



North Eastern Fungus Study Group

Newsletter No 91 - Winter 2018

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NEXT ISSUE: The deadline for articles for the Spring newsletter is 31st April 2019
All contributions will be gratefully received!



Forthcoming Events

Sunday April 28th

Stocksfield

Mike Cruse

Meet at Stocksfield Community Woodland car park .

[Stocksfield community woodland car park](#)

<https://www.searchforsites.co.uk/marker.php?id=29478>

OS grid ref NZ 051 613 postcode NE 43 7 HG

From the A68 / A695 roundabout (just south of the A69) proceed east 1.4 miles to the B6309 turning (signed Ebchester , Hindley) take a right turn there , the car park is almost immediately on your right .

LEADER :- Mike Cruse

mikecruse@live.com

Tel 01661 823229

Mob (On the day only) 07486 992923

Saturday May 11th

Hutton Rudby

Paul Forster and Andrew Hardie

Meet at All Saints church in Hutton Rudby .

HUTTON RUDBY ALL SAINTS - lindleyancestry.com

lindleyancestry.com/hutton_rudby_all_saints.htm

OS grid ref NZ 46792 06344 postcode TS15 0DE

From the A19 take the exit to Crathorne and proceed to Hutton Rudby , (from Stokesley proceed in a SW direction). Park near the church at, NZ 47175 06640: TS15 0HA (or NZ 47000 06380: TS15 0DH). There is mixed woodland near the river , specimens will be taken back to Andrew's for ID . Tea and coffee provided .

LEADERS :- Andrew Hardie and Paul Forster
a.hardie74@gmail.com
paul.forster1@ntlworld.com
 Tel (Paul) 01287 201794
 Mob (Paul) 07847 602670

Saturday July 13th	LUNCH Cassop	Alan Simkins
Sunday August 18th	Rothbury	Sally Pattison
Sunday September 1st	Aireyholme	Tom Kirby
Sunday September 8th	Ormsby Hall	Alan Simkins + Cleveland Nats
(Saturday September 14th	Bamburgh	BFG)
Sunday September 15th	Fallodon	Mike Cruse

NB: The pairing of the 2 forays at Bamburgh and Fallodon , some 10 miles apart, gives those who like to make a w/e of it the opportunity to do so .

Saturday September 21st	Bedburn	Cath Gillie
Saturday September 28th	Danby Park	Tom Kirby
Sunday October 6th	Allensford	Alan Simkins
Saturday October 12th	Hadrian's Wall	Alan Simkins
Sunday October 13th	Ragpath	Val Standen + DWT
Sunday October 20th	Ebchester	Mike Cruse

Friday October 25th - Tuesday October 29th LAKE DISTRICT WEEKEND

Saturday November 2nd	Holy Island	Sheila Lillie (Joint meet with BFG)
Saturday November 9th	Bransdale	Rhona Sutherland
Sunday November 17th	Hesleyside nr Bellingham	Mike Cruse

Please note for all forays a grid reference and post code are required also contact details for the leader in case of any problems on the day.



Hair Ice

Doug McCutcheon sent in the following interesting note.



I saw a most unusual phenomenon in Northumberland the other day after the coldest night of the Autumn so far. Clusters of filaments of pure ice and after reading up on the internet it is called Hair ice, Ice wool or Ice fungus and it is caused by the fungus *Exidiopsis effusa* apparently. There is plenty of information for the purists on the web.

Important changes to the Trust web addresses

Will all members who use or are likely to use any of the Fungus Conservation Trust websites or email addresses, please note that these are all scheduled for updating, to properly reflect the name of the organisation that was changed from ABFG to Fungus Conservation Trust a while back. The changes were approved at the 2018 AGM and are scheduled to take place on a date, as yet to be determined, but almost certainly in January 2019.

The following website changes are scheduled:

<<http://www.abfg.org>> will change to <<http://www.fungustrust.org.uk>>
<<https://cate.abfg.org>> will change to <<https://cate.fungustrust.org.uk>>

If you have a registered login to CATE2 your personal login details will remain unchanged.

