

Pixton Park Saprotrophic Fungi Assessment 2019

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Background

Following the recent publication of the revised JNCC Guidelines for the Selection of Biological SSSI's: Chapter 14 Non-lichenised fungi (2018) a survey was commissioned by Tim Wilkins (Natural England, Senior Specialist, Fungi) to assess the saprotrophic fungi assemblage of Pixton Park in North Devon. More specifically the survey was targeted to investigate the oak deadwood fungal assemblage for which an updated criterion had been included within the revised guidelines for SSSI notifications.

Pixton Park is a large privately-owned ancient parkland situated within Exmoor National Park and close to the confluence of the rivers Barle and Exe. The ancient wood-pasture habitat contains a fine collection of veteran trees, particularly oak and is known to support important lichen and invertebrate assemblages. The unimproved grassland habitat within the park is also of interest and a recent survey by the Natural England Field Unit located a population of the locally rare moonwort (*Botrychium lunaria*) in one area. As a result of this find a secondary aim of the present survey was to assess whether the parkland pasture might support populations of declining grassland fungi such as waxcaps (*Hygrocybe* species).

Survey methodology

The Park was surveyed on two occasions in autumn 2018. On the initial visit on September 26th permission was granted to survey the central fenced deer park but we were advised to avoid this area on the second October 10th visit which coincided with the peak deer rutting season. On each visit an attempt was made to survey the majority of old veteran trees within the Park with particular attention paid to oak, including examination of fallen wood as well as the trunks and limbs of live standing trees. An attempt was then made to record all fungi present including any terrestrial taxa considered to be obviously mycorrhizal with associated tree species.

The fieldwork was carried out by the Natural England Field Unit on September 26th and October 10th 2018. This report was compiled by Andy McLay.

Findings

A list of all fungal species found together with their habitat association is shown in Table 1 below. Saprotrophic species are shown in bold text.

Species	Association	Substrate
<i>Bjerkandera adusta</i>	<i>Fraxinus</i>	Fallen trunk
<i>Calocera cornea</i>	<i>Fagus</i>	Fallen trunk
<i>Calocera viscosa</i>	<i>Picea abies</i>	Dead stump
<i>Collybia fusipes</i>	<i>Quercus</i>	Base of live trunk
<i>Coprinellus micaceus</i>	Various	Dead wood

Table 1.

<i>Cortinarius crocolitus</i>	<i>Betula</i>	Terrestrial
<i>Cuphophyllus virgineus</i>	Poaceae	Terrestrial
<i>Daedaliopsis confragosa</i>	<i>Betula</i>	Fallen limb
<i>Daldinia concentrica</i>	<i>Fraxinus</i>	Fallen trunk
<i>Fistulina hepatica</i>	<i>Quercus cerris</i>	Live trunk
<i>Ganoderma australe</i>	<i>Fagus</i>	Fallen trunk
<i>Ganoderma applanatum</i>	<i>Fagus, Fraxinus</i>	Fallen trunk
<i>Hymenochaete rubiginosa</i>	<i>Quercus</i>	Fallen trunk
<i>Hypholoma fasciculare</i>	<i>Fraxinus</i>	Fallen trunk
<i>Hypoxylon fragiforme</i>	<i>Fagus</i>	Fallen limb
<i>Laccaria amethystina</i>	<i>Quercus</i>	Terrestrial
<i>Laccaria laccata</i>	<i>Quercus</i>	Terrestrial
<i>Laetiporus sulphureus</i>	<i>Quercus</i>	Live trunk
<i>Leccinum scabrum</i>	<i>Betula</i>	Terrestrial
<i>Lycoperdon pyriforme</i>	<i>Fagus</i>	Dead stump
<i>Meripilus giganteus</i>	<i>Fagus, Fraxinus</i>	Base of felled trunk
<i>Mycena galericulata</i>	<i>Fraxinus</i>	Fallen trunk
<i>Mycena haematopus</i>	<i>Fraxinus</i>	Fallen trunk
<i>Mycena inclinata</i>	<i>Quercus</i>	Fallen limb
<i>Mycena pura</i>	Poaceae	Terrestrial
<i>Nectria cinnabarina</i>	Various	Fallen limb
<i>Oudemansiella mucida</i>	<i>Fagus</i>	Fallen trunk
<i>Pholiota aurivella</i>	<i>Fraxinus, Fagus</i>	Fallen trunk
<i>Pholiota squarrosa</i>	<i>Fagus</i>	Base of live trunk
<i>Piptoporus betulinus</i>	<i>Betula</i>	Standing dead trunk
<i>Pleurotus dryinus</i>	<i>Fagus</i>	Dead stump
<i>Pleurotus ostreatus</i>	<i>Quercus</i>	Fallen trunk
<i>Pluteus cervinus</i>	<i>Fraxinus</i>	Fallen trunk
<i>Polyporus squamosus</i>	<i>Fraxinus</i>	Fallen trunk
<i>Ramariopsis crocea</i>	<i>Quercus</i>	Fallen trunk
<i>Russula fellea</i>	<i>Fagus</i>	Terrestrial
<i>Russula nobilis</i>	<i>Fagus</i>	Terrestrial
<i>Russula nigricans</i>	<i>Fagus</i>	Terrestrial
<i>Scleroderma citrinum</i>	<i>Quercus</i>	Terrestrial
<i>Stereum gausapatum</i>	<i>Quercus</i>	Fallen limb
<i>Stereum hirsutum</i>	<i>Quercus cerris</i>	Fallen limb
<i>Stereum rugosum</i>	<i>Corylus</i>	Dead standing limb
<i>Trametes versicolor</i>	Various	Dead wood
<i>Xerocomus chrysenteron</i>	<i>Quercus</i>	Terrestrial
<i>Xylaria hypoxylon</i>	<i>Fagus</i>	Fallen limb
<i>Xylaria polymorpha</i>	<i>Fagus</i>	Felled trunk

