Note on the 2018 BMS Group Leaders' Meeting

The 2018 meeting was held over the weekend of 15th to 17th June 2018 at Northern College, Barnsley.

The meeting was attended by 40 delegates representing 25 BMS-affiliated fungus groups - an increase in numbers over the previous four events. 2 delegates provided cover for neighbouring, unrepresented groups, extending the coverage to 27 out of the total of 37 affiliated groups. The meeting overheads, and a contribution towards the cost of travel for participants, was generously supported by a the BMS.

The following notes provide a summary of the items covered except for Stuart's update on the FRDBI which is provided in full.

Geoffrey Kibby: Guides to Fungi - the challenges, problems and pitfalls of producing mushroom guides.

The programme commenced with a talk by Geoffrey Kibby on the challenges of producing an illustrated field guide to fungi. Geoffrey led us through the development of field guides from 1963 (Lange and Hora) to the present time - reminding us that the UK has a strong tradition of producing field guides. However, this has diminished in recent years with the trend for publishers to prefer new publications in place of revisions or new editions of established works. He used his own recent book, "Mushrooms and Toadstools of Britain and Europe (vol. 1)" and Andy Overall's volume "Fungi: Mushrooms & Toadstools of Parks, Gardens, Heaths and Woodlands" as examples of the high quality of field guide that can be achieved by self-publishing.

Geoffrey pointed out the advantages that different techniques had for illustrating species: hand painting, these days supplemented with images generated on a tablet, providing the best detail for identification features, whilst photographs may be better at illustrating habitat.

We were told that desktop publishing has made self-publishing much more accessible and affordable, and we were challenged to contribute to the production of new works covering our individual specialities. Geoffrey pointed out that the UK checklist for basidiomycetes increases by about 40 species each year and now totals about 4,000. Ascomycetes provide another 15,000 or so species: a daunting prospect for any would-be author of a field guide when deciding which species to cover.

Carol Hobart: BMS Origins, Overview, Updates, Events and News

Carol led us through the history of the BMS from its origins with with the Woolhope Field Naturalists' Club (Hereford, 1867) and the Yorkshire Naturalist Union (1892), then took us through to the current structure of the BMS. The representation and functions of each of the three committees: Fungal Biology Research, Education and Outreach and Field Mycology and Conservation were described. Carol reminded us of the resources available from the BMS including the small grants scheme which can provide BMS members with of up to £500 for specific projects or activities.

Carol concluded with a tribute to the late Geoff Robson who, on BMS Council, had always been supportive of field mycology activities.

David Minter: IUCN Fungal Red Listing

David started his talk with an introduction to the International Union for Conservation of Nature (IUCN) - the world's largest conservation NGO - and the Species Survival Commission specialist groups which form part of the organisation. He specifically referred to the five specialist fungal groups: 1. Chytrid, Zygomycete, Downy Mildew and Slime Mould Specialist Group, 2. Cup-fungus, Truffle and Ally Specialist Group (chaired by DM), 3. Lichen Specialist Group, 4. Mushroom, Bracket and Puffball Specialist Group and 5. Rust and Smut Specialist Group. Details can be found at www.iucn.org/commissions/ssc-groups/plants-fungi

The presentation continued with an outline of the process for evaluating the risk of extinction for any species with particular reference to Dahlberg & Mueller (2011). David discussed the compilation of red lists and the ways in which these lists can be used to influence governments and other bodies

Ref: Dahlberg, A., & Mueller, G. M. (2011). Applying IUCN red-listing criteria for assessing and reporting on the conservation status of fungal species. *Fungal Ecology*, 4 (2), 147-162

Eleanor Landy: Fungal Education and Outreach

Eleanor described the work of the FEO committee and introduced Nathan Smith (FEO Secondary Schools Adviser). Nathan participated in the Group Leaders' Meeting and will be the FEO representative on the BMS Field Mycology and Conservation Committee.

Items from the FEO briefing included an update on the school resources programme, including a substantial overhaul of the relevant sections of the sections of the BMS website. The updated information will be available online from August 2018.

Eleanor advised that the fungus models donated to the BMS by Eileen Chattaway, who died in 2017, have been re-homed at the Bournemouth Natural Science Society. Exhibition details will be publicised when available.