Current email addresses will become changed, as follows:

<mj@fungustrust.org.uk>
<hm@fungustrust.org.uk>
<enquiries@fungustrust.org.uk>

There will be an interim period of several months when the old addresses will still be functional to the extent that, if using them, you will be transferred automatically to the new addresses. However, once you are aware that the changes have been put in place please make the necessary alterations to your own address books as the forwarding service will only continue for a limited time period.

Please note: in emergency, if the above email addresses are down, Michael can be contacted through <mj229452@gmail.com>

A new deputy manager of the CATE2 database

A warm welcome to Fiona Halliday who has joined the CATE2 team, and is undergoing a practical course to take on the role of Assistant Manager of the database. This is very positive news for MJ who has been concerned for some time, that in the event of his incapacity, the national fungus records database should continue, uninterrupted, in safe and competent hands. Fiona was born in West Yorkshire and has held a deep interest in nature and wildlife from a young age. She took the academic road towards arts but subsequently developed an interest in fungi and lichens as a hobby, studying and photographing them. She has pursued volunteer service both in the UK, Ireland, and further abroad in Malta and Sicily. She has recently been involved with work in the farming industry, having recently moved to Dublin, and she says she is looking forward to exploring the biodiversity of Ireland's east coast. In her work with the CATE2 database she has proved thoroughly proficient in all that she has addressed so far, with a competent grasp of the necessary IT skills.



‘The slinking shapes which madness has defiled’¹: Zombie beetles arise in Ovingham

Keith Tulip

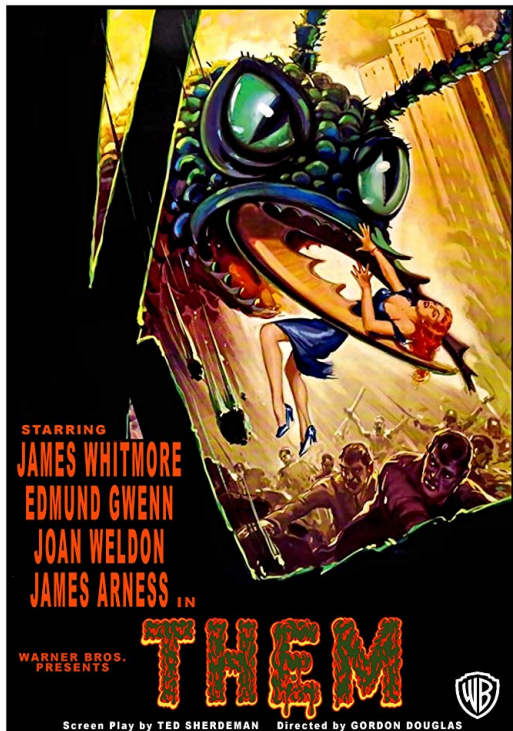


Figure 1: 1954 poster for *Them!* (IMDB 2019)

The horror film may have presented us with gigantic irradiated ants (IMDB 2019), but it was the zombie movies that gave the name ‘zombie ants’ for the insects, infected with a fungal parasite that controls their body and mind. Now it seems we have found our own ‘zombie beetle’ in Whittle Dene Woods, Ovingham, Northumberland.

After infection by *Ophiocordyceps unilateralis*, the behaviour of the ants is modified to optimise the transmission of the fungal spores to new hosts. The ants climb to about 25cm above ground, where their jaws clamp onto leaf veins. The subsequent atrophication of the mandible muscles is associated with a high density of the parasite within the head (Hughes *et al* 2011). It is suggested that behaviour changes are also influenced by the fungus producing enzymes that change the expression of ant genes, and also by the production of neurotransmitter chemicals (Baraniuk 2017).



Figure 2: head of ant infected by *O. unilateralis* - species holotype (Tulasne 1861)

After biting, death occurs within six hours. The fungus then starts to grow a fruiting body from the back of the head, and when grown starts to rain down spores on passing ants (Hughes *et al* 2016). The growth of an elongated sporophore is typical of *Ophiocordyceps*, and we have previously identified other examples (*O. forquignonii*, as the anamorph *Hymenostilbe muscaria* (Tulip 2014) and *O. gracilis* (Tulip 2016)) However, no such structure was present on this specimen. So what had we found?

