

Fungi

Tony Leech

Members of the Norfolk Fungus Study Group continue to improve their skills in identifying fungi collected on recording forays throughout the year. Naming specimens can be difficult and is sometimes impossible, sometimes due to less than clear boundaries between the range of variation of one species and that of an 'adjacent' one. Whether this is a consequence of fungal evolution or ignorance on the part of mycologists is not clear; probably both. The use of DNA sequencing techniques by taxonomists has provided welcome clarity but has thrown up other complications. Now, we amateurs can reap some of the fruits of these advances by preparing DNA from fungal specimens and sending it to be sequenced. During the year, a small team from the Group has been trained to do this in the workroom at the Ted Ellis Trust, Wheatfen. More details will be given in the 2022 report.

Oddballs and mutants

Victorian naturalists were fascinated by fruiting bodies with gross abnormalities. They called them fungal monstrosities and described different manifestations. Most mycologists will have encountered strange forms including conjoined fruiting bodies and cap inversion. Causes are rarely ascertained but by analogy to other organisms these are likely to be varied, including mechanical and chemical interference with development, genetic mutation and infection. More subtle aberrations may make identification problematic or even impossible but early successes of the Norfolk fungus DNA team solved two of these problems.

The first concerned a group of gill fungi collected by Ian Senior on woodchips in Earlham Cemetery in September 2021. Each



An aberrant specimen of Rootlet Brittlestem, Earlham Cemetery. Ian Senior. Insert. Tony Leech.

was tall (ca. 50 mm), slender, uniformly yellowish-buff and with a relatively small (20 mm diameter) cap which was wavy and grooved. The deeply decurrent gills were irregular; some anastomosing and others reduced. Despite the strange appearance, several suggestions were made as to their identity, none of them convincing. DNA sequencing, however, provided the answer; they were aberrant forms of the widespread Rootlet Brittlestem *Psathyrella microrrhiza*.

The second strange fungus was a tall (ca. 40 mm) slender, yellowish fungus with decurrent gills found by Gill Judd on a stump at Upton Fen in September 2021. It did not look abnormal but neither Norfolk mycologists nor experts from further afield were able to propose a convincing



Aberrant specimen of Bark Bonnet. Upton Fen.
Gill Judd. Insert. Tony Leech.

identity despite microscopic examination. Its DNA sequence however established that it was in fact Bark Bonnet *Mycena speirea*. This common fungus on mossy trunks is normally smaller and grey-brown but its microscopic features supported this identification.

Holly death at Swanton Novers

A worryingly large number of *Phytophthora* species have appeared in recent years to cause serious diseases in native British trees. Although no longer considered to be members of Kingdom Fungi, these organisms are sufficiently fungus-like to remain recorded on fungus databases. One

that has received relatively little attention is *Phytophthora ilicis* which attacks Holly *Ilex aquifolium*, probably because it often causes no more than slight dieback of the lower branches. There is only a single record of its occurrence (Yorkshire, 2013) on the national fungus record database but many more descriptions on horticultural websites.

In January 2021, Frances Jenkinson, a local resident with a permit to walk in Swanton Novers Great Wood NNR, reported that the holly trees in the wood were dying. In some parts of the wood these form a dense shrub layer which virtually eliminates herb species. Investigation suggested that *Phytophthora ilicis* was responsible and this was confirmed by Dr Joan Webber at the Forestry Commission research station at Alice Holt where the spread of *Phytophthora* tree diseases is being monitored. In its early stages, the disease gives rise to black patches on leaves which spread to the whole leaf before it dies and falls. This is usually restricted to the very lowest branches but in one compartment at Swanton Novers it had killed branches to head height and in some cases whole trees.

This occurrence was the first documented for the organism in Norfolk but it is almost certainly widespread - gardeners and plant pathologists rarely send records to the national fungus database. Later in the year it was recorded from Baconsthorpe,



Left. Holly understory attacked by *Phytophthora ilicis*, Swanton Novers Great Wood.

Above. Affected Holly leaves. Tony Leech.

