



Newsletter

January 2016



‘Stump of the year’

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View from the Chair, January 2016

My last 'View' was right at the start of the 2015 season and this one is after the end so it's a good time to review the whole fungus season. On the whole it was pretty good. There were 13 forays, including a repeat of the Beginners foray at Risley Moss plus microscope workshop, a whole raft of events for National Fungus Day (see later report from Jeanette Maddy) and, of course, the Keswick Residential Foray. The latter had rather better weather than in 2014 and one of its special features was the range of attenders: new members, old members from Cumbria to Cheshire, far-flung members from Yorkshire (Alan and Enid Braddock) and even a very welcome visit by Yvonne Mynett and Stephen Pinnington who recently

moved to Norfolk. Sadly missing was Robin Dean (in favour of a trip to Vietnam). The catering (Jacqui Dinsdale and helpers) was, as usual, superb. We are booked in again next year (30 September to 3 October) so do keep those dates free and new members are especially welcome.

Other news: after the retirement of our beloved President, Bruce Ing, at the 2014 AGM we have been very fortunate in that Geoffrey Kibby has agreed to become our next President. Geoffrey is the editor of *Field Mycology*, author of several excellent identification keys and one of the leading mycologists in the UK. All being well he will be with us at the AGM in February and will give the annual President's talk – so I hope you are or were able to come (depending on when you receive this Newsletter). The foray programme for

2016 has 16 forays, including more new sites and new leaders and was organized by John Watt, who has taken over the role of Foray Secretary from Tony Carter. Tony has decided that he will step down from the committee but will still continue as recorder and email group supremo, at least for the present. All the other news will be reported on at the AGM from which you will now receive the minutes, so I will not take up valuable Newsletter space (which the editor tells me is scarce).

It remains only to wish you a happy, peaceful and (fungally) fruitful New Year and I hope to see as many of you as possible at the AGM, on forays and/or at Keswick.

Irene Ridge

Editorial

Back in August I only had two short articles in reserve for the newsletter due out in October therefore it was agreed by the committee to delay publication until the end of the year. This would allow members to send details of any interesting finds during the more productive months that include the Keswick residential weekend and National Fungus Day. Fortunately several members have now come forward with contributions and also provided a good selection of photographs for the newsletter.

Many thanks to those members who have contributed articles for this issue and to Mike Walton for typesetting and organising the printing and posting of the Newsletter. Articles can be submit-

ted to me by email. Pictures of fungi to accompany articles are very welcome, preferably as separate attachments. Please note that it is important to show due diligence when including any photographs (or other material) that have not been taken by yourself by getting permission and including the name of the photographer (or copyright holder) so that due credit can be given in the Newsletter.

Paul F Hamlyn

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***Chrysomyxa pirolata* a rust fungus on Wintergreen**

Tony Carter

With financial support from the Esmée Fairbairn Foundation, Kew has embarked on the Lost & Found Fungi Project, a five-year UK fungal research programme in partnership with the volunteer science community. With support from Kew, local fungus recording groups are carrying out surveys and monitoring exercises for a set of 100 species that are currently assumed to be rare, to establish whether they are still extant in the UK and, if so, whether their distributions are larger or smaller than are known at present and whether they are threatened.

(Continued on overleaf)

One such species is *Chrysomyxa pirolata*, a rust fungus that grows on *Pyrola rotundifolia* subsp. *maritima* (Wintergreen). This plant grows on the Sefton Coast and the fungus was last recorded on the Ainsdale & Birkdale Sandhills Reserve. It is listed as an endangered conservation species.

So off I went to Ainsdale on a very blustery day. First find your Wintergreen. Not being much of a botanist, I received some good advice on identification and where to find it from a colleague at the Liverpool Botanical Society, and the Head Ranger who also advised it was not in flower.

I started in the Birkdale side of the reserve. I was in luck. It had started to flower. I found four large patches of plants. The rust grows on the underside of the leaf so I had to turn each leaf to see if it was present. After two hours of searching there was no sign of any rust.

So I went south to the Ainsdale side of the reserve, along the marked track round a large dry slack. I came across a very large patch of Wintergreen on a hillock. As I stood pondering the mass of leaves to be examined I had a bit of luck. There was a strong gust of wind. Some of the leaves flapped and I caught a glimpse of orange. I pounced. There it was - *Chrysomyxa pirolata*.