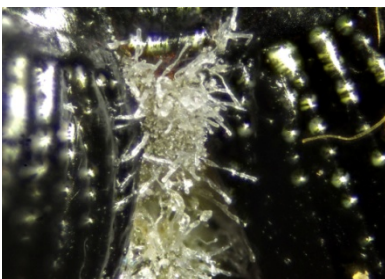


Figure 4: protruding cystidia between the elytra

The fungus, growing on a ground beetle *Nebria brevicollis* (fig. 3) was found by Sally Pattison. My thanks to Gordon Simpson and Cameron Diekonigin for help in beetle identification. Long cystidia could be seen protruding between the elytra (fig. 4) and



Figure 3: a ground beetle, *Nebria brevicollis*, attacked by the fungus

¹ ... that hollow of old oaks,
Grey with a ground-mist that enfolds and chokes
The slinking shapes which madness has defiled.

(Fungi from Yuggoth H.P. Lovecraft (1929))

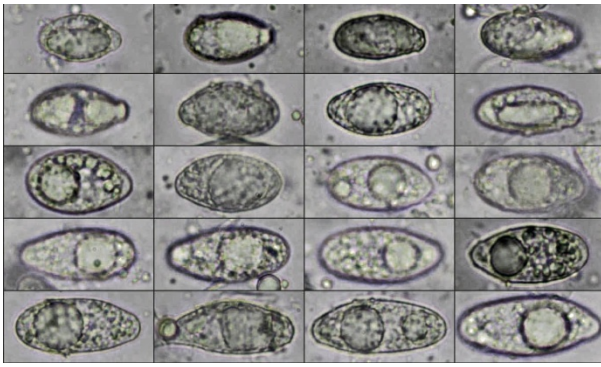


Figure 5: conidial spores
mean 25.4 x 12.4 μ

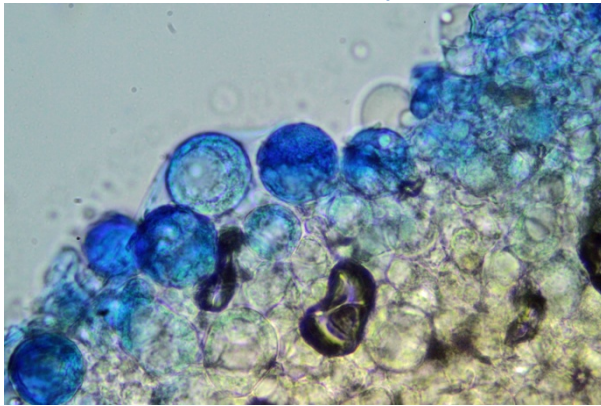


Figure 7: spherical resting spores, mean diameter 35.5 μ

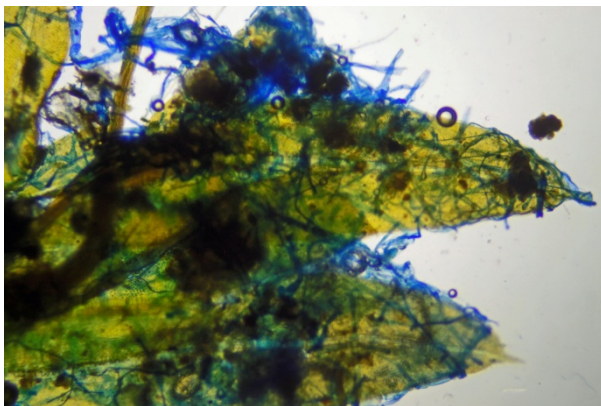


Figure 6: Fungal rhizoids attaching beetle to mossy

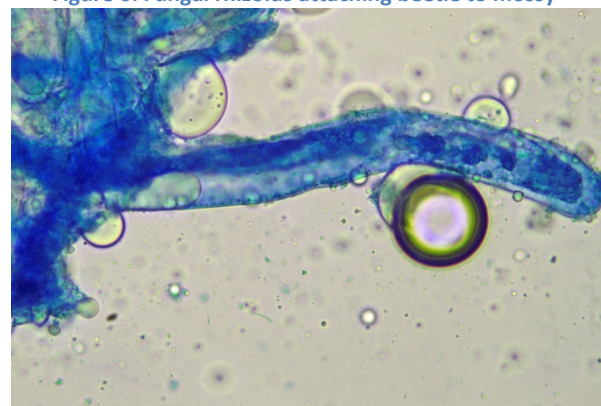


Figure 8: multinucleate cystidium

the fungus is covering a very swollen abdomen, causing the elytra and wings to be splayed upwards and outwards. The conidial spores were found and measured (fig. 5). Spherical resting spores were also found (fig 7). The beetle was attached to the moss by simple fungal rhizoids. (fig. 6). The cystidia were multinucleate (fig. 8), and branching structures were found, probably the conidiophores.

Entomopathogenic fungi mainly belong to two diverse groups: the Hypocreales within the Ascomycota, of which *Cordyceps*, in the widest sense, is a member (Shrestha *et al* 2016), and the Entomophthorales. Using the key to those of the latter which attack beetles (Keller 2013), we found that with branched conidiophores, simple rhizoids, no capilliconidia (secondary conidia on thread-like structures), and being a pathogen of adult ground beetles, we come to *Erynia nebrinae*.

Keller & Hülsewig (2018) report collecting the species in Germany between 2014 and 2016. Their paper formally renames the species from its previous genus of *Entomophthora* and gives a new description. Like our specimen, found in November, their specimens were collected between November and January. It may be that beetles, late in the season, are just more susceptible to fungal attack. But they also speculate that, prior to sporulation, the fungus alters the host behaviour to cause the infected beetles to leave their overwintering sites to die in an open environment, facilitating the dispersal of spores. This altering of behaviour, analogous to that of ants, would allow us to suggest our specimen was, indeed, a 'zombie beetle'.