The 2017 UK Fungus Day was very successful with 65 events nationwide. Group leaders were reminded to send in details for any events planned for this years UKFD which will take place over the over the weekend of the 6th and 7th of October. See www.ukfungusday.co.uk for more information. Eleanor noted that funding of up to £150 is available from the FEO to support UKFD events. Unlike the small grants scheme, this money can be used by non-BMS members who are organising suitable events.

Martin Allison: Lullington Heath and its Fungi

Martin gave an overview of the natural history of the Lullington Heath and discussed issues relating to management of the site. After setting the scene Martin moved on to the fungal component of the site with reference to waxcap grasslands where a clear distinction was noted between portions of the site subject to cultivation in the 1950s (moderately rich in waxcaps), the acid loam (poor) and the rendzina: the lime-rich soil with dark humus overlying the chalk (very good waxcap-grassland assemblage). Martin then highlighted some species found in other habitats on the heath including *Poronia punctata*, nail fungus, on pony dung. The talk concluded with a review of the threats to the mycota of the site including under- or over-grazing, scrub-bashing, fire sites, compaction and chemical treatments.

Peter Smith: Photographing Fungi

Peter started his presentation with a review of the issues to be considered when choosing a camera for fungus photography. In particular he illustrated the effect of pixel size and sensor size on the final image, then moved on to consider the impact of aperture setting and focal length on the lens resolution. After offering some useful tips for better photography - especially the use of a tripod and selection of aperture priority - Peter then treated us to a series of his excellent fungus images to illustrate the technical points covered earlier in the talk.

Paul Cannon: Notes from Kew

Paul brought the group up to date on changes at Kew stemming from the 2013 restructuring which, for the most part, gave fungi the same status as plants and resulted in an increase in the number of mycology staff employed. However, Paul noted that both he and Martyn Ainsworth are now part-time and the Lost and Found project, which employs Brian Douglas and Ollie Ellingham, has just one more year to run.

A major publication, State of the World's Fungi 2018, will be launched at a two-day scientific symposium at Kew in September. This will be a printed document but also available as a PDF file.

Paul outlined the current focus at Kew which is to contribute to programmes in which the whole genome is sequenced for each fungus. Kew will concentrate on UK collections. Paul also referred to the Fungi and Lichens of Great Britain and Northern Ireland website (http://fungi.myspecies.info) which he established and which already contains 1,400 species descriptions along with extensive images and literature references.

Brian Douglas: The Lost and Found Fungi Project

Brian introduced the talk by reminding us that we are entering the final year of the 5-year LAFF project then took us through development and execution of the programme initially based on 100 target species as a focal point. Engagement with fungus groups was seen as particularly productive with a programme of field trips, joint surveys and workshops proving popular.

Charts and graphs were shown to illustrate the progress made in collecting new records and finding new sites for many of the target species. Brian then illustrated this with a series of examples from across the UK including *Favolaschia calocera*, an invasive New Zealand species which has now been found in Cornwall and Devon, and *Cryptomyces maximus*, initially believed to be confined to a few sites in Pembrokeshire but now known to occur at several other sites in the British Isles including large clusters in the Orkneys and also on the Scottish mainland.

Later in the programme, Brian returned to the stage to pose questions about the way in which the legacy of the LAFF project can be taken forward, and options for future cooperation between Kew and the BMS to support fungal taxonomy in the UK.

FRDBI, fungus names and the use of records

Stuart Skeates: FRDBI report for GLM

Phase 1

The initial plans for the FRDBI have been rolled out with the first version available in October 2016. Over the last two years there has been a steady growth in the number of registered users which now stands at about 300. Nearly all the 55,000 records added to the site so far have been added individually along with some 3,000 images. Importing bulk records has now been successfully undertaken which means that it is now possible to star-t importing the old FRDBl records in earnest.

Email support has been available to users as well as some individual training at BMS field meetings and by individual arrangements. Group training sessions have also taken place and a series of help notes are now available. The latter will be available for download from the website shortly.

There are still modules available for the site that have yet to be switched on and these will be discussed during the Group Leaders Meeting. These modules are available because we share the system with the Biological Records Centre and many other users in the UK, Europe and further afield. We are part of a global record system.

Valuable feedback, ideas and requests from users has helped to create a wish list for a Phase 2 development which is now being implemented.

Importing old records

Now that the bulk import module is working a serious start can be made on past records. There are however still a number of users who would like to submit current records in bulk. One group recorder has now been trained and managed to import their records in bulk and with this experience support can now be offered to other recorders who would like to undertake this process. How the balance between adding records individually, bulk importing current records, importing old records and training will develop is open to discussion.

