Wyre Forest Yew Fogging Project 2018

ROSEMARY WINNALL

In 2015 Natural England (NE) sampled the arthropods of three oak trees in the Wyre Forest using the technique of fogging. Many invertebrates were collected and identified, and this was written up in the Wyre Forest Study Group REVIEW 2016 https://wyreforest.net/wp-content/uploads/Forest_Articles/2016-Wyre-Forest-Oak-Fogging-Project-Copy_optimize.pdf

In the summer of 2018, the technique was used again, this time on two Wyre Forest Yew trees, both in Forestry Commission (FC) woodland, one in Worcestershire (VC37) on 15th June 2018 and one in Shropshire (VC40) on 26th July 2018. The technique involves choosing a clear, still, dry dawn to operate a powered hand-held machine (PulsFO K-10-SP portable thermal fogger) to blow an insecticide mist (10% solution of Permethrin) up into the canopy. The invertebrates are collected below on pre-erected tarpaulins.

Alice James, with Mick Blythe and Rosemary Winnall, chose Yew trees to fog which were easily accessible from forest tracks and which had flat ground beneath on which to erect the tarpaulins suspended from frames. One was chosen in New Parks, Worcestershire SO7489 7648, and one in Wimperhill SO7312 7655 on the Shropshire side of the Forest. The latter was actually

Yew Tree 1. New Parks, Worcestershire Rosemary Winnall

Yew Trees 2. Wimperhill, Shropshire Rosemary Winnall

two Yew trees growing close together but effectively there was one joined canopy.

Tree 1 was successfully fogged at dawn on 15th June 2018. But on 25th July 2018, when fogging had just started on Tree 2, the fogger suddenly caught fire and Alice had to make a very hasty retreat. As a result, not many invertebrates were gathered from that tree. As the fogger had to be sent away for repair in Germany, there was no opportunity for another attempt that year.

Alice James carefully collected the specimens from the tarpaulins using a paint brush and Mick Blythe sorted the catch, commenting that when he'd undertaken this with specimens from the oak trees in 2015, he was able to sort all the specimens into their taxonomic groups. But the Yew tree catch was a fine sludge of tiny creatures, so this was quite impracticable. He took batches and sorted half carefully in isopropanol, and collected only the larger specimens, notably spiders and beetles, from the other half. He noted:

"There were large numbers of parasitic hymenoptera, overwhelmingly Chalcidoidea, with a wide range of species, and more of the larger Parasitica in the second sample. There was a huge population of Psocoptera

Tree 1, tarpaulins erected and Alice James preparing the fogger Natural England

Tree 1, view of fogging taken from a 'drone' Natural England

comprising a limited number of species. A large proportion of the sample was made up of psocopteran nymphs. There were relatively few true Hemiptera, mostly a limited number of species of Heteroptera and their nymphs. Few aphidoids were found but there were some bulky Homoptera species.