It would not be the first; research has been carried out into the fungus *Eryniopsis lampyridarum* infecting soldier beetles in North America (Malhotra 2017). Like the ants, the infected beetles climb plants, clamping their jaws onto flowers. Like the ground beetles, after death the wings open with the fungal spores and filaments emerging from the abdomen. A researcher, Donald Steinkraus, has suggested that the raised wings and swollen abdomen make the corpse attractive for mating, and has seen live males attempting sex with dead females, thereby infecting themselves. Could this

also apply to the ground beetles? Alas, a search of photographs of mating ground beetles showed the elytra and wings remaining firmly closed.

So it seems that separate fungi families have evolved to create ‘zombies’ in order to propagate. But Hughes (2011, 2016) reminds us that, in the case of the ant, infected but still living:

‘while the manipulated individual may look like an ant, it represents a fungal genome expressing fungal behaviour through the body of an ant.’
‘A fungus in ant’s clothing’

There is only one other record of *Erynia nebriae* in Britain, found at the end of November 1999 in Wiltshire. The Royal Botanic Gardens, Kew, have asked for our specimen for their Fungarium.

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- Tulip, Keith (2016), ‘Kill not the moth nor butterfly’, *Newsletter* 82 3-5 (North Eastern Fungus Study Group)

all photographs by the author

‘Nor let the beetle, nor the death-moth be
Your mournful Psyche’
Keats (1820) ‘Ode on Melancholy’

Interesting Web Sites - Sally Pattison and Mike Cruse

1. [Flying fungi :Cornell Mushroom Blog](https://blog.mycology.cornell.edu/2019/02/03/flying-fungi)

<https://blog.mycology.cornell.edu/2019/02/03/flying-fungi>

Using DNA sampling to test the bodies of RCWOs as well as their cavities for fungi, scientists linked the fungal community on RCWOs to their excavations.