Table 1 shows that the majority of fungal taxa recorded were lignicolous species, growing on decaying or live timber. This list therefore reflects the evident abundance of both fallen and standing deadwood within the Park and also the presence of a large and fine collection of mature and over-mature veteran trees. Oak and beech account for the greater number of specimen trees but there also some striking examples of ash, sweet chestnut and wild cherry within the Park. The larger trees are variously distributed around the site, occurring in both open well-illuminated parkland as well as within some of the more

shaded denser blocks of woodland. Many of the more massive oak specimens present were seen to be turkey oak (*Quercus cerris*) but smaller numbers of native pedunculate oak (*Q. robur*) also occur.



Veteran Turkey Oak (*Quercus cerris*) © Andy McLay

The fungal species most typically associated with oaks appeared to have no preference to species and were seen with equal frequency on the bark and decaying timber of nonnative turkey oak. Two distinctive species which mainly grow only on the trunks of mature live oaks are *Fistulina hepatica* (Beefsteak Fungus) and *Laetiporus sulphureus* (Chicken-of-the-Woods). Both species are widespread in the UK and can frequently be found on isolated mature trees in parks, gardens and lanesides but the largest populations occur in ancient parklands where veteran oaks are most plentiful. Both species were seen in good quantity at Pixton on a number of old oaks and *Laetiporus* was also noted on veteran sweet chestnut and wild cherry. The latter fungal species frequently grows at a considerable distance up the trunk of the tree whereas *Fistulina* often occurs close to or at the base. Both species tend to colonise wounds and scars within the bark and will often continue to grow on fallen limbs or standing dead wood.



Fistulina hepatica (Beefsteak Fungus) © Andy McLay



Laetiporus sulphureus (Chicken-of-the-Woods) © Andy McLay

Fallen oak timber is usually very slow to rot and over time can develop a rich associated saprotrophic mycota. One of the most characteristic species of oak wood in a highly advanced state of decay is the small bracket fungus *Hymenochaete rubiginosa* (Oak Curtain Crust). The dark overlapping brackets of this species are a fairly common sight but only where mature oaks are frequent. It was found in some of the more shaded areas of the Park at Pixton. The agaric *Mycena inclinata* (Clustered Bonnet) is likewise largely confined to well-decayed oak wood and was found on a number of old shaded stumps. It's



much commoner relative *Mycena galericulata* (Common Bonnet) was also present on oak but was perhaps more frequent on dead beech. The less common *Mycena haematopus* (Burgundy Bonnet) was also present on an ash stump in the damper western side of the park. This species exudes reddish blood-coloured droplets of moisture from its broken stipe.