I could only find a small patch of rust but some was seen on the top side of one of the leaves and a few on the petioles, a fact I had not seen mentioned in any of the literature.



I took a few samples and having satisfied myself, after microscopic examination, that my identification was correct, I dried and pressed it. I sent it to Kew Herbarium where it was confirmed by Dr. Martyn Ainsworth. It was he who had previously found this species, at Ainsdale, very near to my find.



For more information see
<http://fungi.myspecies.info/content/lost-found-fungi-project>

Bactridium flavum

A Hyphomycete

Michael Valentine

Hyphomycetes are asexual reproductive structures, generally classed as Fungi imperfecti, Deuteromycota, or anamorphic fungi, although most are now assigned to the Ascomycota, on the basis of DNA sequencing and phylogenetic analysis. They grow directly on the substrate, without any kind of enclosing tissues.

Bactridium flavum is one such hyphomycete, which can be found growing on wet, well-rotted wood, with *Fagus* and *Salix* being particularly favoured substrates. Most literature suggests that within the UK, it can be found between December and July. The associated photos are from one collection found in July 2015, in Sunnyhurst Wood, Darwen; on the remains of a long since fallen *Fagus sylvatica* trunk.



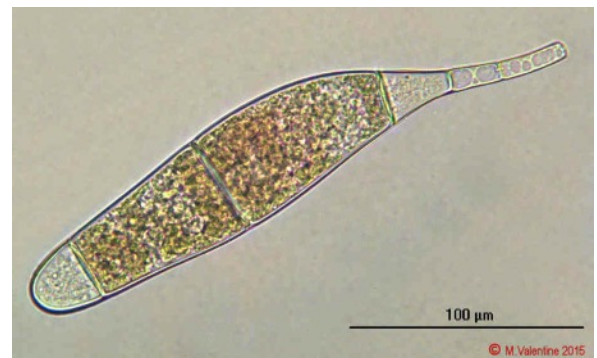
The species appears as discrete, tiny, (± 1 mm across), yellow or cream coloured cushion-like growths, which, when casually observed, appear to be rather spiky or warted. Imagine something like an oversized version of a single, spherical, and strongly echinu-

late spore! However, each of these “cushions” is actually made up from a dense cluster of conidium-bearing hyphae and conidiophores, and is known as a sporodochia.

Under high magnification, the conidia of *Bactridium flavum* are rather attractive looking. Club-shaped, 2-4 septate, and generally between 100 – 200 μ m in length, they are borne on long, multi-septate “stems” (which, rather unfortunately, tend to break away all too easily when mounting in a water drop for viewing under the scope).



There are currently 360 records on the FRDBI, but this is another species that could be easily overlooked, and I would suspect it to be significantly under-recorded.



Reference:

Ellis & Ellis – *Microfungi on Land Plants* (p.252 & plate 108).

A Dandelion “rust” that’s not actually a “rust”?

Michael Valentine

It’s a Chytrid! – And what is a Chytrid? – Well, most of them are aquatic fungi. One of them, *Batrachochytrium dendrobatidis* is responsible for chytridiomycosis, a disease thought to be the principal cause of worldwide decline in amphibian numbers. However, some Chytrids are terrestrial, and one in particular, *Synchytrium taraxaci*, commonly affects Dandelion – *Taraxacum officinale* agg.

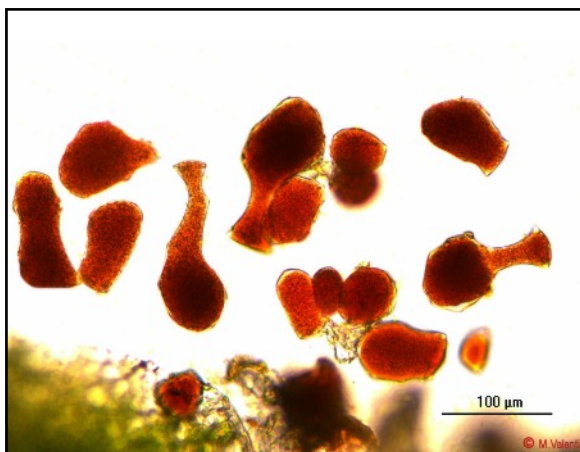


With only 138 records currently on the FRDBI, it’s one worth looking out for on forays as I’d suggest it’s one of the many species that are essentially under-recorded. – I’ve spotted it quite easily at several local sites. *S. taraxaci* has no (B.M.S.) officially accepted English name, but is often referred to as “Dandelion Wart”.

