



Wyre Forest Study Group

Plant Pathogens Recorded in 2020 by Members of the Wyre Forest Study Group

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Many plant pathogens were discovered and recorded in and around Greater Wyre during 2020 (Table 1), even though the survey we proposed at the start of the fieldwork season (Ingram & Winnall, 2020) was derailed by the Covid-19 pandemic. Private gardens and green spaces close to peoples' homes provided sites for both observation and recording, and much was learned about the pathogens encountered and how best to study them. Although the names of the sites are not included in Table 1, to protect member's address-related information, several were, we know, within the Greater Wyre boundary itself (see map on page 8 of Westwood *et al*, 2015).

The list of pathogens and hosts recorded in Table 1 is most valuable at various levels. First, the number of recorders, nine, is very encouraging and suggests that surveys in 2021 and subsequent years will be well worth undertaking. Moreover, the number of members of the Wyre Forest Study Group (WFSG) participating in the plant pathogen email circulations, c.14, showed that many more people were prepared to dip a toe into the subject of plant pathology, without at that early stage being sufficiently committed to become recorders themselves. We hope, therefore, that in the meantime, some of these additional 'corresponding' members may have become sufficiently interested to participate as recorders in 2021. Finally, the survey itself, albeit somewhat serendipitous and limited in scope, served as excellent practice for what we all must hope will be a more successful, if partial survey season in 2021 (see Winnall, Taylor & Ingram, this volume).

Close examination of Table 1 reveals that the pathogen recorders noted and identified a total of 80 different named pathogen species. Since the Rusts (Uredinales; Basidiomycota) comprised the major target group recommended for recording by Ingram & Winnall (2020), these are unsurprisingly the most numerous in the list: 68 different species, some 85% of the total, with c. 25 further species still remaining to be identified.

The Smuts (Ustilaginales; Basidiomycota), although also named by Ingram & Winnall (2020) as a principal target group, yielded only six recorded species, a mere 7.5% of the total. This is probably due to the fact that Smuts, given the epithet 'Dark and Secretive' by Ingram & Robertson (1999), are less well documented than Rusts in the UK, and are also less spectacular, frequently being systemic for much of their life cycles, and therefore more difficult for beginners to identify by eye in the field.

The limited lists of different species of Downy Mildews (Peronosporaceae; Oomycota) and White Blister-rusts (Albuginaceae; Oomycota) recorded in the Table, three,

in both cases, is not surprising since neither group was identified by Ingram & Winnall (2020) as subjects for recording, the numbers of the two groups in the UK are not large, and infections by Downy Mildews in the field frequently do not attract the eye of the observer. The Downy Mildews and White Blister-rusts are fascinating and important pathogen groups worthy of our closer attention in 2021.

Several Powdery Mildews (Erysiphales; Ascomycota), with their conspicuous, whitish surface mycelium were noted late in the season, but few were identified accurately and the names and hosts are not therefore recorded in Table 1.

Finally, four other ascomycete (Ascomycota) pathogens were noted, but are also not recorded in the Table. Two of these, however, are worthy of special mention: *Blumeriella jaapii* (Cherry Leaf Spot), for its association with historic Cherry cultivation in Wyre and whose lesions superficially resemble Rust lesions; and the hemi-biotroph *Rhytisma acerinum*, a pathogen of Acer species, now common as a result of the reduced atmospheric pollution of recent decades, and whose large Tar Spot lesions are especially conspicuous as Acer leaves senesce in the autumn.

An important conclusion from these limited observations is that, given the increased experience gained by recorders by the end of the 2020 season, it has now been agreed to extend from the outset the list of pathogen groups to be included in the 2021 survey (see Winnall, Taylor and Ingram, this volume).

Since we are both gardeners and one of us (DSI) is also, in part, a horticultural scientist, we are delighted to note that garden plants and trees are represented as hosts in the Table, as are many garden 'weeds', although which of these were actually seen in gardens and which in the wild is again not recorded. Pathogens of garden plants and 'weeds' will also be recorded during 2021.

As an aside, it should be noted that the use of the word 'weed' is, of course debatable, for among a mixed group of gardeners and naturalists, one person's pernicious weed is likely to be another's favourite spring wildflower, as proved to be the case when one of us (DSI) once wrote to the other (RW) about Lesser Celandine (*Ficaria verna*). We both agree, however, that probably the best definition of a weed that we know of, and certainly the most entertaining, is that given by the nineteenth century art critic, painter, naturalist and social thinker, John Ruskin, in his stimulating but scientifically controversial book on botany, *Proserpina* (published in parts between 1875 and 85): 'A [weed is a] vegetable which has an innate disposition to get



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into the wrong place ... [and] a troublesome weed ... is not its being venomous, or ugly, but its being impertinent—thrusting itself where it has no business, and hinders other people's business—that makes a weed of it.'