Horsford, Martham Broad, Roydon and Ingoldisthorpe.

Dark spindles and tiny spindles

Most British spindle fungi (also known as club fungi) and their branched relatives, the coral fungi, are pale-coloured but the Dark Club *Clavaria greletii* found by Ash Murray at Roydon Common in October is one of three dark, almost black, species found in Britain. Although there are only a dozen or so records across England, and not hitherto in East Anglia, it is also the commonest of the three.

Imagine a pin shrunk to 1 mm high to get some idea of the appearance of another spindle, *Typhula brunneola* which Stewart Wright somehow found on the dead leaves of Purple Moor-grass *Molinia caerulea* at Broadland Country Park in November. There appear to be only three previous British records, all from Scotland (1983 and 1993, the latter from two nearby sites on successive days).

Smuts in novel places

Smut fungi are microfungi that are parasitic on plants but more closely related to gill fungi and brackets etc. than they are to the ascomycetes which form the bulk of parasitic microfungi. Like most parasites they display a very high degree of host



The smut fungus *Microbotryum pinguiculae* on the anthers of Common Butterwort. Beeston Common. Mark Joy.

specificity and when Stewart Wright heard of a smut (*Microbotryum pinguiculae*) which occurs on the stamens of Common Butterwort *Pinguicula vulgaris* he wanted to find it. This plant is far from common in Norfolk but the first population he examined, at Beeston Common, included infected plants. The smut has been recorded widely north of the Great Glen and in south Wales but in all probability this is the first English record.

If you think that smuts always have black spores and occur on leaves and flowers, you would be wrong. Stewart found *Entorrhiza aschersoniana* at Ashmanaugh, a species that forms white galls on the roots of Toad Rush *Juncus bufonius*. There are very few British records but finding the fungus necessitates digging up the plant so it is not encouraged.

First Norfolk records of larger fungi

Size is in the eye of the beholder. Here, 'larger' means that details of the spore-producing bodies are clearly visible to the naked eye. Species described elsewhere in these notes are omitted.

Gill fungi

Arrhenia onisca One of two small agarics with decurrent gills collected from sandy areas at Roydon Common TF6822 by Tony Leech in November. This species is widespread in Britain.

Conocybe siennophylla A small brown agaric which is widespread in Britain but probably under-recorded as it is difficult to distinguish from related species. Found by Yvonne Mynett at Broadland Country Park in August.

Conocybe dentatmarginata This conecap was found by Anne Crotty in compost in a plant pot at Whitlingham in December 2021. Whether such specimens have arisen in the county or arrived from elsewhere is never clear.

Coprinellus pellucidus A small inkcap found on pony dung at Hickling Broad by

Yvonne Mynett in February. Widespread in Britain *Coprinopsis pseudonivea*. Another small inkcap but hitherto only recorded occasionally from the London area and further south. Found twice in Norfolk on cow dung in 2021: by Yvonne Mynett at East Walton Common TF7316 in June and by Jenny Kelly at Ken Hill TF6734 in October.

Flammulina elastica Very similar to the widespread Velvet Shank *F. velutipes* but apparently restricted to *Salix* sp. Found by Yvonne Mynett at Martham TG4319 in January. Most of the previous records are from Scotland.

Bracket fungi etc

Bicolored Bracket *Gloeoporus dichrous*
 Found and identified by Jenny Kelly at Ken Hill TF6734 in March. Only a few scattered records from Britain.

Resinous Bracket *Ischnoderma resinosum*
 This large brown bracket fungus on deciduous wood is very similar to the much commoner Benzoin Bracket *Ischnoderma benzoinum* which is found on conifer wood. When a foray led by Tony Leech found it at Broadland Country Park TG1817 it was thought to be a new county record but, sometime later, Anne Crotty found a photograph of it that she had taken some years earlier at a different location at the same site.

