

International Symposium





ONLINE EVENT Sunday, 8th October 2023

Fungi are crucial for the functioning of all ecosystems on the planet, and are researched on all of earth's continents. Their importance in seas, oceans and freshwater ecosytems is becoming increasingly apparent too.

The twelve speakers at this Symposium are based in, or will talk about, fungi from all continents including Antarctica.

Free, online, open to all. Book your place now!

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Symposium programme Session 1 - 09:00 - 12:05 (BST)

Aquatic fungi



Sally Fryar Australia

Fungi are found in lakes, rivers, streams, oceans, estuaries, mangroves, and tidal flats around the world. They are found in the deep sea, arctic regions, the open oceans, and tiny waterholes in arid regions. Marine and freshwater fungi are typically different species to those found on land and are an essential component of many aquatic ecosystems as decomposers, pathogens and mutualists. Most aquatic fungi are ascomycetes, but other major groups of fungi including basidiomycetes, chytrids, and microsporidia are also represented. So far there are over 5000 fungal species described from marine and freshwater habitats, with many more to be described.

What is the world distribution of wood decay by fungi? Implications for climate change



Yu Fukasawa Japan

The type of wood decay brought about by fungal decomposers is a categorized based on extent to which lignin and cellulose are broken down in the wood. After conducting dead wood investigations in forests in Japan and Europe, Yu discovered a clear latitudinal gradient in the occurrence of brown rot type of decay, where lignin remains with little modification. Wood decay type could affect carbon sequestration in forests, as brown-rotted wood may play a more significant role in soil organic matter accumulation than white-rotted wood, where lignin undergoes substantial decay. An important aspect to consider regarding wood decay type is that the activities of fungi involved in wood decomposition can indirectly have long-lasting, cascading impacts on forest biodiversity by altering the physicochemical properties of dead wood. Therefore, it is crucial to incorporate the effects of wood decay type into ecological models in order to predict the long-term dynamics of biodiversity, vegetation, and carbon cycling in forest ecosystems worldwide.

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Two decades of lichen research in Thailand



Ek Sangvichien Thailand

Since the first account of lichens in Thailand from Koh Chang Island in 1909 and some collections from northern parts of country, LRU at Ramkhamhaeng University was established in 1997 by supporting local grants. The herbarium (RAMK) was supported by Prof. Philip Rundel (UCLA) with his donation of 10,000 specimens from around the world, and currently more than 80,000 specimens are held in the herbarium including more than 100 new species and 50 new records (since checklist, 2017). Originally, research activity focused on tropical lichen diversity and taxonomy, but other aspects including the fungal partner for isolation and culturing of lichen forming fungi for their phylogenetic analysis, identification of secondary metabolites and their potential applications and examination of enzyme properties. Lichen transplants and Quality Air monitoring are also important parts of team activities.



Bernice Bancole Republic of Benin

Fungi diversity and importance in Benin Republic

In West African countries, known fungal diversity represents 11.4% of the expected diversity. Particularly for the Republic of Benin, such known diversity is less than 2%. Benin is located in West Africa and has a rich and diverse natural environment that remains largely unexplored in terms of fungal diversity and importance. For several groups of animals and plants, such data are available, but for fungi and fungus-like organisms they are mostly missing. However, scientific information about the fungal biodiversity distribution and importance are indispensable for their conservation and sustainable management. Collation of the small amount of available fungi diversity data is needed to secure the survival of species and natural habitats providing ecosystem services, in the face of pressure from an increasing human population causing land use changes, pollution, and climate change. The analysis of fungal diversity will yield insights into the species richness, abundance, and distribution patterns across different ecosystems in Benin. The analysis of the ecological factors influencing fungal distribution, the potential applications and use of the identified fungal species in various domains will shed light on the fungal diversity in the Republic of Benin, filling a potential critical knowledge gap in our understanding of the ecology of the fungi.

Symposium programme Session 2 - 13:00 - 16:05 (BST)

Africa's mushrooms: their cultural and socioeconomic significance towards the continent's sustainable development



Nailoke Kadhila Namibia

Nailoke will focus on how mushrooms have a cultural significance in many African societies being used in traditional medicine, culinary practices, and rituals. How Africans use indigenous knowledge that is passed down through generations by preserving cultural heritage on identification, collection, and preparation of edible mushrooms. Some regions in Africa that are known for their unique and diverse mushroom species and how this biodiversity attracts tourists interested in mycology and nature exploration will also be considered.

Bethan Manley UK and USA

Mapping underground mycorrhizal networks

Nearly all plants on Earth form a symbiosis with mycorrhizal fungi and these fungi have altered the evolutionary history of the planet. When working toward understanding and conserving organisms there is a strong focus on what we can see, even when it comes to the fungal kingdom. We can sometimes miss or underestimate contributions from mycorrhizal fungi, crucial actors that exist out of sight in the soil. Bethan will talk about the work that SPUN is doing to overturn this 'aboveground bias' and to work toward a better understanding of the world's mycorrhizal fungi through global mapping of underground mycorrhizal networks.