2. [birds :Cornell Mushroom Blog](https://blog.mycology.cornell.edu/category/birds)

<https://blog.mycology.cornell.edu/category/birds>

Flying fungi . Meet the red-cockaded woodpecker, a black and white bird with a real knack for making holes in living pine trees. Read on to learn of its incredible relationship with a shelf fungus that eats the heartwood of those same pines.

3. [The Caves of Mushroom Valley: Bygone Industry and ...](https://growlermag.com/the-caves-of-mushroom-valley-bygone...)

<https://growlermag.com/the-caves-of-mushroom-valley-bygone...>

According to the boast, it was the mushroom capital of the Midwest. “Mushroom Valley” was the informal name for several miles of the Mississippi River gorge in St. ...

4. [La Cave des Roches \(Mushroom Caves\) – Bourré, France ...](https://www.atlasobscura.com/places/la-cave-des-roches-mushroom-caves)

<https://www.atlasobscura.com/places/la-cave-des-roches-mushroom-caves>

La Cave des Roches – also known as les caves champignonnières, or the mushroom caves – are part of a vast network of tunnels and caves in France’s Loire Valley, the result of hundreds of ...

5. [Retreating Arctic Glacier Leads to the Discovery of Two ...](https://www.newsweek.com/fungi-new-species-mrakia-hoshinonis...)

<https://www.newsweek.com/fungi-new-species-mrakia-hoshinonis...>

An international team of researchers has discovered two species of fungi entirely new to science in sediments at the front of a rapidly melting glacier on Ellesmere Island, located in Canada’s ...

6. [Fossilized Fungi is World’s Oldest Land Fossil](https://www.newsweek.com/fossilized-fungi-worlds-oldest-land...)

<https://www.newsweek.com/fossilized-fungi-worlds-oldest-land...>

Fungi are as old as the hills. Scientists have identified bits of fossilized fungi that date back 440 million years, making them the oldest known fossils of any land-dwelling organism. The finding ...

7. [fungus | Definition, Characteristics, Types, & Facts ...](https://www.britannica.com/science/fungus)

<https://www.britannica.com/science/fungus>

03/01/2019 · Fungus: Fungus, any of about 144,000 known species of organisms of the kingdom Fungi, including yeasts, mildews, molds, and mushrooms. Fungi are some of the most widely distributed organisms on Earth and are of great environmental and medical importance. Learn more about their life cycles, evolution, taxonomy, and features.

- [Importance of Fungi](#) · [Protist](#)

8. [When Giant Fungi Ruled - YouTube](https://www.youtube.com/watch?v=-G64DagHuOg)

<https://www.youtube.com/watch?v=-G64DagHuOg>

18/12/2017 · Viewers like you help make PBS (Thank you ☐) . Support your local PBS Member Station here: <https://to.pbs.org/DonateEONS> 420 million years ago, a giant feast...

9. [At this museum of mushrooms, what can kill you is just a ...](https://www.oneweirdglobe.com/museum-mushrooms-can-kill-just...)

<https://www.oneweirdglobe.com/museum-mushrooms-can-kill-just...>

Yep — you read that right, a **mushroom museum**. Call it Muzej gljiva if you prefer using the Croatian name, and think of it as an education center. This collection exists thanks to the hard work of Dr. Romano Božac. From starting a **mushroom** association in 1983, a newspaper in 1984 to an

10. [Fantastic Fungi: The Spirit of Good - YouTube](https://www.youtube.com/watch?v=2wzBPSbTGYM)

<https://www.youtube.com/watch?v=2wzBPSbTGYM>

24/01/2012 · The fungal-fantastical. Emerging from their axial homes, fungi are beginning to be understood as nutrients to the human consciousness and ecological sustainability. Paul explores mycology and ...

- **Author:** Paul Stamets



Mal Greaves encounters the extraordinary species, *Onygena equina*

I have carried out surveys for the Yorkshire Wildlife Trust in the past, and recently it was suggested that I might like to look at an area just across from Ingleborough in North Yorkshire.