Mycena inclinata (Clustered Bonnet) © Andy McLay

An agaric which appears to be strongly associated with old oak trees in ancient parkland is *Collybia fusipes* (Spindle Shank). This species habitually occurs in clusters on the ground at the base of mature trees and has a very tough cartilaginous stipe which is difficult to break. It was found here in association with a veteran oak in the southern part of the Park.



Collybia fusipes (Spindle Shank) © Andy McLay

Members of the genus *Stereum* are crustose fungi which grow on a variety of deadwood. The commonest species is *S.hirsutum* (Hairy Curtain Crust) which frequently forms small brackets on the decaying wood of deciduous trees including oak. The related *S.gausapatum* (Bleeding Oak Crust) is more restricted to oak but is frequent where these occur. A third common species at Pixton is *S.rugosum* (Bleeding Broadleaf Crust) which was typically found on both hazel and beech. The latter two fungal species are entirely crustose and are so-called because the flesh of the hymenium discolours red when scratched.

Perhaps the most notable find in association with oak was the coral fungus *Ramariopsis crocea* (Orange Coral). This striking species is a member of the *Clavariaceae* family, a group of fungi better known for their association with unimproved nutrient-poor grassland habitat. Although this rare fungus is included as a listed “waxcap grassland” indicator species within the JNCC guidelines, in the UK at least it would appear to be more closely associated with ancient woodland. It was found on the fallen trunk of an oak in an area of shaded woodland in the western side of the Park. The British Mycological Society’s national database of fungal records lists only 35 finds of this taxon but there would appear to be a slight concentration of records from the North Devon/West Somerset area.



Ramariopsis crocea (Orange Coral) © Andy McLay

The fallen and standing decaying timber of beech was also seen to support a characteristic assemblage of saprotrophic fungal species. Commoner representatives included *Oudemansiella mucida* (Slimy Beech Tuft), *Hypoxylon fragiforme* (Beech Woodwart), *Xylaria polymorpha* (Dead Man’s Fingers) and *Pholiota squarrosa* (Shaggy Scalycap). The latter species is parasitic and the fungus frequently attacks the root system of live trees (albeit usually on over-mature specimens which are already displaying symptoms of early decay). At Pixton fruiting bodies were typically seen growing at the base of a large veteran beech tree. A less common relative, *Pholiota aurivella* (Golden Scalycap) was also found on decaying beech wood here and also on a fallen ash tree. Unlike *P.squarrosa*, this species has a markedly viscid cap surface when moist. The uncommon agaric *Pleurotus dryinus* (Veiled Oyster) was present on an old dead beech stump and was typically growing singly unlike its much commoner relative *P.ostreatus* (Oyster Mushroom) which

was seen to form large overlapping brackets on a fallen oak trunk. *Meripilus giganteus* (Giant Polypore) characteristically forms large overlapping fruiting bodies around the base of old standing dead or decaying beech trees where it tends to attack the surrounding root system. It was found on several trees but was perhaps most frequent around the felled stumps of old veteran specimens.



Meripilus giganteus (Giant Polypore) © Andy McLay

One of the most noticeable and distinctive fungal species associated with old beech trees is *Ganoderma australe* (Southern Bracket) which can form large tough brackets on dead or decaying bark. A less common relative *G.applanatum* (Artist's Bracket) appears to be equally common at Pixton where it was also noted on a fallen ash trunk. The rust-brown spores of both species are shed prolifically from the under surface of the bracket and can often be seen to discolour the surrounding vegetation.

Other frequent saprotrophic species found included *Daldinia concentrica* (King Alfred's Cakes) and *Polyporus squamosus* (Dryad's Saddle) both on fallen ash, *Daedaliopsis confragosa* (Blushing Bracket) on decaying birch and numerous examples of *Piptoporus betulinus* (Birch Polypore) which was often seen to form tiers on standing dead birch trees. Terrestrial fungi were much fewer in number at the time of survey but included several mycorrhizal species including *Russula nobilis* (Beechwood Sickener), *R.fellea* (Geranium Brittlepill) and *R.nigricans* (Blackening Brittlepill) all of which were associated with beech. Some good examples of *Cortinarius crocolitus* (Birch Webcap) were also noted with its host tree species. This large and striking species is one of the more distinctive members of a very large and often problematical family of agaric fungi.