Chromocyphella muscicola Not a bracket



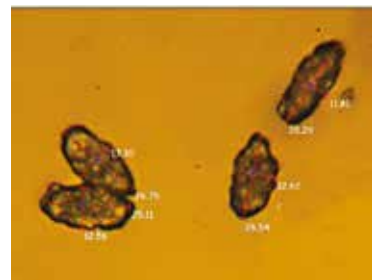
Chromocyphella muscicola on a tree trunk at Thursford Wood. Rob Yaxley.

but a cyphelloid fungus which looks more like a cup fungus. Cyphelloids are small basidiomycete fungi which have 'lost' their gills. This fungus was found by Rob Yaxley on a moss-covered Alder trunk at Thursford Wood TF9733 in January. None of the fifty or so British records are from further east than near Oxford.

Cup fungi and other ascomycetes

Smaller, less significant, cup fungi are listed under first Norfolk records of microscopic fungi, below

Melastiza contorta There are a number of conspicuous orange cup fungi including



Melastiza contorta. Dersingham Bog. Upper photo shows spores; measurements in micrometres. Mark Joy.



Haw Candlesnuff, Norwich.
James Emerson.

the widespread *Melastiza cornubensis*. *M. contorta* is superficially similar but with very different 'knobbly' spores. These were noted by Mark Joy who found the fungus at Dersingham Bog TF673288 in December. It is widely recorded in northern Scotland (an earlier name for it was *M. scotica*) but only rarely elsewhere.

Lachnum salicariae This small, pale, gregarious cup fungus looks like many other species but its growth on dead Purple Loosestrife *Lythrum salicaria* stems facilitates identification. First found by Tony Leech at Beeston Common TG1642 in May and later by Stewart Wright at Hoveton Hall in June.

Scutellinia hirta One of a number of eyelash fungi which challenge the would-be identifier but Yvonne Mynett found it at Ashwellthorpe Lower Wood TM1397 in May. The relatively few British records are mostly from northern Scotland again.

Haw Candlesnuff *Hypoxylon oxyacanthae*
This relative of Candlesnuff Fungus

occurs on old hawthorn berries and was recorded by James Emerson in Norwich in June.

First Norfolk records of microfungi

Microfungi is an informal designation here used to describe fungi, details of which are not readily distinguished by the naked eye. Many are the anamorphs (asexual forms) of ascomycetes and some (Oomycetes) are not fungi at all. Many produce spots or dots on living or dead plant material; others appear as a white 'mould'. They are grouped here for convenience rather than on a strict taxonomic basis. The finding and identification of these species is the passion of Stewart Wright (ASW) who is responsible most of the records listed in Tables 1 to 4. Many of his records are from cultivated plants and some have only recently been distinguished (often as taxonomic splits on different hosts) so have not yet been officially recognised as British (at least under this name).

Table 1. Ascomycetes (including asexual forms) new to Norfolk in 2021.

Abbreviations: [0] No records on UK databases [1] Only other record from Brit. Is., Cork 1883. [X] Not (yet) on British list.

* Recorded subsequently again in 2021.

Recorders: ASW Stewart Wright ; AB Andy Beaumont; ARL Tony Leech; IS Ian Senior; JE James Emerson; YM Yvonne Mynett.

Species	Date	Place	Substrate	Recorder	Note
<i>Alternaria raphani</i>	08/09/2021	Repps-with-Bastwick	<i>Raphanus sativus</i> fruit	ASW	[0]
<i>Anthostomella rubicola</i>	25/02/2021	Repps-with-Bastwick	<i>Rubus fruticosus</i> dead stem	ASW	
<i>Asteroma coryli</i> *	23/09/2021	Barton Turf	<i>Corylus avellana</i> leaf	ASW	
<i>Asteroma impressum</i>	03/11/2021	Acle, Roman Wood	<i>Tussilago farfara</i> leaf	ASW	