Ingleborough is known for its fantastic displays of Waxcaps and Geoglossaceae, and having recently developed an online key to the Geoglossums, it seemed to me that a nature reserve just across from such an area held out great promise, especially as it has a good selection of orchids in the summer. Unfortunately when I got there I found that it

is managed by grazing cattle rather than sheep on the neighbouring Ingleborough area. This means that the grass is kept far too long for Waxcaps even though it is obviously perfect for orchids.

So the trip was not a total write-off. I visited a couple of areas around Ingleborough itself. Like many areas this year it has been badly affected by the long dry summer and other than a large number of Meadow Waxcaps there were very few of the more colourful species. What I was rewarded with was a stunning display of *Onygena equina*, commonly known as the Horn Stalkball.



Taxonomy notes:

Onygena equina is a far from commonly-encountered species, not least because of its unusual host material. There are currently only 33 records of the species on CATE2. With very few exceptions these have come from the north of England and Scotland. In the south it has only been encountered twice, with single records in Devon and Somerset. It is the most frequently encountered of four species of the genus that also includes *O. apus*, *O. corvina* and *O. piligena*.

O. corvina is encountered on bones and predominantly the feathers of birds and appears to be more widely distributed, though it has been recorded with about the same frequency. *O. piligena* was recorded very infrequently in the 19th century, chiefly on textiles, and once on a bird pellet in the 1950s. *O. apus* includes one doubtful record from 1847. The NBN Atlas is said to list a total of 176 records of the genus in the UK, many of which appear to be unconfirmed. Most of those that are confirmed have come from Scotland and, in the case of *O. corvina*,

from East Anglia.

The *Onygena* species are grouped in the family Onygenaceae, and are included in a total of 16 species known world-wide. They are Ascomycete fungi in the class Eurotiomycetes. Many tend to grow on the remains of animals and on dung that includes animal remains.

Below: **Onygena corvina**

photo: O & A. Ceska



Winter 2018 15

North East Fungus Study Group AGM minutes

Minutes of the 22nd AGM held at Rainton Meadows on 23rd February 2019 at 12.30a.m.

1. Present: A.Simkins (chairman), M.Cruse, R.Pattinson, D.McCutcheon, D.Colback, J.Robinson, , V.Standen (secretary), C.Gillie, D. Gillie, Jill Cunningham, Christina and Mike Cook, R.Richards,

2. Apologies for absence: Christine Meek, Keith Tulip, Kaye Kossick, Audrey and Edith Collins, Daphne Aplin. Tom Kirby, Gwen Humble, Sally Pattison, Aubrey and Edith Colling.

3. Matters arising from Jan minutes: none, minutes approved - proposed Jill, seconded John.

4: Chairman's report: Membership of NEFSG remains robust several new members joining in 2018 - which I think reflects support for our extensive foray programme, the excellence of the newsletter and website - and that we have FUN when we are out and about.

Once again I thank those who put themselves forward to do something extra for us in 2018. This includes foray leaders, committee members (particularly Val and Tom who hosted committee meetings in 2018. John for his continued support and refinement of the website, Jo for her management and production of our newsletters, and Ron for his excellent dried fungi quiz last month.

During 2018 we cemented links with our 'friends in the north' (Borders Fungus Group BFG) with joint forays - and the promise of more to come in 2019.

Our German myco-colleagues are visiting in 2019. 12 of our members undertook a reconnaissance of the venue (Brathay Hall near Ambleside) last October. The venue received approval. Rooms have been reserved and thoughts on the programme are firming up.

Finally I wish to say something about Tom Kirby. Tom has been diagnosed with cancer but at the time of writing this report the course of treatment has not been determined. Because of what might follow Tom has decided he must relinquish his role as treasurer but he remains a member of NEFSG. We give him all our support in his battle with his illness.

Alan reported that Gwen Humble is seriously ill in James Cook Hospital, Middlesbrough following heart surgery. Members present signed Get Well cards for Tom and Gwen.

The NEFSG library now resides with me and will be brought to all indoor meetings.