Macroscopically, affected Dandelions might initially appear to have been attacked by a rust fungus. Leaves can become somewhat contorted, with ob-

vious pale cream-yellow areas, (sometimes turning red), visible on the upper surface, and blister-like pustules, mostly on the under surface.

Microscopically though, it soon becomes obvious that this is no rust. Each of these pustule-like sori is filled with large, orange, angular sporangia, which release motile flagellate zoospores at maturity. The zoospores are able to move around in the water film on damp soil particles, where they locate and infect new plants.



Associated images: -

Left – Live leaf showing hypophyllous *Synchytrium taraxaci* sori.

Top – Close up of *Synchytrium taraxaci* sori.

West Pennine Moors Survey

Tim Rogers

The West Pennine Moors, an area roughly between Rivington in the west, & Haslingden in the east, & between Accrington in the north, & Bolton in the south, has been considered by Natural England for designation as a Site of Special Scientific Interest (SSSI) based on its upland habitats and breeding birds.

Fields in upland areas are often known to be good for their grassland fungi, in particular for some of the more interesting species, waxcaps, earth-tongues, fairy-clubs, & *Entolomas* (pinkgills) - members of the NWFG were asked to take part in a survey of sites which were selected on the basis of previous NVC surveys – these picked out two communities, MG5 & U4, which both (especially the latter, *Festuca ovina-Agrostis capillaris-Galium saxatile* grassland) tend to produce the short swards which seem to stimulate fruiting; very often, such swards are not botanically diverse, which typically would be the result of over-grazing - this seems not to have an adverse effect on fungal diversity; four of us volunteered to conduct the survey - myself, Jeanette Maddy, Tony Bond, & Joyce Riley.

The survey began in the autumn of 2012 – however, that year's survey was considered unsatisfactory, given a very late start (mid-October), & also because 2012 was generally acknowledged to be a very poor year, so it was repeated in 2013 (lack of funding being the reason for the survey originally lasting for only a single season). As it happened, little was found in 2013 before quite late in the season, & although fruit-bodies were more abundant, only two additional species were found. Eventually, funding was found for the survey to be continued for a third year, which is the preferred length of time for an SSSI assessment. Although the sites found so far have shown fair diversity, they have fallen short of SSSI standard (see below) - none of the sites were comparable to Turn Slack Clough, known to many NWFG members, though perhaps this would have been expecting too much, given the exceptionally rich fungal diversity of the latter site.

A total of twenty-one sites were assessed (most of which had few, if any, 'target' species), six being selected for intensive surveys - these were White Coppice Cricket Club, Siddow Fold, Taylor's Farm, two adjacent fields south of Roddlesworth (Roddlesworth 1 & 2), & Haslingden Grane West (this was discovered, during a botanical survey, by Graeme Skelcher, who wrote the final report); an additional site, which we've called Haslingden Grane North, was first surveyed in 2013, & had ten waxcap species on one day in 2014 – I'd hoped to organise a Group visit (it's a big site) this year, but that hasn't been possible – anyone who is interested in visiting the site in 2016 (no date has been set, as yet), please get in touch!

According to NE guidelines, SSSI designation should be considered 'where 12 or more species of waxcap are found in a single visit or where 18 or more are found in multiple visits'. The guidelines also recommend consideration of other indicators of important grasslands where the waxcap targets are not met, i.e., the *Clavariaceae*, *Entoloma*, the *Geoglossaceae*, and *Dermoloma* – SSSI thresholds for total numbers of these species are suggested as five, twelve, three and two respectively for multiple visits. For these groups, however, it is not considered that meeting the threshold for one group solely would be sufficient, but, quoting Graeme Skelcher - 'the more genera/families in this list that exceed their respective threshold, the more confident one can be of the overall high quality of the site'.

Graeme, in the conclusion to his assessment of the survey for 2012/2013 (which we were anticipating would be his final report), says that 'the interest (i.e., the quality of the species list) is not sufficient to justify SSSI notification for waxcap grasslands as a key feature at any of the surveyed sites within the West Pennine Moors' - the field-work of 2014 didn't change this. However, the combined totals for the whole area do meet the required SSSI totals for waxcaps, *Clavariaceae*, & *Entoloma* – given the considerable area covered by the West Pennine Moors, & the apparent lack of historical data, other potential SSSI sites may well be found – the second site at Haslingden Grane mentioned above may yet prove to be of SSSI standard.

