the outcomes of the AGM and discussed several new initiatives that we have been keen to get off the ground:

***NEW* ZEALAND STUDENT REPS** We welcome Massey University PhD students Hannah McCarthy and Ellie Bradley to the council as New Zealand Student Representatives. Hannah and Ellie will share the role with Christina Stephenson from UQ. They will be responsible for our social media presence, any student AMS initiatives, as well as student involvement at our annual meeting next year.

AMS VIRTUAL SEMINAR SERIES We are happy to announce that starting in January, we will be holding a monthly seminar in the last week of each month (day and time TBC). We already have several speakers who have expressed interest in presenting and we are aiming to get representation from all areas within mycology. Seminars will be free for members to attend and a nominal fee will apply to non-members. Details for registration for the seminar series will be sent out in the next newsletter in early January. If you would like to present your research at the AMS Virtual Seminar Series, please get in touch.



NEW CHAIR NEEDED FOR EDUCATION SUBCOMMITTEE After several years of volunteering, Susan Nuske is stepping down as the Education Subcommittee Chair. If you are interested in nominating for the role, please contact Tracey on aussmysoc.president@gmail.com. We wish Susan all the best as she begins her maternity leave and thank her for her wonderful work on the subcommittee.

Feature Research: Fungi for weed biological control

[Dr Louise Morin](#)

CSIRO Health & Biosecurity
Canberra, ACT



The classical approach of weed biological control (biocontrol) relies on the deliberate introduction of arthropods or pathogens that are highly specialised natural enemies of the target weeds in their native range. Australia was the first country to introduce a fungus for weed biocontrol. The rust fungus *Puccinia chondrillina* from Europe was approved and first released in Australia in 1971 for the biocontrol of skeleton weed (*Chondrilla juncea*), which was a serious problem in cropping areas at the time. This was a major success and since then Australia has continued to be a leader in this field, with a total of 14 fungi deliberately introduced thus far. Biotrophic fungi have been primarily used for weed biocontrol because most can readily be dispersed by wind and typically are highly specific. Empirical research is required to demonstrate that the candidate fungi for weed biocontrol will not pose an unacceptable risk to non-target plant species before they are approved for release in Australia. This is done by testing the pathogenicity of the fungi on representative species that are phylogenetically related to their target weeds.

Fungi released for weed biocontrol often complement introduced insect biocontrol agents in causing damages on the target weeds that negatively affect their growth, providing conditions are suitable for the development of the agents. Since they need water to infect plants, fungi cause more severe disease on their weed hosts in areas and/or seasons with high rainfall, such as in coastal regions of Australia. Biocontrol agents, however, do not eradicate their target weeds, and rather are part of the weed management toolbox used to reduce biomass, population density and/or reproduction of the weeds.

The most recent fungi introduced to Australia by the CSIRO are the microcyclic rust fungus *Baedromus eupatorii* from Mexico (2014) and the leaf smut fungus *Kordyana brasiliensis* from Brazil (2019) for the biocontrol of Crofton weed (*Ageratina adenophora*) and wandering trad (*Tradescantia fluminensis*), respectively. *Baedromus eupatorii* established widely soon after its release across the range of Crofton weed in eastern NSW and south-east Queensland. The fungus disappeared from most sites during the recent drought but survived and with the onset of rainfall has recently been observed causing severe disease symptoms on Crofton weed again. Releases of *K. brasiliensis* are ongoing on wandering trad in partnership with communities in Victoria and NSW, and the fungus is now confirmed established at some sites.



Left: Crofton weed infected by *Baedromus eupatorii* in Lord Howe Island, NSW – [inset: closeup of infections on stems] (Photos Sue Bower).

Right: Wandering trad infected by *Kordyana brasiliensis* in Kangaroo Valley, NSW (Photo Ben Gooden).

For more information on CSIRO's current weed biocontrol projects: <https://research.csiro.au/weed-biocontrol/>. For more information on plant pathogens for weed biocontrol: Morin L (2020) Progress in biological control of weeds with plant pathogens. Annual Review of Phytopathology 58: 201-223. This article can be accessed at no cost [here](#):

Other News, Events and Interesting Finds

The 2016 recipient of our AMS Grant was Cecilia Li from the Fungal Pathogenesis Group at the Centre for Infectious Diseases and Microbiology at Westmead Institute for Medical Research. Cecilia's project was titled "Investigating the role of the inositol polyphosphate kinase signalling pathway in fungal metabolism". Cecilia has since been awarded her PhD and her research was published this year in the journal Pathogens (MDPI): Lev, S.; Li, C.; Desmarini, D.; Liuwantara, D.; Sorrell, T.C.; Hawthorne, W.J.; Djordjevic, J.T. Monitoring Glycolysis and Respiration Highlights Metabolic Inflexibility of *Cryptococcus neoformans*. *Pathogens* **2020**, *9*, 684 <https://doi.org/10.3390/pathogens9090684> (Open Access).

A recently published book titled "Entangled Life" by Merlin Sheldrake (PhD from Cambridge University) is making all kinds of waves in the mycology – and non-mycology – world. His beautifully written book describes everything from the basics of fungal biology to depictions of biologists in the lab and field, all the way through to how fungi have shaped social norms and cultures. There is a review on this book [here](#), and it's currently on sale at booktopia.com.au. Check it out!

The Ecological Society of Australia, like many societies, has chosen to deliver their 2020 conference in the virtual world this year. The conference runs on 30 November to 4 December, and this year includes several symposia and talks relevant to mycologists including "Soil microbial responses to climate extremes: mechanisms, patterns, interactions" convened by Eleonora Egidi and Christina Birnbaum. There is also a keynote presentation on chytrid fungal disease in amphibians by Laura Brannelly, and several talks related to ecological recovery after bushfire. There is still time to register, and since the conference is wholly online, registration fees are low and are therefore ideal for students. For more information, see <https://www.esa2020.org.au/>

Fungal Education Subcommittee

We will continue to advertise this major initiative of the [Education Subcommittee](#): they have developed a list on the AMS website of tertiary courses related to mycology available in Australia and New Zealand. This is a great resource for anyone interested in studying mycology at a tertiary level. If you have any courses to add or update for 2021, please visit the Education subcommittee [page](#), and while you're there, check out the other mycology teaching tools available.

If you have anything you'd like to add to our next newsletter including photographs or drawings, research updates, an interesting new species, or you want to share your mycology-related ideas or initiatives, please contact AMS Secretary Laszlo Irinyi: geza25@gmail.com.

Don't forget you can follow us on Facebook: [AMSstudents](#) and Twitter: [@ausmycsoc](#)

Stay safe,

Dr Tracey Steinrucken

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