Website development

Following discussion with users and problem areas with the current website and number of enhancements and improvements are planned.

1. Associated organisms - The original plan to record associated organisms as a record in its own right was a new venture which created its own teething problems. Particular issues occurred in complex situations of an organism associated with an organism associated with a third organism and the removal of either organism without the removal of its partner. New forms are proposed to make this process easier. There will also be a mechanism to withhold genus and other vague determinations from dissemination and sharing. l am happy to discuss this during the GLM.

2. Downloading records. Many users and groups wish to download their records to share with other organisations and landowners. The current download options do not meet the requirements and a new format is being implemented. I would like users to indicate the fields they would like included in their download which can of course be further edited to suit individual needs. A form will be available at the meeting.

3. Smartphone recording app. Users have requested an app similar to the iRecord app which will enable the initial recording of records in the field. This should allow improved location data to be captured with the limitations of the phone's GPS system, and the capturing of images at the same time These records can be edited online at a later time.

4. Online display of associated organisms. Currently these are displayed on the species summary page in a “Cloud” format which is not to everyone's taste. An alternative display as a list showing name of organism and number of records will be available. These will be live links as at present.

5. Performance improvements

a. The speed with which names of collectors etc to appear will be improved. Names will also have to be entered in the correct format ie *surname, forename*

b. The list of literature titles will be searchable on any phrase in the field

c. In the longer term the whole system will use different search and display techniques as in Google and other social media systems. This should lead to everything speeding up.

6. Additional data displays. The developers are open to requests for new online display pages
for example

a. Phenology graphs and tables (almost ready for release)

b. Grouping records from a foray/field trip by Orders in either lists or charts

c. Additional data on species summary page - voucher records, examples of drawings and illustrations and descriptions, full descriptions.

7. New functionality.

a. Editing records; There is a module just made available that allows users to download their records, edit them and reimport them. This needs testing for our website.

b. Transfer of personal to group records.

c. Next button on species and record summary pages.

d. Mouse click functionality on maps to be restored.

e. Entry pages to have additional fields access through a “+” click button for say DNA sequencing.

8. Backroom changes:

a. Although not visible to users the website operating system (Drupal) is going to be upgraded to the latest version. This is akin to upgrading your windows system and has security and performance benefits.

b. The site will have secure HTTPS functionality.

During the presentation Stuart illustrated various elements of the system then continued in the evening with a workshop on the use of the FRDBI in conjunction with Richard.

Richard Shotbolt: Singing from the same Record Sheet

Richard provided an overview of the issues which mean there is little consensus in naming fungi across national recording databases. He described a program (TaxoVac) he developed to synchronise the BMS GB checklist with the UK Species Inventory maintained by the Natural History Museum. UKSI is the species database used by many recording sites including the NBN Gateway, Ispot, Irecord and local records centres.

Although Richard's program provides a mechanism for adding new or changed names to the UKSI, in practice there are practical issues as basidiomycete names should be consistent with the UK Checklist (CBIB) which should be maintained at Kew. At present this is not happening on a consistent basis. In contrast, ascomycete names can be sychronised with Index Fungorum.

Until the issue of the update of CBIB is resolved, the suggested work around is that we continue to use the old current

names, but add new names to the Working GB checklist and UKSI as “junior synonyms”. New names can be added by contacting Stuart Skeates or Richard.

Clare Blencowe: Fungus records - how are they used?

Clare, who is manager of the Sussex Biodiversity Records Centre and an enthusiastic field mycologist, gave a presentation on the use of fungus records.

The presentation introduced the work of Local Environmental Record Centres (LERCs), then showed the routes by which data reaches the National Biodiversity Network (NBN) which is the partnership created to exchange biodiversity information at a national level. Clare illustrated the ways in which this information is subsequently used by statutory conservation bodies (e.g. for species and site assessments) and by local government authorities (e.g. assessing planning and development proposals).

A significant issue raised by Clare related to the use of NBN data for commercial (including cost recovery) purposes. Unless an agreement is in place between the originator of the data, in this case the BMS, and NBN, then the only way LERCs can use records commercially is if county recorders or recording groups copy their records directly to their local LERC as well as submitting to the BMS. This is a national issue which affects other taxonomic groups and is currently being addressed in an (unsatisfactory) piecemeal approach by seeking separate agreements between records providers and the NBN.