Species	Date	Place	Substrate	Rec-order	Note
<i>Asteroma padi</i>	04/09/2021	Upton Fen	<i>Prunus padus</i> leaf	ASW	
<i>Belonopsis iridis</i>	16/10/2021	Scottow Enterprise Park	<i>Iris pseudacorus</i> dead leaf	ASW	
<i>Blumeriella jaapii</i>	20/06/2021	East Walton Common	<i>Prunus avium</i> leaf	ASW	
<i>Botryotinia narcissicola</i>	05/05/2021	Winterton, Low Road	<i>Narcissus</i> sp. leaf	ASW	
<i>Camarosporium oreades</i>	27/12/2021	Norwich, Earlham Cemetery West	<i>Castanea sativa</i> dead leaf	JE (ASW)	
<i>Capnodium footii</i>	27/12/2021	Repps-with-Bastwick	<i>Hedera helix</i> leaf	ASW	[1]
<i>Cephalotrichum microsporum</i>	01/05/2021	Shropham, Manor Farm	Muntjac dung	ARL	
<i>Cercospora apii</i>	09/10/2021	Wheatfen, Surlingham	<i>Apium nodiflorum</i> leaf	ASW	
<i>Coniothyrium ilicis*</i>	07/06/2021	Norwich, Earlham Cemetery East	<i>Ilex aquifolium</i> dead leaf	IS (ASW)	
<i>Coniothyrium phormii</i>	10/06/2021	Ashmanhaugh	<i>Phormium tenax</i> dead leaf	ASW	
<i>Diaporthe corni</i>	09/03/2021	Catfield	<i>Cornus sanguinea</i>	AB	
<i>Didymella holostea</i>	18/01/2021	Ashmanhaugh	<i>Stellaria holostea</i>	ASW	
<i>Dothidea sambuci</i>	29/12/2021	Buckenham Wood	<i>Sambucus nigra</i>	ASW	
<i>Drepanopeziza salicis*</i>	25/08/2021	Barton Turf	<i>Salix fragilis</i>	ASW	
<i>Drepanopeziza sphaerioides*</i>	01/09/2021	Potter Heigham	<i>Salix x sepulcralis</i>	ASW	
<i>Ellisembia leptospora</i>	29/12/2021	Buckenham Wood	<i>Sambucus nigra</i>	ASW	
<i>Entyloma cosmi*</i>	08/09/2021	Repps-with-Bastwick	<i>Cosmos bipinnatus</i>	ASW	[X]
<i>Epichloe mollis</i>	16/06/2021	Norwich, Earlham Road	<i>Holcus mollis</i>	IS (ASW)	
<i>Erysiphe baptisiae</i>	11/09/2021	Repps-with-Bastwick		ASW	[0]
<i>Erysiphe buhrrii*</i>	09/08/2021	Norwich, Earlham Road	<i>Silene dioica</i>	IS	
<i>Erysiphe capreae</i>	20/11/2021	Roydon Common	<i>Salix caprea</i>	ASW	
<i>Erysiphe cotini</i>	16/09/2021	Repps-with-Bastwick	<i>Cotinus coggygria</i> living leaf	ASW	
<i>Erysiphe hypophylla</i>	09/10/2021	Wheatfen, Surlingham	<i>Quercus robur</i>	ASW	[0]
<i>Erysiphe knautiae</i>	16/09/2021	Norwich, City	<i>Knautia macedonica</i>	JE	
<i>Glonium nitidum</i>	18/09/2021	Holme Dunes	<i>Pinus nigra</i> subsp. <i>laricio</i> cone	ASW	
<i>Gnomonia comari</i>	18/08/2021	Repps-with-Bastwick	<i>Fragaria x ananassa</i> dead leaf	ASW	
<i>Golovinomyces vincae</i>	17/05/2021	Norwich, Earlham Road	<i>Vinca major</i> living leaf	JE	
<i>Kabatia periclymeni</i>	17/11/2021	Waxham	<i>Lonicera periclymenum</i> living leaf	ASW	
<i>Leptosphaeria macrocapsa</i>	17/07/2021	Gawdy Hall Big Wood	<i>Mercurialis perennis</i> dead stem	ASW	
<i>Leptotrochila medicaginis</i>	27/10/2021	Barton Turf	<i>Medicago arabica</i> living leaf	ASW	
<i>Lophiostoma origani var. rubidum</i>	22/05/2021	Beeston Regis Common	<i>Epilobium hirsutum</i> dead stem	ASW	
<i>Lophodermium juniperinum</i>	22/07/2021	Three Hammer Common	<i>Juniperus squamata</i> dead leaf	ASW	
<i>Minimelanolocus subulifer</i>	25/02/2021	Catfield	<i>Euonymus europaeus</i> dead fruit	AB	
<i>Morenoina minuta</i>	03/06/2021	Catfield	<i>Juncus effusus</i> live stem	AB	
<i>Mycosphaerella brunneola</i>	09/10/2021	Wheatfen, Surlingham	<i>Convallaria majalis</i> senescent leaf	ASW	
<i>Mycosphaerella elodis</i>	20/11/2021	Roydon Common	<i>Hypericum elodes</i> living leaf	ASW	
<i>Mycosphaerella escalloniae*</i>	15/02/2021	Hoveton Hall	<i>Escallonia</i> living leaf	ASW	
<i>Mycosphaerella euphorbiae</i>	11/12/2021	Hoveton Hall	<i>Euphorbia cyparissias</i> dead stem	ASW	
<i>Mycosphaerella fagi</i>	18/12/2021	Snettisham, Ken Hill Estate	<i>Fagus sylvatica</i> dead leaf	ASW	
<i>Mycosphaerella latebrosa</i>	22/07/2021	Three Hammer Common	<i>Acer campestre</i> living leaf	ASW	
<i>Mycosphaerella plantaginis</i>	15/11/2021	Hoveton Hall	<i>Plantago major</i> living leaf	ASW	
<i>Mycosphaerella pomi</i>	09/08/2021	Hoveton Hall	<i>Malus domestica</i> living leaf	ASW	
<i>Mycosphaerella primulae</i>	03/12/2021	Hoveton Hall	<i>Primula auricula</i> dead leaf	ASW	
<i>Mycosphaerella recutita</i>	22/04/2021	Catfield	<i>Dactylis glomerata</i> living leaf	AB	