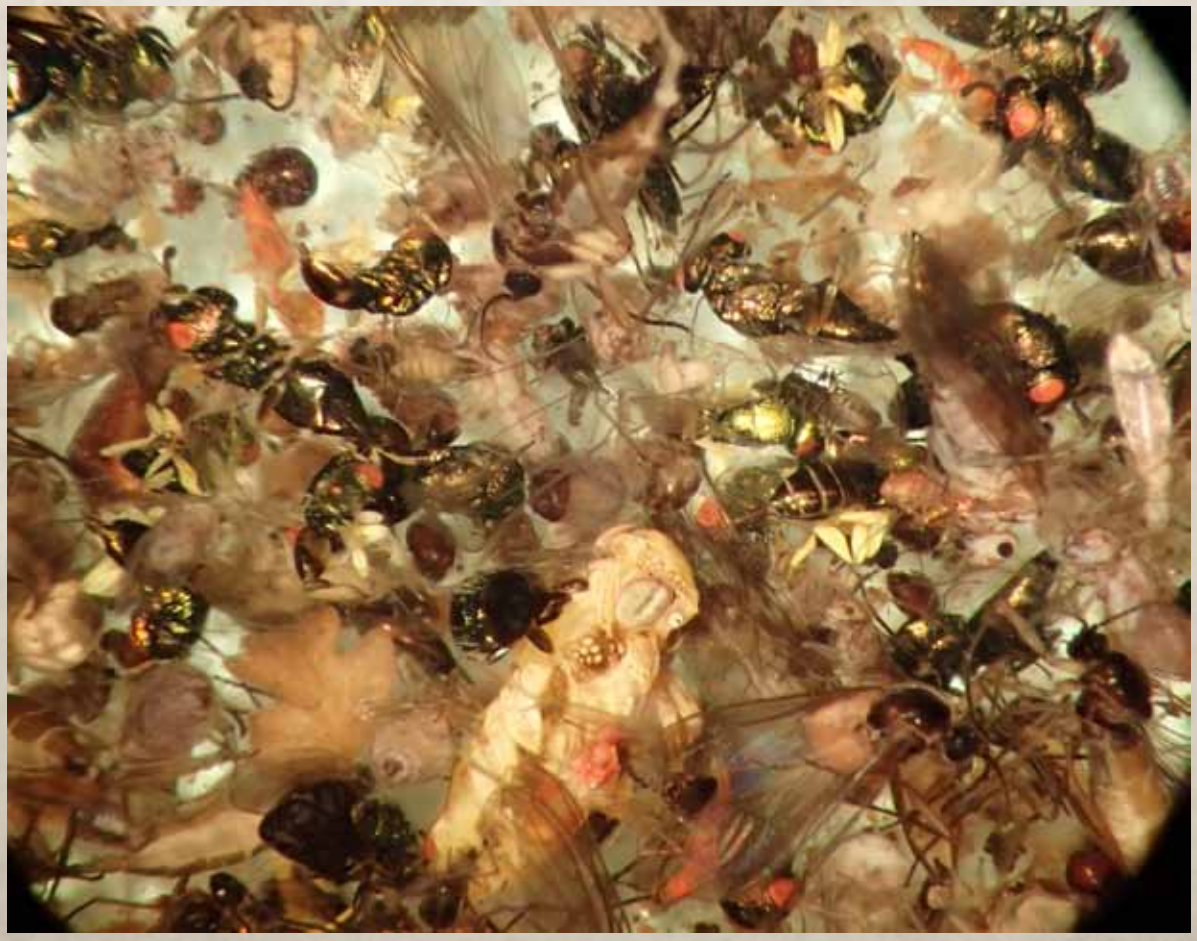
Diptera present included extremely large populations of biting midges (Ceratopogonidae, including Culicoides, Forcipomyia, Stilobezzia and Dasyhelea). Sciaridae were also abundant. There were significant numbers of Empidoidea (particularly *Rhamphomyia longipes*, *Bicellaria* and *Sciapus*) but with a very small species range. Phoridae and Anisopodidae (*Sylvicola*) were also quite abundant. The Ceratopogonidae (Biting Midges) were present in the samples in amazing numbers, quite beyond coping, particularly as the males must be dissected for identification. Chironomidae (non-biting midges) were present in unusually small numbers. Some Calyptrata and Mycetophilidae were in the catch but there were relatively few Tipuloidea. Psychodidae (Moth-flies) were in low single figures.

Beetles were quite numerous, but they were predominantly small brown Staphylinidae, at first glance all the same species. Spiders were present in good numbers and apparently with a range of species. A few harvestmen were noted and vast numbers of mites, mostly oribatids (Cryptostigmata), but some Mesostigmata and even Astigmata were also noticed. A small number of ticks were found."

We were privileged to have local willing experts to help with the identification and their results are noted below. Records have been sent to the Worcestershire Biological Records Centre, and a full report has been submitted to Natural England.

Caddisflies – Dr Martin Skirrow

Caddisflies	Tree 1	Tree 2
Hydropsyche instabilis	1m, 1f	0
Hydropsyche pellucidula	1f	0
Limnephilus affinis	1m	0
Limnephilus auricula	1m	0
Limnephilus centralis	2m, 1f	0
Limnephilus sparsus	12m, 8f	0



Microscope view of part of the catch — Rosemary Winnall

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Thrips - Dr Martin Skirrow

Thrips	Tree 1	Tree 2
Limothrips cerealium Grain Thrips	1f	49f
Oxythrips ajugae	1f	
Thrips sp.	1f	2f
Phlaeothripidae sp.(damaged)	1f	
Limothrips denticornis		8f
Thrips major		2f
Thripidae sp. (damaged or unspeciated)		3f

Dr Martin Skirrow comments:

It is striking that all thrips but one are grass- or flower-dwelling Thripidae species; and there was just the one Phlaeothripid species (fungus-feeding thrips), which were so dominant in the oak fogging project. This suggests that yew dead wood and twigs were not being utilised by thrips.