We wish to thank most warmly everyone who participated in the 2020 Survey, either as active recorders or as email correspondents only, for their interest and involvement in the Greater Wyre Plant Pathogen Survey project. And finally, we urge all members of the WFSG to read our proposed strategy (Winnall, Taylor & Ingram, this volume), for surveying this fascinating group of organisms in 2021.

References

Ingram, D.S. & Robertson, N.F. (1999) *Plant Disease: A Natural History*. Harper Collins, London.

Ingram, D. S. & Winnall, R. (2020) *Native Plant Pathogens in the Wyre Forest: a proposed survey*. Wyre Forest Study Group Review 2019, 10-17.

Westwood, B., Shirley, P., Winnall, R. & Green, H. (2015) *The Nature of Wyre – a wildlife-rich forest in the heart of Britain*. Pisces Publications, Newbury.

Pathogen species	Host plant (scientific name)	Host plant (vernacular name)
Uredinales (Rusts)		
<i>Coleosporium tussilaginis</i>	<i>Sonchus oleraceus</i>	Smooth Sow-thistle
<i>Coleosporium tussilaginis</i>	<i>Petasites hybridus</i>	Butterbur
<i>Coleosporium tussilaginis</i>	<i>Melampyrum pratense</i>	Common Cow-wheat
<i>Cumminsia mirabilissima</i>	<i>Mahonia aquifolium</i>	Mahonia aquifolium
<i>Frommea obtusa</i>	<i>Potentilla erecta</i>	Tormentil
<i>Gymnosporangium confusum</i>	<i>Crataegus monogyna</i>	Hawthorn
<i>Gymnosporangium sabinae</i>	<i>Pyrus communis</i> s.l.	Pear
<i>Kuehneola uredinis</i>	<i>Rubus fruticosus</i> agg.	Bramble
<i>Melampsora</i> sp.	<i>Salix</i> sp.	Sallow
<i>Melampsora epitea</i>	<i>Euonymus europaeus</i>	Spindle
<i>Melampsora euphorbiae</i>	<i>Euphorbia helioscopia</i>	Sun Spurge
<i>Melampsora euphorbiae</i>	<i>Euphorbia lathyris</i>	Caper Spurge

<i>Melampsora euphorbiae</i>	<i>Euphorbia peplus</i>	Petty Spurge
<i>Melampsora hypericorum</i>	<i>Hypericum androsaemum</i>	Tutsan
<i>Melampsora lini</i>	<i>Linum catharticum</i>	Fairy Flax
<i>Melampsora populnea</i>	<i>Populus tremula</i>	Aspen
<i>Melampsora populnea</i>	<i>Mercurialis perennis</i>	Dog's Mercury
<i>Melampsorella symphyti</i>	<i>Symphytum officinale</i>	Comfrey
<i>Melampsorium betulinum</i>	<i>Alnus glutinosa</i>	Alder
<i>Phragmidium fragariae</i>	<i>Potentilla sterilis</i>	Barren Strawberry
<i>Phragmidium mucronatum</i>	<i>Rosa canina</i> agg.	Dog Rose
<i>Phragmidium rosae-pimpinellifoliae</i>	<i>Rosa pimpinellifolia</i>	Burnet Rose
<i>Phragmidium rubi-idaei</i>	<i>Rubus</i> sp.	Raspberry
<i>Phragmidium sanguisorbae</i>	<i>Sanguisorba minor</i>	Salad Burnet
<i>Physoderma menthae</i>	<i>Mentha aquatica</i>	Water Mint
<i>Physoderma menthae</i>	<i>Mentha</i> sp.	Mint
<i>Puccinia aegopodii</i>	<i>Aegopodium podagraria</i>	Ground Elder
<i>Puccinia allii</i>	<i>Allium sativum</i>	Garlic
<i>Puccinia annularis</i>	<i>Teucrium scorodonia</i>	Wood Sage
<i>Puccinia antirrhini</i>	<i>Antirrhinum</i> sp.	Snapdragon
<i>Puccinia arenariae</i>	<i>Silene dioica</i>	Red Campion
<i>Puccinia arenariae</i>	<i>Stellaria holostea</i>	Greater Stitchwort
<i>Puccinia betonicae</i>	<i>Stachys officinalis</i>	Betony
<i>Puccinia brachypodii</i>	<i>Arrhenatherum elatius</i>	False Oat-grass
<i>Puccinia chrysosplenii</i>	<i>Chrysosplenium oppositifolium</i>	Opposite-leaved Golden Saxifrage
<i>Puccinia circaeae</i>	<i>Circaea lutetiana</i>	Enchanter's-nightshade
<i>Puccinia cnici</i>	<i>Cirsium vulgare</i>	Spear Thistle
<i>Puccinia coronata</i>	<i>Holcus mollis</i>	Creeping Soft-grass
<i>Puccinia coronata</i>	<i>Frangula alnus</i>	Alder Buckthorn
<i>Puccinia glechomatis</i>	<i>Glechoma hederacea</i>	Ground Ivy