Species	Date	Place	Substrate	Rec-order	Note
<i>Mycosphaerella salicicola</i> *	10/07/2021	Wheatfen, Surlingham	<i>Salix caprea</i> living leaf	ASW	
<i>Ophiobolus ulnosporus</i>	10/01/2021	Repps-with-Bastwick	<i>Ballota nigra</i> dead stem	ASW	
<i>Paraphaeosphaeria vectis</i>	23/06/2021	Repps-with-Bastwick	<i>Iris foetidissima</i> dead leaf	ASW	
<i>Parascedosporium putredinis</i>	07/08/2021	Repps-with-Bastwick	<i>Brassica oleracea</i> dead stalk	ASW	
<i>Passalora dubia</i>	17/11/2021	Norwich, Sleaford Green	<i>Chenopodium album</i> living leaf	JE	
<i>Penicillium digitatum</i>	10/01/2021	Repps-with-Bastwick	<i>Citrus x sinensis</i> fruit	ASW	
<i>Peyronellaea obtusa</i>	01/06/2021	Repps-with-Bastwick	<i>Malus domestica</i> living leaf	ASW	[0]
<i>Pezicula houghtonii</i>	01/02/2021	Hoveton Hall	<i>Prunus laurocerasus</i> dead branch	ASW	
<i>Phacellium alborosellum</i> *	08/03/2021	Hoveton Hall	<i>Cerastium glomeratum</i> living leaf	ASW	
<i>Phoma sambuciphila</i>	13/12/2021	Hoveton Hall	<i>Sambucus nigra</i> decorticated wood	ASW	
<i>Phyllosticta argyrea</i>	18/05/2021	Hoveton Hall	<i>Elaeagnus pungens</i> living leaf	ASW	[0]
<i>Phyllosticta chaenomelina</i>	16/09/2021	Ashmanhaugh	<i>Chaenomeles japonica</i> living leaf	ASW	[0]
<i>Phyllosticta epimedii</i>	09/11/2021	Hoveton Hall	<i>Epimedium alpinum</i> living leaf	ASW	[0]
<i>Phyllosticta eupatorii</i> *	15/07/2021	Barton Turf	<i>Eupatorium cannabinum</i> living leaf	ASW	
<i>Phyllosticta impatientis</i>	10/07/2021	Wheatfen, Surlingham	<i>Impatiens capensis</i> living leaf	ASW	
<i>Phyllosticta japonica</i> *	11/05/2021	Hoveton Hall	<i>Mahonia japonica</i> living leaf	ASW	
<i>Phyllosticta lonicerae</i>	06/11/2021	Broadland Country Park	<i>Lonicera periclymenum</i> living leaf	IS (ASW)	
<i>Phyllosticta mahoniicola</i>	09/05/2021	Repps-with-Bastwick	<i>Mahonia aquifolium</i> living leaf	ASW	
<i>Phyllosticta polygonorum</i>	19/06/2021	East Walton Common	<i>Persicaria maculosa</i> living leaf	ASW	
<i>Phyllosticta prunicola</i>	03/11/2021	Acle, Roman Wood	<i>Prunus domestica</i> living leaf	ASW	
<i>Phyllosticta sorbi</i>	16/10/2021	Scottow Enterprise Park	<i>Sorbus aria</i> living leaf	IS (ASW)	
<i>Phyllosticta ulmi</i>	02/11/2021	Hoveton Hall	<i>Ulmus procera</i> living leaf	ASW	
