Wildlife Report 2013

Fungi

Tony Leech

Ash dieback – an unwelcome arrival

In other circumstances, the finding of a fungus new to Britain might be something to celebrate but the discovery of *Chalara fraxinea* in Ashwellthorpe Lower Wood, near Wymondham, Norfolk [TM 1397] in October 2012 was not welcome since it was the first time this causative agent of ash dieback had been found in Britain in a mature woodland.

Although the symptoms of the disease can be readily recognised, the fungus causing them is microscopic and, in this form, lacks any kind of 'fruiting body'. It belongs to a large group of fungi which lack the ability to reproduce sexually and which has been given many names including Fungi Imperfecti, deuteromycetes and mitosporic fungi. However, many of these do indeed have a sexual form (teleomorph) but this is very different in appearance from the asexual form (anamorph). Matching the asexual form (anamorph) with the sexual form (teleomorph) requires much detective work and for many anamorphs, corresponding teleomorphs have not been found, or may not even exist. It was 14 years after ash dieback was first recognised in Europe (in Poland, 1992) that the causative agent was given the name *Chalara fraxinea,* and only in 2010 was its sexual stage recognised as a discomycete (cup fungus) and named *Hymenoscyphus pseudoalbidus.* Since then, a ruling by the *International Code of Nomenclature for Algae, Fungi and Plants* has stipulated that each fungus species can have only one name, and the name *Hymenoscyphus fraxineus* has now been accepted (superceding both *C. fraxineus* and *H. pseudoalbidus*). A very similar species, *H. albidus*, is well-known and widespread in Britain. Both species fruit on the midrib (rhachis) of fallen Ash *Fraxinus excelsior* leaves from mid-summer into autumn. However, *H. albidus* appears to have become much rarer in Britain since the arrival of *H. fraxineus.*

In some ascomycetes, sexual and asexual stages alternate, or at least both are involved in an annual lifecycle. This appears to be the case with *H. fraxineus*. Spores from the discomycete on the fallen leaf stalks are blown on to growing leaves where the germinating fungus enters, grows and spreads into the twigs. Eventually it reaches the stem of the tree, causing damage which is ultimately fatal. When infected leaves fall to the ground, asexual spores are produced but these seem incapable of re-infection. However, those from different mating strains (analogous to different sexes) can undergo a fertilisation process which leads to the formation of the discomycete fruiting bodies which release spores which can infect new hosts.

It was appropriate for two reasons that the first discovery of the discomycete form of *H. fraxineus* in Britain was made by Anne Edwards at Ashwellthorpe Lower Wood (2 June 2013). The first is that this site was where ash dieback was first seen in Britain in self-set trees, and the second is that, Anne, a research scientist, had begun working on the molecular biology of the fungus at the John Innes Centre, Norwich. Through genome analysis she was able to confirm that the fungus was indeed *H. fraxineus*. Just a few weeks later, Neil Mahler found and photographed numerous specimens at Foxley Wood [TG 0522] Photo: Plate 15.5 p.54. It is now widely found on Ash leaves which have fallen during the previous year, especially if lying on wet ground.

Typhula phacorrhiza - a master of disguise

Anne Edwards' professional interest extends to all fungi on Ash leaves so she kindly agreed to examine the white button-like structures found by Francis Farrow on a fallen Ash leaf on Beeston Common [TG 1642] in 2013. Although apparently fungal, the buttons, 2-4 mm in diameter had a firm, almost rubbery, texture and lacked any evidence of reproductive structures Some of the leaves also bore similar dark brown 'buttons'(see photo: Plate 15.4, p.54).

Sequencing part of the 18S ribosomal RNA gene revealed that both the white and the brown 'buttons' were sclerotia *of Typhula phacorrhiza*, a spindle fungus. After the results were published (Edwards *et al.* 2014), a mycologist from Norway informed us that she had puzzled over the identity of these structures for seven years! Sclerotia are perennating structures which allow the fungus to remain dormant but then grow rapidly in the next season. Ted Ellis recorded this fungus (in its spindle form) at Wheatfen in the 1940s but it was not recorded in Norfolk again until 2003 when it occurred in Simon and Anne Harrap's garden at Edgefield (see photo: Plate 15.3, p.54). Earlier this year Rob Shepherd found *T. phacorrhiza* in his garden near Dereham.