This is a complete list of the target species found, for all of the sites:

Hygrocybe: *acutoconica*; *calyptriformis*; *acutoconica*; *calyptriformis*;
cantharellus; *ceracea*; *chlorophana*; *coccinea*; *conica*; *fornicata*;
insipida; *irrigata*; *laeta*; *miniata*; *mucronella*; *pratensis*;
psittacina; *punicea*; *quieta*; *reidii*; *virginea*

Clavaria: *fragilis*; *fumosa*; *straminea*

Clavulinopsis: *corniculata*; *fusiformis*; *helvola*; *laeticolor*; *luteoalba*;
umbrinella

Geoglossum: *fallax*; *glutinosum*

Entoloma: *chalybeum*; *conferendum*; *juncinum*; *lampropus*;
longistriatum; *papillatum*; *porphyrophaeum*; *prunuloides*;
sericellum; *sericeoides*; *sericeum*; *serulatum*

Dermoloma: *cuneifolium*

I hadn't realised that, although the Pink Waxcap (found at four sites) is no longer considered a rare species in the UK, it is still thought to be under threat over most of Europe – it is included on the Red Data Lists for 11 European countries – this being the case, the UK is now considered to be a European stronghold for this species and 'therefore has an international responsibility to maintain its populations' to quote again from Graeme Skelcher's report.



Hygrocybe calyptriformis



Hygrocybe pratensis



Hygrocybe psittacina



Hygrocybe coccinea

Rhubarb Rhubarb Rhubarb

Tony Carter

If you have looked at the latest Field Mycology you will have noted that one of the *Xerocomellus* has been renamed *Rheubarbariboletus*. It refers to the yellow colour of the cut flesh of Turkish Rhubarb (*Rheum palmatum*).

To those of us who regularly cut our Turkish Rhubarb this would have been obvious.

Turkish Rhubarb (also Chinese Rhubarb) is used to cure stomach ailments and severe constipation, probably caused by the stress of having to keep up with these interminable name changes.

UK Fungus Day

Jeanette Maddy

“UK Fungus Day” took place on Sunday 10 October 2015 and was once again supported by NWFG, with six public-facing events taking place that weekend. However, NWFG’s involvement in public outreach activity extended beyond our participation in UK Fungus Day.

This autumn 18 NWFG members led or assisted at over 20 public outreach events spread across the region from mid-September to mid-November. There was a good mix of walks, training workshops, displays and also a family day. Attendance was for the most part good, and for the various walks so was the weather and the numbers of fungi found. Feedback from attendees was very positive with comments received such as: “I didn’t know there was so much to know about fungi”. At another event a lady said that the foray was a dream come true. She had wanted to go on a foray for over 15 years. Manchester museum thanked us for “for bringing such enlightening and enjoyable activities to the Museum during Manchester Science Festival and half-term”. One event apparently ended with a round of applause.

BMS were very helpful, providing the usual free leaflets and give-away oyster mushroom kits for event leaders. Resources were also available to download from the BMS and Fungi4schools websites. For the museum event we were able to borrow the BMS resin

mushroom models, two of the large exhibition screens and the small binocular microscopes. Norman Porrett of BMS was extremely helpful, managing the delivery and removal of the various items.

I don’t know whether we will have attracted any new members through the various outreach activities, but I certainly believe that one of NWFG’s stated charitable objectives was met: *“To educate the general public in the importance of fungi as components of the ecosystem by holding talks and exhibitions and to train interested members of the public in the identification of fungi by holding workshops and forays which are open to all.”*

Looking forward to 2016, UK Fungus Day will take place on 9 October. I expect that NWFG members will again be involved in several UKFD events, and also in a variety of other outreach events occurring across the North West throughout the autumn season. My hope is that in 2016 even more NWFG members will be persuaded to join in. It’s fun and very rewarding. For now though I’d like to say a big thank you to those of you who led, assisted at, or helped in any other way with the 2015 events.

2016 A.G.M.

**SATURDAY 27 FEBRUARY
at 10.30 a.m.**

**VISITORS' CENTRE,
RISLEY MOSS RESERVE
WARRINGTON.**



U.K.F.D. - Nan Goodall and the N.W.F.G. Stand at Lancashire Wildlife Trust



U.K.F.D - Liz Moore and the collage work at Manchester Museum

COASTING

Tony Carter

If you go for a day at the seaside and a walk through the sand dunes, you are most likely to come across groups of *Psathyrella ammophila* (Dune Brittlestem).