Fungal technologies for a sustainable future

In this talk, David will discuss some of the ways that startup companies are tapping into the enormous potential of the fungal world, to create innovative solutions to global challenges.

David Quist Norway

3 sessions to cover world time zones!

Symposium programme Session 2 - 13:00 - 16:05 (BST)

Polar mycology



Kevin Newsham UK

Polar regions are exposed to some of the harshest conditions for life on Earth. They are also currently subjected to rapid climate change. Here, Kevin will outline the environmental conditions encountered by terrestrial fungi in polar regions, how these conditions shape fungal communities and the strategies used by fungi to grow and survive in polar environments. He'll also describe climate change at the poles and its effects on the environment, and detail experiments in the southern maritime Antarctic and High Arctic aimed at understanding how soil fungi will respond to increased temperature and precipitation. Some of the day-to-day challenges of working in polar regions – such as encounters with Arctic wildlife and camping on Antarctic glaciers – will also be explained.

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ONLINE EVENT Sunday, 8th October 2023

Symposium programme Session 3 - 16:30 - 19:35 (BST)

Tropical mycology: good, bad and beautiful



D Jean Lodge USA

Some tropical agaric fungi grow on shrubs and trees in humid tropical forests and frequently appear to be harmless. However, these fungi can rapidly change from a saprotrophic (Dr. Jekyll) to a necrotrophic (Mr. Hyde) stage, killing, then decomposing parts of the plants supporting them. Many of these tropical plant pathogenic agaric species are in the Marasmiaceae. A few plant pathogens in the Russulales and Gomphales are also known. In some cases, forest disturbances that opens the canopy trigger fungal conversion to the pathogenic stage.

The biology behind the Zombie-ant fungi



Joâo Araújo USA

The ability to infect insects arose multiple times along the evolution of Fungi. However, none has shown such broad and sophisticated strategies to infect, persist and transmit spores than the so-called "Zombie-Ant Fungi". These fungi evolved the ability to make their hosts leave the colony, climb up to a summit position on plant parts and bite onto the substrate. The infected ant remains attached by locking its mandibles into the plant tissue, which is often further reinforced by fungal structures. A few days after the host's death, the fungus erupts from their bodies to grow structures that will shower spores on the forest floor, eventually infecting new workers that forage on the ground. They also developed a broad range of morphologies, adapted likely in response to the host ecology and morphology. In this talk, Joâo will present how these behaviour manipulators arose and which strategies they have developed in order to thrive and spread through several species, becoming a diverse fungal group.

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Symposium programme Session 3 - 16:30 - 19:35 (BST)

Don't forget about the single cells: Yeast ecology in forest environments



Primrose Boynton USA

The kingdom Fungi is broad and diverse, and includes thousands or more species of yeasts. Yeasts are single-celled fungi, and this single-celled form has evolved many times in the Ascomycota and Basidiomycota. Because yeasts are so diverse, they live in every imaginable habitat on Earth and interact with communities of microbes and macrobes. But yeasts are mysterious: despite their diversity, it's not always clear how they live and reproduce in their natural habitats.

The model yeast *Saccharomyces paradoxus* lives on soil and leaf litter in temperate northern hemisphere forests. *S. paradoxus* seems well-adapted to high sugar environments but cannot digest plant polymers, which are the most common source of energy in forest floor environments. However, *S. paradoxus* has diverse interactions with other forest floor fungi, some of which can facilitate its growth. Primrose's research explores the ecology and evolution of *S. paradoxus* and other yeasts in their natural habitats: she investigates how community interactions influence yeasts' growth and survival in these complex environments.

Fungal diseases of food plants



Silvia Restrepo Colombia

We are starting to understand how plants and fungi interact. For the last 20 years, Silvia has studied fungi that cause devastating diseases in plants but also fungi that live inside the plants without causing apparent damage, and fungi that establish symbiotic relationships with their hosts; what we have to understand as humans is that the fungi, like all other living organisms, are just trying to survive in complex environments. In her talk, Silvia will focus on fungi and fungus-like microorganisms that cause disease in the Solanaceae (nightshades) botanical family of plants. She will also illustrate other fungal representatives of the incredible biodiversity of Colombia.

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Chaired by Lynne Boddy

Through UK Fungus Day, the <u>British Mycological Society</u> shares the importance of fungi to our lives and aims to inspire others to help preserve our native fungi and improve our scientific knowledge of these unique and remarkable organisms. UK Fungus Day is an annual celebration of our fungal world, offering something for everyone, inviting everyone to join in, delve deeper and learn more about fungi through art and performance, crafts and creations, the photography competition and this online International Symposium.



British Mycological Society promoting fungal science ukfungusday.co.uk