Clare has posted the full version of her presentation and notes on her blog: https://misidentifyingfungi.blogspot.com

Malcolm Greaves, Eric Janke: Interactive Keys (FSC Identikit)

The development and use of computer-based keys based on the FSC Identikit (Tom.bio) system was of particular interest to the group and was covered in two presentations. The first, by Malcolm, introduced the concept of the system using the example of *Scutellinia* followed by his more recent project involving Geoglossaceae. The system was shown to be very powerful and easy to use with the facility to incorporate help notes and an extensive library of supporting images. Eric continued the theme with a worked example to demonstrate the ease with which an online key can be constructed.

The speakers noted that extensive documentation is available on the FSC website with additional instruction available on Youtube videos. Either speaker is happy to offer advice on setting up a new key using this system

Tombio link (http://www.fscbiodiversity.uk/?q=fullscreen/identikit).
Keys to *Geoglossum* and *Scutellinia* can be accessed on the MYFG (http://www.myfg.org.uk)

<u>The application of DNA techniques to field mycology</u>

Brian Douglas: Opportunities for the Field Mycologist

Brian introduced the topic of DNA barcoding and led us through the processes that lead to phylogenetic trees derived from DNA barcoding. He suggested that important species should be routinely sequenced to confirm their identification and justify retention of the voucher and supporting material. We were then given a series of examples where DNA barcoding has improved our understanding of species, for example where a single species name is now known to represent more than one species: the challenge being to find macro or micro characters that enable collections to be separated.

Brian reminded us that mycology and fungal taxonomy is dependent on field mycologists and considered that the way forward will involve collaboration between field mycologists and academic/institutional taxonomists. He recognised that training and support for field mycologists was needed to support this and has been developing suitable presentations and guidance documentation. Brian indicated he was happy to help with queries during this final year of the LAFF project and gave an example of a recent DNA workshop in west Wales at which he was the guest tutor.

David Harries: Wales Microglossum Project

David provided the background to a Wales-wide project to collect and sequence samples of *Microglossum*. The project was designed to take account of recently published paper (Kucera et al 2017) which described a number of new green-stemmed species previously aggregated under the *M. olivaceum* complex (at least in the UK).

DNA was extracted and the barcode portion amplified for subsequent sequencing at Aberystwyth University. David acknowledged support for the project from the University, Kew (Lost & Found Project), the BMS and Natural Resources Wales.

The number of samples exceeded expectations with over 50 collections submitted by 14 mycologists. Over 40 of the collections yielded good quality barcodes including several *M. atropurpureum* which will be forwarded to Kew for further work. The remaining green/brown collections fell into 5 distinct clades represented by *M. pratense, M nudipes* (aff)*, M. rufescens, M truncatum* and a brown clade Further work is planned to further investigate the brown clade. Three additional samples from outside Wales were submitted by Malcolm Greaves (*M. tenebrosum* and an example of the brown clade) and Eric Janke (*M. griseoviride*).

Carol Hobart: A Citizen's Journey into Science

Carol led us through her personal introduction to mycology and eventual specialisation in fungi that live underground. This was illustrated with a range of interesting collections she had found over many years of recording and collecting. She emphasised the value of retaining good quality voucher material - in some cases used many years after collection to support research on a particular genus - and making sure data is properly backed up. She noted that projects may take many years to come to fruition.

Carol referred to a 2008 House of Lords report on “Systematics and Taxonomy” which concluded that “....the state of systematics and taxonomy in the UK, both in terms of the professional taxonomic community and volunteers, is unsatisfactory - in some areas, such as mycology, to the point of crisis”. She suggested that field mycologists have an valuable part to play in addressing this and emphasised the importance of collaborative efforts with other specialists in the field, together with access to DNA sequencing for samples.

The talk concluded with a series of examples of the work already being carried out by field mycologists across the UK. Carol reinforced the value of these contributions but noted the need for the provision of support for citizen science ventures, particularly in the form of training and access to molecular tools.

GLM future

The event concluded with discussions on future of BMS group leaders' meetings. DJH noted that this one had been very well supported by BMS groups. The consensus was that the existing 2-year intervals were appropriate and that Northern College was a cost effective location that was reasonably accessible from all parts of the UK.

David Minter closed the meeting with thanks to everyone who had contributed to the success of the event.

DJH 28.06.2018