5. Report by acting treasurer Ron Pattison: I took over as acting Treasurer from Tom Kirby who has resigned through ill health. There is a balance of £1,100 in the bank account. As it is difficult to change names of signatories on a bank account I will set up a new account. The money resulting from Easyfunding amounted to £149 and I will circulate details of how to do this to members. There is some confusion about insurance through membership of FCT or what is covered and I will ask Michael Jordan to clarify this. Also unclear whether we are affiliated to BMS which also would convey insurance. VS to ask Gorrdon Beakes if he could find out more.

6. Election of officers: Ron Pattison was elected unanimously as treasurer and other officers also re-elected - Alan Simkins, Chairman, Val Standen, Secretary.

7. Foray programme for 2019: below - There are some changes to the draft programme put together at the last committee meeting.

Foray programme for 2019

Sunday	April 28	Stocksfield	Mike Cruse
Saturday	May 11th	Hutton Rudby	Paul Forster
Saturday	July 13th	LUNCH at Cassop	Alan Simkins
Saturday	Aug 18 th	Rothbury	Sally Pattison
Sunday	September 1st	Aeryholme to Pinchinthorpe	Tom Kirby with Gt. Ayton WG
Sunday	September 8th	Ormsby Hall	Alan Simkins + Cleveland Nats.
Sunday	September 15th	Falloden nr.Seahouses	Mike Cruse
Saturday	September 21	Bedburn	Cath Gillie
Saturday	September 28th	Danby Park	Tom Kirby

Sunday	October 6th	Allensford	Alan Simkins
Saturday	October 12th	Hadrians Wall	Alan Simkins
Sunday	October 13th	Ragpath	Val Standen + DWT
Sunday	October 20th	Ebchester	Mike Cruse
	October 25-29th	Brathay LAKE DISTRICT WEEKEND	
Saturday	November 2nd	Holy Island	Shiela Little (joint with BFG)
Saturday	November 9th	Barnsdale	Rhona Sutherland
Sunday	November 17th	Hesleyside, Bellingham	Mike Cruse

Mike Cruse offered to lead foray's which might not be covered.

8. German visit to Lake District: 9 German visitors and 13 NEFSG. Alan circulated details of the programme and referred to some changes.

Rachel suggested a social event on Friday - possibly wine and local cheeses and this was agreed. Cath and Val to buy in food for packed lunches. John and Rhona to confirm Armit Museum open on Saturday and intend to visit it at the end of march to progress things.

Money. It was agreed at the November committee meeting that NEFSG funds would be made available to provide some hospitality for the German visitors. Lunches, £54; Saturday evening meal £150; Brathay wine £160; meeting room hire £120; wine for Sat evening meal £120 - total £600.

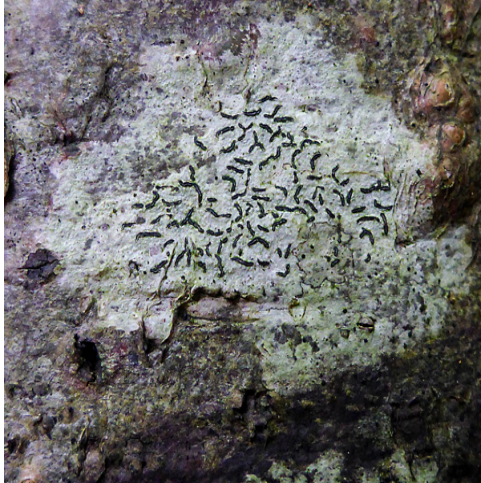
9. AOB: Mike asked for a 10.30 start but the general consensus was that is time needed for travel so continue 10.30 for 11am start.

Mike reported that forays to be in next newsletter and asked all leaders to provide, email, landline, mobile, post code, grid ref, and map for their forays.

Date of next AGM: Feb 15th 2020.

Lichen Lookout

Two lichens to watch out for on tree trunks or larger branches. You may need a hand lens to see the small details.



Graphis scripta

A crustose lichen with distinctive fruits. Seen as black lines on a grey thallus. Grows on smooth barked trees and branches in partial shade.



Pertusaria pertusa

A crustose lichen that grows on tree trunks and large branches. The fruiting bodies seen as raised areas have several holes in them which give it the common name of 'pepper pots'. The thallus can be grey or light greenish.