<i>Podosphaera senecionis</i> *	02/10/2021	Thetford, Barnham Cross Common	<i>Jacobaea vulgaris</i> living leaf	ASW	
<i>Ramularia agrestis</i>	21/03/2021	Repps-with-Bastwick	<i>Viola arvensis</i> living leaf	ASW	
<i>Ramularia aplospora</i>	24/02/2021	Repps-with-Bastwick	<i>Alchemilla ellenbeckii</i> living leaf	ASW	
<i>Ramularia bellunensis</i>	27/03/2021	Repps-with-Bastwick	<i>Tanacetum parthenium</i> living leaf	ASW	
<i>Ramularia coleosporii</i> *	22/07/2021	Three Hammer Common	<i>Coleosporium tussilaginis</i> uredinia	ASW	
<i>Ramularia coriandri</i>	10/06/2021	Ashmanhaugh	<i>Coriandrum sativum</i> living leaf	ASW	
<i>Ramularia crassiuscula</i>	04/10/2021	Hoveton Hall	<i>Aconitum carmichaelii</i> living leaf	ASW	[X]
<i>Ramularia dispar</i> *	04/09/2021	Upton Fen	<i>Eupatorium cannabinum</i> living leaf	ASW	[0]
<i>Ramularia epilobiana</i>	31/05/2021	Potter Heigham	<i>Epilobium hirsutum</i> living leaf	ASW	
<i>Ramularia erodii</i>	01/02/2021	Repps-with-Bastwick	<i>Erodium trifolium</i> living leaf	ASW	
<i>Ramularia major</i> *	02/09/2021	Repps-with-Bastwick	<i>Petasites hybridus</i> living leaf	ASW	
<i>Ramularia menthicola</i>	27/09/2021	Hoveton Hall	<i>Mentha aquatica</i> living leaf	ASW	
<i>Ramularia rosea</i> *	01/09/2021	Potter Heigham	<i>Salix alba</i> living leaf	ASW	
<i>Ramularia triboutiana</i>	22/07/2021	Three Hammer Common	<i>Centaurea nigra</i> living leaf	ASW	
<i>Ramularia tricherae</i>	03/11/2021	Acle, Roman Wood	<i>Knautia arvensis</i> living leaf	ASW	
<i>Rosellinia britannica</i>	29/03/2021	Acle, Damgate Wood	<i>Ribes rubrum</i> twig	YM	
<i>Septoria alnicola</i> *	04/09/2021	Upton Fen	<i>Alnus glutinosa</i> living leaf	ASW	
<i>Septoria cymbalariae</i>	22/11/2021	Hoveton Hall	<i>Cymbalaria muralis</i> living leaf	ASW	
<i>Septoria erythraeae</i>	20/11/2021	Roydon Common	<i>Centaureum erythraea</i> living leaf	ASW	[0]
<i>Septoria ficariae</i>	17/05/2021	Hoveton Hall	<i>Ranunculus ficaria</i> living leaf	ASW	
<i>Septoria lycopersici</i>	07/08/2021	Repps-with-Bastwick	<i>Lycopersicon esculentum</i> living leaf	ASW	[0]
<i>Septoria phlogis</i>	01/06/2021	Hoveton Hall	<i>Phlox paniculata</i> living leaf	ASW	[0]
<i>Unguicularia costata</i>	27/10/2021	Barton Turf	<i>Juncus effusus</i> dead stem	ASW	