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<i>Puccinia graminis</i>	<i>Berberis vulgaris</i>	Berberis
<i>Puccinia graminis</i>	<i>Dactylis glomerata</i>	Cock's-foot
<i>Puccinia graminis</i>	<i>Mahonia aquifolium</i>	Oregon grape
<i>Puccinia hieracii</i>	<i>Leontodon hispidus</i>	Rough Hawkbit
<i>Puccinia holcina</i>	<i>Holcus lanatus</i>	Yorkshire-fog
<i>Puccinia iridis</i>	<i>Iris foetidissima</i>	Stinking iris
<i>Puccinia lagenophorae</i>	<i>Senecio vulgaris</i>	Groundsel
<i>Puccinia lapsanae</i>	<i>Lapsana communis</i>	Nipplewort
<i>Puccinia malvacearum</i>	<i>Malva sylvestris</i>	Common Mallow
<i>Puccinia malvacearum</i>	<i>Malva neglecta</i>	Dwarf Mallow
<i>Puccinia malvacearum</i>	<i>Malva moschata</i>	Musk Mallow
<i>Puccinia menthae</i>	<i>Origanum vulgare</i>	Marjoram
<i>Puccinia nitida</i>	<i>Aethusa cynapium</i>	Fool's parsley
<i>Puccinia obscura</i>	<i>Bellis perennis</i>	Daisy
<i>Puccinia phragmitis</i>	<i>Rumex acetosa</i>	Common Sorrel
<i>Puccinia polygoni-amphibii</i>	<i>Persicaria amphibia</i>	Amphibious Bistort
<i>Puccinia pulverulenta</i>	<i>Epilobium hirsutum</i>	Greater Willowherb
<i>Puccinia pulverulenta</i>	<i>Epilobium montanum</i>	Broad-leaved Willow-herb
<i>Puccinia punctata</i>	<i>Galium mollugo</i>	Hedge Bedstraw
<i>Puccinia punctiformis</i>	<i>Cirsium arvense</i>	Creeping Thistle
<i>Puccinia sessilis</i>	<i>Allium ursinum</i>	Ramsons
<i>Puccinia sessilis</i>	<i>Arum maculatum</i>	Lords and Ladies
<i>Puccinia smyrnii</i>	<i>Smyrnum olusatrum</i>	Alexanders
<i>Puccinia urticata</i>	<i>Urtica dioica</i>	Common Nettle
<i>Puccinia variabilis</i>	<i>Taraxacum officinale</i> agg.	Dandelion
<i>Puccinia veronicae</i>	<i>Veronica montana</i>	Wood Speedwell
<i>Puccinia vincae</i>	<i>Vinca major</i>	Greater Periwinkle
<i>Puccinia violae</i>	<i>Viola riviniana</i>	Common Dog-Violet
<i>Puccinia violae</i>	<i>Viola hirta</i>	Hairy Violet
<i>Pucciniastrum agrimoniae</i>	<i>Agrimonia eupatoria</i>	Agrimony