As the name suggests, it grows with *Ammophila arenaria* (Marram Grass). It frequently grows on the outer dunes. When people see it for the first time, they are surprised that any fungus can grow in such sandy and exposed terrain. In fact, quite a few species do but the *Psathyrella* is the most common.

I recently joined a group of naturalists on a walk along the coast from Southport to Ainsdale. This length of coast is known as Green Beach. Instead of the usual erosion, plants are reclaiming land from the sea. As a result, many unusual and rare pioneering plants are to be found and the area is subject to much scientific examination.

On this visit, I found my first fungus *Psathyrella ammophila*. Interestingly it was also amongst patches of *Elymus arenarius* (Sand Ryegrass) but as *Ammophila* was also present, it was impossible to tell if the fungus had any association with it.

The land at this point is separated from the sea by a very low sandbank. From the flotsam and remnants of sea shells, it is obviously covered by the sea at very high tides. The fungus seems able to cope with these conditions.

As the land builds up, I hope to find some more species soon.

A forester's perspective on the management of *Heterbasidion* in Norway Spruce

John Watt

Since 1997, when I acquired the land I call Scutchers Acres, near Burscough and Ormskirk, I have had much to learn about woodland management and wider ecological processes generally. In addition, since I manage the land primarily for wildlife and as an educational resource, the keeping of records of all species encountered has been of prime importance. Thus it was how I came into mycology.

An additional area of land purchased in 2010 included a 0.2 ha plantation of *Picea abies* (Norway Spruce), planted extremely densely in the early 1980s as a Christmas tree crop but never thinned. The ecological purist would have recommended felling the whole wood but it provides a wonderful refuge for goldcrests, tawny owls and song thrushes amongst other birds; and in the autumn, especially, there are amazing troops of fungi, of which I have identified 22 species (listed on page 16) many appearing annually.

Not so welcome is *Heterobasidion* since it causes loss of two thirds of the spruce trees in plantations with a financial loss of 790 m€ /y in the EU. For this reason, the fungus has resulted in 1,700 scientific papers over the last 40 years and it is the first plant pathogen to

have had full genomic sequencing, which in itself has thrown up some very interesting observations.

In Eurasia, there are in the main 3 species: *H. annosum* with *Pinus* as primary host; *H. abietinum* with *Abies* as primary host; and *H. parviporum* with *Picea* as primary host. The Asian species is *H. occidentale* and the species in North America is *H. irregulare*. The latter has however also appeared in Italy, thought to have arrived on wood imported from USA during the WWII. It is threatening Stone Pines alongside *H. annosum* and the two species seem to be co-evolving with hybridization and the production of novel chimeric genes, the first time for such an observation in the fungal kingdom.

Apart from the reproductive genes, there are two batteries of genes which tip the balance between necrotrophic and saprotrophic behaviour, for in natural woodland *Heterobasidion annosum* sensu lato is probably a useful saprotroph in contradistinction to its presence in coniferous monoculture plantations.

Primary infection occurs when haploid basidiospores released from a fruit body grow on tree wounds or freshly sawn stumps, which remain vulnerable for about a month after felling before changes in nutrients and colonisation by other fungi. Young spruce appear less susceptible to infection since it has proportionally more sapwood than heartwood, the former which can mount a reaction zone with production of resins and phenolic compounds and

upregulation of chitinase and peroxidase enzymes.

Secondary mycelia, a mosaic of haploid and mated heterokaryotic hyphae, spread into heartwood and into the root systems by at least 20 cm per month and in this way can spread from a cut stump to neighbouring trees. This knowledge in combination with DNA studies have shown that the largest genets may extend to a radius of up to 50 metres and that the estimated maximum age of individual genets can be between 14 and 140 years, relatively short lived in comparison with some *Armillaria* populations exceeding 1,000 years. Conidia from the anamorph, known as *Spiniger meinelus*, are also produced and are used in experimental work as evidence of *Heterobasidion* infection, but these do not appear to play a role in the spread of infection in nature.

In the course of time a fruit body appears in the form of a bracket at the tree base or on roots varying in size from popcorn to 40 cm. Spores do not appear to disperse widely with only 0.1% at a distance of more than 100 metres, so that the risk of infection during felling of conifers is mainly pertinent to the woodland in question.