Table 2. Rusts and smuts (parasitic basidiomycetes)

Abbreviations: [0] No records on UK databases

Recorders: ASW Stewart Wright ; AB Andy Beaumont; IS Ian Senior.

Species	Date	Place	Substrate	Recorder	Note
<i>Melampsora salicis-albae</i>	03/11/2021	Acle, Roman Wood	<i>Salix alba</i> living leaf	ASW	
<i>Microbotryum scabiosae</i>	22/08/2021	Marlingford Estate	<i>Knautia arvensis</i> anther	IS	
<i>Pucciniastrum areolatum</i>	11/10/2021	Catfield	<i>Prunus padus</i> living leaf	AB	
<i>Sphacelotheca reiliana</i>	18/01/2021	Ashmanhaugh	<i>Zea mays</i> ear	ASW	[0]

Table 3. Zygomycetes on insects

Abbreviations: [0] No records on UK databases. [X] Not (yet) on British list. * Recorded subsequently again in 2021.

Recorder: ASW Stewart Wright.

Species	Date	Place	Substrate	Recorder	Note
<i>Entomophaga tipulae</i> *	18/09/2021	Holme Dunes	<i>Tipula paludosa</i> dead insect	ASW	[0]
<i>Entomophthora schizophorae</i> *	16/09/2021	Ashmanhaugh	<i>Delia</i> sp. dead insect	ASW	[X]

Table 4. Oomycetes (downy mildews)

Abbreviations: [0] No records on UK databases. * Recorded subsequently again in 2021.

Recorder: ASW Stewart Wright; CDP Chris Preston; IS Ian Senior.

Species	Date	Place	Substrate	Recorder	Note
<i>Albugo laibachii</i>	16/04/2021	Hoveton Hall	<i>Arabidopsis thaliana</i> living leaf	ASW	[0]
<i>Bremia taraxaci</i>	15/07/2021	Barton Turf	<i>Taraxacum officinale</i> living leaf	ASW	[0]
<i>Bremia tulasnei</i>	16/10/2021	Scottow Enterprise Park	<i>Senecio vulgaris</i> living leaf	ASW	[0]
<i>Peronospora conferta</i>	22/07/2021	Three Hammer Common	<i>Cerastium fontanum</i> living leaf	ASW	
<i>Peronospora flava</i>	02/10/2021	Thetford, Barnham Cross Common	<i>Linaria vulgaris</i> living leaf	ASW	[0]
<i>Peronospora hyoscyami</i> f.sp. <i>tabacina</i>	26/07/2021	Hoveton Hall	<i>Nicotiana alata</i> living leaf	ASW	
<i>Peronospora knautiae</i>	19/06/2021	Narborough, railway cutting	<i>Knautia arvensis</i> living leaf	ASW	[0]
<i>Peronospora obovata</i>	02/10/2021	Thetford, Barnham Cross Common	<i>Spergularia rubra</i> living leaf	CDP	
<i>Peronospora stigmaticola</i> *	09/08/2021	Hoveton Hall	<i>Mentha aquatica</i> stigma	ASW	[0]
<i>Peronospora tomentosa</i> *	12/04/2021	Houghen Plantation	<i>Cerastium glomeratum</i> living leaf	ASW	
<i>Plasmopara muralis</i> *	01/10/2021	Hoveton Hall	<i>Parthenocissus quinquefolia</i> living leaf	ASW	[0]

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