

BMS RECORDING NETWORK NEWS

MARCH/APRIL 2023

Nathan Smith
BMS Recording Network Coordinator

Looking to the Future

A third issue—a last issue?

My apologies once again for sending out the newsletter so late. This has been due, in part, to difficulty in sourcing articles. Already, a large number of newsletters circulate within and between groups—such as the exquisite *Mycology Notes* by John Taylor—and the question is raised as to the role of the BMS Recording Network News within this diverse ecosystem. It exists to serve the recording community and, my feeling at least, is that its current iteration is not doing this to the best of its ability

The newsletter will continue *ad hoc* while the last of the articles promised to me come through—they are bound to be excellent and well worth reading—whilst a transition is made to a more immediate emailing system that gets events and news to you ASAP. I will also be setting up a Recording Network JISCMail (<https://www.jiscmail.ac.uk/>) so that Network members will be able to communicate with each other directly. I hope such moves will encourage more discussion between groups and I will include expanded updates (and step-by-step guides) in the next issue of the newsletter.

Here an excellent article is presented from Dr. Sam Rowe on DNA Barcoding with the Norfolk Fungus Group. It is an engaging and accessible account on the potential of DNA and the exciting work already being done.

Following on from an action point from the Group Leaders' Meeting, this issue will also be sent out with Safeguarding templates for groups to adopt should they wish to and lack a safeguarding policy of their own. Safeguarding should be a priority for all groups dealing with the public—in whatever capacity—and protects both attendees and organisers.

Kindest Regards,
Nathan

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DNA Barcoding with the Norfolk Fungus Study Group

The [Darwin Tree of Life](#) is an ambitious project to sequence the genomes of 70,000 plants, animals, fungi and protists in Britain and Ireland. It brings together expertise in biodiversity, genomics and data analysis to transform the way we do biology and encourage new collaborations across the country. Alongside the main research project, a number of public engagement programmes were launched to enable naturalist groups and recorders to directly contribute to Darwin Tree of Life as citizen scientists.

In this article we hear from Dr Sam Rowe, Public Engagement Officer at the Earlham Institute in Norwich, who coordinated one such engagement programme called [Barcoding the Broads](#) - providing training in a technique called DNA barcoding that can be used to identify fungi species (as well as plants and invertebrates) through studying their DNA.



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What is DNA barcoding?

DNA barcoding is a powerful tool for identifying species of plants, invertebrates and fungi (and more!). It involves carefully collecting and recording a specimen followed by extracting and analysing its DNA. The analysis uses a process called DNA sequencing to find unique patterns within the organism's DNA (called 'DNA barcodes') that can be compared against online databases to match up with a particular species.

The process is relatively fast and cheap, typically taking 2-3 days to generate results at a cost of around £7-10 per sample. Recent advances in DNA barcoding technology mean the protocols are really robust and use small, portable and accessible pieces of equipment. This all works alongside more traditional methods of species identification and can be particularly useful for identifying rare or obscure organisms.

Background information, written protocols, image galleries and explainer videos for the full DNA barcoding process can be found on our [Barcoding the Broads webpage](#).

What are the aims of Barcoding the Broads?

At the Earlham Institute we share the knowledge and skills for DNA barcoding through free full-day training workshops on the Norwich Research Park. To date, over 200 people have been through the sessions including teachers, students, naturalists, artists, science educators and other researchers. The aim is to empower public audiences to learn about new science technologies and to provide an authentic research experience with a variety of laboratory and computer techniques. Beyond an initial training workshop, we loan out all the specialist kit and chemical reagents for DNA barcoding so groups can conduct independent experiments to identify species of interest.

"Fascinating, brought to life what previously I'd only seen on TV and would probably have thought to be beyond my current skills or understanding" – **workshop attendee**

DNA barcoding is great for reinforcing science education in secondary schools but can also be used by naturalist groups in support of local and global projects. For example, something as broad as Darwin Tree of Life will undoubtedly rely on the expertise of wildlife recording groups and volunteers, whose knowledge and enthusiasm will be invaluable in the hunt for 70,000 species in Britain and Ireland. We're really keen to connect with these groups to share skills and provide training opportunities with lots of mutual benefits.



How has this work involved the Norfolk Fungus Study Group?