Amanita inopinata - the unexpected

If ever a fungus was well-named it is *Amanita inopinata* (see photo: Plate 15.1, p.54). It has no English name but when Derek Reid described it in 1987 he chose the specific epithet '*inopinata*' meaning 'unexpected'. It was unexpected in at least two ways: first it was a surprise that such a distinctive fungus should have remained undiscovered until 1981 (in Kent) and, secondly, that such a strange amanita should exist at all. Equally unexpected has been its recent appearance in a North Norfolk garden, extending its range northwards by over 100 km.

During a fungus foray organised by the Norfolk Group of Plant Heritage in the large garden of John and Judy Wilson at West Beckham [TG 1339], Pauline Davies emerged from the shrubbery with a chunky gilled fungus and a tentative 'is this anything interesting'. With peach-coloured gills, a scaly cap and no apparent volva,the fungus did not at first reveal itself as an amanita. Indeed its identification involved several blind alleys.

Amanita inopinata is not thought to form mycorrhizal associations with any tree species but most of the finds have been with introduced conifers, particularly, as in this case, *Chamaecyparis*. Its association with habitats influenced by man, and its recent appearance and subsequent spread, suggest that it might have been introduced. After a description of *Amanita inopinata* was published, it was reported that an identical (but then unnamed) fungus had been previously found in several locations in New Zealand, but again with non-native conifers in man-made habitats (Ridley 2000). One explanation is that it has indeed been inadvertently introduced but to both Britain and New Zealand from a third centre, as yet undiscovered.

Oak Polypore returns

The Oak Polypore *Piptoporus quercinus* is one of only four species of fungus on Schedule 8 of the Wildlife and Countryside Act 1981, making it illegal to pick or destroy the bracket. Its second British record was from West Norfolk in 1871 but after that it was very rarely recorded anywhere in Britain until the 1990s when Martyn Ainsworth had a contract from English Nature to locate the fungus. Since then he has found a remarkable number of specimens, all of them on oak trees that are at least 200 years old. The bracket usually appears in early summer on wounded surfaces or on the ends of large fallen branches. In 2005, Martyn Ainsworth was being driven from a meeting in Brancaster to King's Lynn to catch a train back to London. As he passed close to Castle Rising, he recognised

the name as the locality where Charles Plowright had collected the fungus in 1871 and suggested that a brief detour might be made. From the village, Martyn looked across the fields towards a row of ancient oaks in a field boundary and observed that this was the sort of place that the bracket might occur. He walked over to the trees – and promptly found an Oak Polypore on the end of a large fallen branch! Good fortune does indeed favour the prepared mind. Remarkably, during 2013 the Oak Poylpore was found twice in Norfolk. Tracy Money and Andy Gardiner found the fungus on an a mature oak tree in the grounds of Wymondham College [TM 0798] and Anne Crotty found it at Whitlingham - on an old fallen branch and on a stub of a live veteran oak nearby. Ironically the highly protected status of the fungus makes it difficult to confirm finds!

And finally, a Yorkshire record with Norfolk connections. Joseph Hubbard, an active member of the Norfolk Fungus Study Group, on holiday with his family, visited Helmsley Castle where he spotted a bracket fungus growing on a large oak beam over a window in the roofless keep. Martyn Ainsworth later confirmed it as Oak Polypore - making it the first record of the fungus on worked timber.

Sclerogaster compactus – a smelly truffle

The name truffle is given to any fungus with a fruiting body which develops beneath the soil surface. Over 80 species have been recorded in Britain, from a diverse range of fungal groups. Most are small and inedible, and are not commonly recorded. In December, Jonathan Revett entered his greenhouse in Welney and wrote:

> "The thing that alerted me was a strong smell of garlic which was odd as there were no plants in there, only sawdust, woodchips and other organic debris to encourage fungi. A quick poke around revealed several small (3-5 mm diameter),

Table 1. New county records of fungi (excluding those referred to in the text).