Cortinarius crocolitus (Birch Webcap) © Andy McLay

In spite of its potential promise the grassland habitat within the Park was largely devoid of fungi at the time of survey. A single common waxcap species *Cuphophyllus virgineus* (Snowy Waxcap) was found in association with *Mycena pura* (Lilac Pinkgill) within the wellgrazed central deer park. However, the pasture was seen to support a well-developed moss layer in places and a well-timed survey is likely to produce additional finds.

Site evaluation

The oak wood saprotroph assemblage was developed by Ainsworth (2017) and comprises 16 fungi found entirely or primarily on veteran oak wood (Table 8). The number of recorded assemblage species is used to assess sites. A site should be considered for SSSI notification if the total count reaches or exceeds eight. The listed indicator species are shown below in Table 2. Species shown in bold text were recorded at Pixton Park during the present survey.

Table 2.

<i>Buglossoporus (Piptoporus) quercinus</i>	<i>Grifola frondosa</i>
<i>Daedalea quercina</i>	<i>Gymnopus (Collybia) fusipes</i>
<i>Fistulina hepatica</i>	<i>Hymenochaete rubiginosa</i>
<i>Fomitiporia (Phellinus) robusta</i>	<i>Laetiporus sulphureus</i>
<i>Fuscoporia (Phellinus) torulosa</i>	<i>Mycena inclinata</i>
<i>Fuscoporia (Phellinus) wahlbergii</i>	<i>Podoscypha multizonata</i>
<i>Ganoderma lucidum</i>	<i>Pseudoinonotus dryadeus</i>
<i>Ganoderma resinaceum</i>	<i>Riopa (Ceriporia) metamorphosa</i>

Table 2 confirms that a total of 5 recognised oak wood saprotrophic indicator species was recorded at Pixton Park during the present survey. All 5 of these species are known to be

widespread and frequent in the UK wherever mature oak trees and associated dead wood are plentiful. Two further species, *Daedalea quercina* (Oak Mazegill) and *Pseudoinonotus dryadeus* (Oak Bracket) are considered as likely to be present given their known frequency and association with ancient parkland sites. The remaining listed species are all scarce or rare in the UK and would appear to be largely confined to wood-pasture and ancient woodland habitats.

It should be noted that the present survey took place during an exceptionally dry and therefore unproductive year for fungi due to a protracted hot dry summer which extended well into the autumn season. Even during the autumn period rainfall levels in the south of England were well below average and soils remained parched on many sites well into December. Saprotrophic fungi of shaded habitats fared slightly better and at Pixton the majority of recorded species were found in late September following a brief period of heavy rain in the south west. However, the unseasonably dry weather resumed into October and a return visit coincided with a particularly dry and windy spell of weather which resulted in a dearth of fungi within the parkland. The unfavourable weather patterns in 2018 highlighted the importance of carrying out multiple site surveys to assess the status of fungal populations at any given site. The unpredictable fruiting patterns of fungi dictate the need to re-survey sites repeatedly and it can take many years to achieve a comprehensive picture of a site's fungal diversity.

The results of this survey were therefore inconclusive but the quality of the parkland and its potential for further significant finds was apparent. The Park contains a fine collection of veteran trees with an abundant associated supply of standing and fallen decaying wood habitat. Furthermore the unimproved grassland habitat within the Park may yet prove to be of significance to endangered CHEGD grassland fungi.



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Appendices

Appendix 1. Grid locations for selected species.

Species	Grid reference
<i>Collybia fusipes</i>	SS9264426529
<i>Cortinarius crocolitus</i>	SS9264326883
<i>Fistulina hepatica</i>	SS9265127049
<i>Ganoderma applanatum</i>	SS9266027031
<i>Hymenochaete rubiginosa</i>	SS9242526746
<i>Laetiporus sulphureus</i>	SS9292027123
<i>Meripilus giganteus</i>	SS9284426964
<i>Mycena inclinata</i>	SS9261526582
<i>Pholiota aurivella</i>	SS9264927089
<i>Pleurotus dryinus</i>	SS9285126452
<i>Ramariopsis crocea</i>	SS9240426735

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