<i>Tranzschelia discolor</i>	<i>Prunus domestica</i>	Damson
<i>Tranzschelia discolor</i>	<i>Prunus domestica</i>	Plum (Victoria)
<i>Triphragmium ulmariae</i>	<i>Filipendula ulmaria</i>	Meadowsweet
<i>Uromyces dactylidis</i>	<i>Ficaria verna</i>	Lesser Celandine
<i>Uromyces dactylidis</i>	<i>Ranunculus repens</i>	Creeping Buttercup
<i>Uromyces dianthi</i>	<i>Dianthus barbatus</i>	Sweet William
<i>Uromyces fallens</i>	<i>Trifolium pratense</i>	Red Clover
<i>Uromyces ficariae</i>	<i>Ficaria verna</i>	Lesser Celandine
<i>Uromyces geranii</i>	<i>Geranium pyrenaicum</i>	Hedgerow Cranesbill
<i>Uromyces geranii</i>	<i>Geranium pratense</i>	Meadow Cranesbill
<i>Uromyces muscari</i>	<i>Hyacinthoides non-scripta</i>	Bluebell
<i>Uromyces pisi-sativi</i>	<i>Cytisus</i> sp..	Broom
<i>Uromyces trifolii</i>	<i>Trifolium repens</i>	White Clover
<i>Uromyces viciae-fabae</i>	<i>Vicia sativa</i>	Common Vetch
<i>Uromyces viciae-fabae</i>	<i>Vicia faba</i>	Broad Bean
<i>Uromyces viciae-fabae</i>	<i>Vicia sepium</i>	Bush Vetch
<i>Xenodochus carbonarius</i>	<i>Sanguisorba officinalis</i>	Great Burnet
Species yet to identified		
	<i>Calystegia</i> sp.	Bindweed
	<i>Rumex obtusifolius</i>	Broad-leaved Dock
	<i>Tussilago farfara</i>	Coltsfoot
	<i>Hemerocallis</i> sp.	Day Lily
	<i>Bromus ramosus</i>	Hairy Brome
	<i>Campanula rotundifolia</i>	Harebell
	<i>Alopecurus pratensis</i>	Meadow Foxtail
	<i>Pilosella officinarum</i>	Mouse-ear Hawkweed
	<i>Quercus</i> sp.	Oak
	<i>Carex pendula</i>	Pendulous Sedge
	<i>Beta vulgaris</i>	Ruby Chard
	<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass
	<i>Deschampsia cespitosa</i>	Tufted Hair-grass

	<i>Melica uniflora</i>	Wood Melick
	<i>Allium</i> sp.	Chives
	<i>Lotus corniculatus</i>	Common Bird's-foot Trefoil
	<i>Centaurea nigra</i>	Common Knapweed
	<i>Rosa arvensis</i>	Field Rose
	<i>Phaseolus vulgaris</i>	French Bean
	<i>Festuca gigantea</i>	Giant Fescue
	<i>Oxalis</i> sp.	Oxalis
	<i>Campanula persicifolia</i>	Peach-leaved Bellflower
	<i>Sonchus arvensis</i>	Perennial Sow- thistle
	<i>Rosa</i> sp.	Rose
	<i>Phaseolus coccineus</i>	Runner Bean
Ustilaginales (Smuts)		
<i>Entyloma calendulae</i>	<i>Calendula officinalis</i>	Marigold
<i>Entyloma ficariae</i>	<i>Ficaria verna</i>	Lesser Celandine
<i>Entyloma ranunculi- repentis</i>	<i>Ranunculus auricomus</i>	Goldilocks Buttercup
<i>Ustilago avenae</i>	<i>Arrhenatherum elatius</i>	False Oat- grass
<i>Urocystis violae</i>	<i>Viola riviniana</i>	Common Dog- Violet
<i>Microbotryum violaceum</i>	<i>Ficaria verna</i>	Red Champion
<i>Microbotryum violaceum</i>	<i>Silene latifolia</i>	White Champion
Peronosporaceae (Downy Mildews)		
<i>Hyaloperonospora niessleana</i>	<i>Alliaria petiolata</i>	Garlic Mustard
<i>Peronospora alta</i>	<i>Plantago major</i>	Greater Plantain
<i>Plasmoverna pygmaea</i>	<i>Anemone nemorosa</i>	Wood Anemone
Albuginaceaea (White Blister-rusts)		
<i>Albugo candida</i>	<i>Arabis caucasica</i>	Garden Arabis
<i>Albugo candida</i>	<i>Lunaria annua</i>	Honesty
<i>Albugo leimonica</i>	<i>Cardamine hirsuta</i>	Hairy Bittercress
<i>Albugo leimonica</i>	<i>Cardamine pratensis</i>	Lady's Smock
<i>Pustula obtusata</i>	<i>Tragopogon pratensis</i>	Goatsbeard
<i>Pustula obtusata</i>	<i>Senecio vulgaris</i>	Groundsel

Recorders
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