The Norfolk Fungus Study Group (part of the wider Norfolk and Norwich Naturalists' Society) were some of the first people I met after launching Barcoding the Broads in summer 2021. Members of the group attended introductory DNA barcoding workshops and wanted to explore setting up their own experiments at Wheatfen on the Norfolk Broads. To support this, we teamed up with Brian Douglas and Kieran Woof from Kew Gardens to secure more funding from Darwin Tree of Life.

A new grant covered extra training sessions, two field trips in 2022 and all the specialist equipment for independent experiments. Our collaboration combined DNA barcoding of various fungi around Wheatfen with the collection of over 100 specimens for culturing at Kew Gardens and full genome sequencing as part of Darwin Tree of Life. The Norfolk Fungus Study Group are now pretty much self-sufficient and doing an amazing job identifying interesting fungi around the site through DNA barcoding.



The Norfolk Broads has been a great base of study as it encompasses varied habitats such as fens, wet woodland, shallow lakes and coastal dunes. Wheatfen also has a long history of biological records and is possibly the best recorded fenland site for fungi, with records of around 1,310 fungi species and a total species list of more than 10,000 - about one seventh of all known UK species diversity!

What are the outcomes and future plans?

So far, the Norfolk Fungus Study Group have identified over 40 fungi species around Wheatfen and have written up clear experimental protocols as they look to share DNA barcoding with other members of the Norfolk and Norwich Naturalists' Society. While practising their DNA barcoding skills, the group even managed to identify two new species for Britain and Ireland – *Entoloma proterum* and *Tarzetta alnicola*! Results like this have really shown the power of DNA barcoding and how collaborating with local naturalist groups can contribute directly to ongoing research projects.

FEATURE ARTICLES

In the future, we hope to offer more DNA barcoding workshops with continued support for the schools and naturalist groups already running their own experiments. We also recently expanded beyond Norfolk with the launch of the [Herts DNA Barcoding Hub](#) that aims to serve an entirely new cohort of researchers and recorders across Hertfordshire.

*“Very informative. Enjoyed the hands-on approach - actually ‘having a go’. The day has got me thinking about how to apply DNA barcoding to conservation projects with butterflies and rare species” - **workshop attendee***

Sam Rowe

BMS Online Talks

Fungi that harm and heal trees and gardens

31 May 2023, 19:30 – 21:00

Tree health is increasingly threatened by introduced organisms, with an average of 6 new organisms establishing in Europe each year. Many of these plant pathogens are fungi, including *Cryphonectria parasitica*, Sweet Chestnut Blight, which was responsible for the destruction of the approximately 4 billion strong population of American chestnuts during the twentieth century. In part one of this talk, hear about the fungal pathogens of concern in the UK and Europe and how stakeholders at all levels can help safeguard tree health for future generations. In the second half of the talk we will explore the fungi found in UK gardens and delve into the importance of fungal diversity to support general plant health and ecosystem functioning. Public appreciation of fungi is now mainstream, so it is a crucial time to harness this positivity and support gardeners to nurture fungal diversity in their gardens responsibly.

About Jassy Drakulic

Jassy is a plant pathologist specialising in fungal pathogens with experience in teaching and science communication. She studied plant and microbial sciences at undergraduate level before completing teaching qualification in secondary science then a PhD on Fusarium head blight of wheat. Since joining the Royal Horticultural Society in 2016, she now works on tree health citizen science, beneficial fungi, and fungal ecology, and leads the *Armillaria* root rot research program.

Accessing this online event

Book here: <https://www.eventbrite.co.uk/e/551285518827>



The graphic is a promotional poster for a BMS talk. It features a green background on the left and an orange background on the right. A circular inset photo shows a woman, Jassy Drakulic, sitting on a rock in a forest, wearing a green jacket and glasses, with a basket of yellow flowers next to her. The text on the green background reads: 'BMS Talk: 31 May 2023 / 19:30 Fungi that harm and heal trees and gardens'. Below this, it says 'Jassy Drakulic Royal Horticultural Society'. The orange background contains the BMS logo (British Mycological Society) and the website 'britmycolsoc.org.uk'.

BMS Talk:
31 May 2023 / 19:30
Fungi that harm and heal trees and gardens

Jassy Drakulic
Royal Horticultural Society

bms
British Mycological Society promoting fungal science

britmycolsoc.org.uk