Species	Place	Collector [Identifier if different]	Habitat
Agarics			
Coprinellus pusillulus	Watermill Broad, Cranwich TL 7795	Tony Leech	Sheep dung
Coprinopsis kubickae (Photo: Plate 15.2 p.55)	Watermill Broad, Cranwich TL 7795	Lee Barber [Tony Leech]	Reed stem
Coprinopsis tigrinella	Watermill Broad, Cranwich TL 7795	Lee Barber [Tony Leech]	Reed stem
Hygrocybe aurantiosplendens	Brinton Hall TG0335	Alex Prendergast	Lawn
Hygrophorus penarius	Little Plumpstead Wood TG 3110	[Tony Leech]	Woodland
Leccinum melaneum	Gresham's School, Holt TG 0839	Tony Leech	Lawn (birch)
Jelly fungi			
Mucronella flava	Holt Country Park TG 0837	James Emerson	Conifer log
Discomycetes (cup fungi)			
Ascobolus hawaiiensis	Watermill Broad, Cranwich TL 7795	Tony Leech	Sheep dung
Ascobolus stictoideus	Watermill Broad, Cranwich TL 7795	Tony Leech	Deer dung
Coprotus sexdecimsporus	Watermill Broad, Cranwich TL 7795	Tony Leech	Rabbit dung
Peziza fimeti	Watermill Broad, Cranwich TL 7795	Tony Leech	Deer dung
Saccobolus citrinus	Watermill Broad, Cranwich TL 7795	Tony Leech	Deer dung
Other ascomycetes			
Hypoxylon petrinae	Pigney's Wood TG 2932	Neil Mahler	Ash log
Sordaria macrospora	Blakeney Point TG 0046	Tony Leech	Hare dung
Trichodelitschia munkii	Blakeney Point TG 0046	Tony Leech	Hare dung

very downy, white sub-globose structures, partially buried amongst the woody debris. There were also lots of mycelial cords amongst the debris which may or not have been part of this species.Cutting through the fruitbodies displayed a slimy, green, gelatinous interior with several chambers. The garlic smell was not as prominent. The spore shape and size, coupled with the macroscopic features, agreed with the description of *Sclerogaster compactus* in Pegler et al. (1993) although I can find no reference in this or in other literature to the garlic smell."

There are no previous records for this fungus from Norfolk and only six from Britain, the most recent in 1964.

Fungal hot spots

On most forays large numbers of widespread species are recorded but occasionally, when time and place are right, a cluster of more unusual species is encountered. One such foray took place at the Greenacres Woodland Burial Park, Colney [TG 1608] in October. The highlight was the first Norfolk record of *Lepiota cortinarius*, found by a small girl at the start of the foray. This was followed by *Amanita betulae*, Dark Honey Fungus *Armillaria ostoyae*, *Cystolepiota hetieri*, Golden Bootleg *Phaeolepiota aurea*, *Pholiota tuberculosa* and Piggyback Rosegill *Volvariella surrecta*, all rarely recorded in the county. The latter is a medium-sized agaric which grows on the collapsing remains of Cloud Funnel *Clitocybe nebularis*. A week later, an opportunity for the Norfolk Fungus Study Group to visit Sutton Broad Wood South [TG 3723], on the RSPB Sutton Fen Reserve, revealed Girdled Webcap *Cortinarius trivialis*, *C. cinnamomeoluteus*, *C. uliginosus*, *Lactarius lacunarum*, Orange Oak Bolete *Leccinum aurantiacum*, and the cup fungus *Peziza limnea*.

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Amanita inopinata. West Beckham. *Tony Leech.*

***Hymenoscyphus fraxineus*, the causative agent of ash dieback disease, Foxley Wood.** *Neil Mahler.*

Left. **The spindles of *Typhula phacorriza* in a garden at Edgefield.** *Simon Harrap.*

Below. **Sclerotia of *T. phacorrhiza* on an Ash leaf at Beeston Common.** *Francis Farrow.*

Coprinopsis kubickae, Cranwich Pits**.** ***T****ony Leech*