In 2014, I had observed brackets of *Heterobasidion* at the base of four spruce trees which I assumed to be *H. Annosum* (see over) although I had been unable to obtain any spores, not an uncommon problem with this genus. I ought to have measured the pore sizes



more carefully for according to Ryvar-den and Melo in their volume 'Polypore Fungi of Europe', the pores of *H. annosum*, usually a *Pinus* associate, range in size from 4-5 per mm. The range in *H. parviporum* is (3) 4-6 (7) per mm; *H. abietinum* pores are 2-3 (4) per mm. These characters and the host preference feature in the key for this genus. However, these different species are still not separated in the FRDBI.

Though sporulation was not evident at the time of my examination, the presence of the fruit bodies intuitively meant that there could be a high risk of infection during thinning operations, even though the findings of fruit bodies does not merit a score in the parameters use to define Risk Zones and the derived appraisal of need for prophylaxis.

Researching the options for prophylaxis, general points include low likelihood for stump infection at temperatures below freezing or above 40° C but otherwise three active measures may achieve prophylaxis against infection.

Stump application with spores of the fungal competitor, *Phlebiopsis gigantea*, is one option but this is only presently recommended for *Pinus* species even although a study in France did show good results for the protection of *Picea abies*.

The most widely used treatment has been application of 40% urea, introduced in the 1970s and approved in 1988 and again in 2001. For a period it was sprayed to the cut stump at the same time as during the mechanical sawing but its corrosive action proved to be a problem. The mode of action is thought to be the inhibitory effect of alkaline ammonia following hydrolysis of urea.

At that time I had been unable to source a supplier of the 40% urea incorporating blue dye yet needed to take prophylactic action so it seemed the only thing I could do was to use the boron product, disodium octaborate tetrahydrate (DOT), which is known to be effective and is licensed in North America. Furthermore, DOT is also a fungicide which seemed ideal since I also wanted to treat those trees already infected. Although DOT has many attributes that make it more acceptable than urea, the harmonisation of pesticides under European rules has made it unavailable for stump treatment since 2003. My advice from the Forestry Commission confirmed that it is unlicensed and lack of funding makes it unlikely that DOT will be submitted through the EU as a prophylactic fungicide.

The supplier was a timber preservation firm which offers DOT in different preparations so that a gel may be painted on a cut stump but a smaller but more concentrated paste (40%) can be used to inject into a series of half a dozen holes drilled into wood as a preservative. Injection of the infected standing trees was the obvious solution which also minimised spillage of boron into the surrounding soil with possible adverse effects on the mycorrhizal fungi present. It was difficult to calculate an appropriate dose because of uncertain absorption and distribution within the conifer tracheids but I was ready to take the risk that the small number of injected trees may die from boron toxicity, though boron has a low overall toxicity for plants.

Therefore on 12 December 2013 the four infected *Picea abies* were injected with 40% DOT after drilling six 3cm deep holes at the base of each tree, and the holes being plugged afterwards.



Six weeks later, on 27 January, the fruit bodies were seen to be dying.



Ten months on, it was evident that *Heterbasidion* had been effectively treated but that the native fungi were not affected.



Since January, I have been able to identify a supplier of 40% urea so, instead of having to apply boron paste to the cut stumps, I was able to paint the blue urea within 20 minutes on every freshly cut spruce stump.

Fungi identified in Trumpeting Wood, Scutchers Acres

| | | |
|--------------------------------|------------------------------|--------------------------------|
| <i>Agaricus augustus</i> | <i>Agaricus silvicola</i> | <i>Chlorophyllum racodes</i> |
| <i>Clitocybe nebularis</i> | <i>Clitocybe phyllophila</i> | <i>Flammulina velutipes</i> |
| <i>Gymnopus peronatus</i> | <i>Heterobasidion</i> spp. | <i>Lactarius deterrimus</i> |
| <i>Lepista flaccida</i> | <i>Lepista nuda</i> | <i>Limacella guttata</i> |
| <i>Lycoperdon perlatum</i> | <i>Mycena filopes</i> | <i>Pluteus cervinus</i> |
| <i>Psathyrella candolleana</i> | <i>Postia caesia</i> | <i>Ramaria abietina</i> |
| <i>Rhodocollybia butyracea</i> | <i>Russula queletii</i> | <i>Tricholomopsis rutilans</i> |
| <i>Xeromphalina campanella</i> | | |



U.K.F.D - Mere Sands Fungal Foray with Irene Ridge