The sharp difference between the catch of thrips on the two dates, and the predominance of the common grass-dwelling species *Limothrips cerealium* and *L. denticornis*, could be explained by the movement of females of *L. cerealium* as described by Kirk (1996): "Adult females migrate from cereal fields in July and August when the plant water content drops below about 45%, possibly because it is then difficult for them to feed. The thrips fly by day when the air temperature is above 20°C." ..... "A migrating thrips seeks out a small crevice in which to spend the winter. It prefers a crevice about 300 µm wide, but thrips manage to penetrate gaps that are as little as 50 µm wide." The timing of such an uplift event is consistent with the weather conditions. If you remember, June was cool until the end of the month but then we got hot dry weather running into July, which could have dried the cereals and prompted the migration. Dom Collins points out that these recognised uplifts of *L. cerealium* often result in windborne deposit on a non-host, which is probably what we are seeing here. But I wonder whether the somewhat scaly bark of a yew provides good shelter for thrips and that the thrips were utilising such crevices. The few other species of thrips were probably casual occurrences.

Collembola - Dr Martin Skirrow

Collembola	Tree 1	Tree 2
Entomobrya nivalis	13	5
Entomobrya albocincta	11	2
Xenylla grisea		6
Immature Poduromorpha		1

All three species are common and widespread. *Entomobrya nivalis* can be beaten from flowers and branches of trees and bushes and *E. albocincta* is found under bark and associated with dead wood. *Xenylla grisea* (identity confirmed by Peter Shaw) is found under bark and amongst leaf litter and organic debris.

Neuroptera - Dr Martin Skirrow

Neuroptera	Tree 1	Tree 2
Coniopteryx pygmaea	1m	10m
Coniopteryx sp.	11f	13f
Coniopteryx borealis		1m
Brown Lacewing (unid'd)	1f	

Coniopteryx borealis is common and widespread throughout Britain and Colin Plant found it plentiful at Lodgehill in the 1980s. *C. pygmaea* is also widespread but local and scarce. Colin Plant recorded it in 1984 in a light trap at approx. SO755755.

Other invertebrates - Gary Farmer

Scorpion Flies – 9 male *Panorpa germanica* and 2 male *Panorpa communis*

Woodlice - 1 adult and 40+ juveniles *Porcellio scaber*

Spiders - John Partridge

Aranaea	Tree 1
Philodromus collinus	15m, 1f
Tetragnatha obtusa	3m, 6f
Neriene peltata	5m, 13f
Platnickina tincta	14m, 7f
Clubiona comta	1m, 1f
Theridion mystaceum	1m, 1f
Dicranopalpus ramosus	1
Harpactea hombergi	1m
Erigone atra	1m
Achaearanea lunata	7m, 1f
Trematocephalus cristatus	3f
Cyclosa conica	1m
Paidiscura pallens	7f

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Neriene montana	2f
Achaearanea tepidariorum	1f
Hypomma cornutum	1f
Tetragnatha montana	14m, 9f
Theridion varians	1m
Zilla diodia	1f

John Partridge reported that *Philodromus collinus* was new to Worcestershire (and is uncommonly found in southern and eastern England). This is known to occur on branches of evergreen trees, especially pine and yew, and Wyre is on the edge of its range. *Trematocephalus cristatus* (hole in the head spider) Nationally Scarce was pleasing to find – he'd recorded one other a few years ago which he'd collected low down in scrub, and the Wyre Forest Study Group had recorded one in Wimperhill on 9th May 2015.

Beetles - Caroline Uff (with Clive Washington)

Coleoptera		Tree 1	Tree 2
Cantharidae	*Cantharis pellucida*	1	
Cantharidae	*Malthinus seriepunctatus*	2	
Cantharidae	*Malthodes pumilis*	1	
Cantharidae	*Rhagonycha lignosa*	2	
Carabidae	*Calodromius spilotus*		2
Carabidae	*Dromius agilis*	3	
Carabidae	*Dromius quadrimaculatus*	41	2
Chrysomelidae	*Aphthona atrocaerula*	2m	
Chrysomelidae	*Bruchidius varius*	1m	
Chrysomelidae	*Bruchus rufimanus*		1f
Chrysomelidae	*Phratora laticollis*	1f	
Ciidae	*Ennearthron cornutum*		1
Coccinellidae	*Aphidecta obliterata*	2	
Coccinellidae	*Harmonia axyridis*	1	
Coccinellidae	*Stethorus pusillus*	1	
Elateridae	*Agriotes pallidulus*	1	
Elateridae	*Athous haemorrhoidalis*	12	
Elateridae	*Dalopius marginatus*	1	
Elateridae	*Melanotus castanipes*	1	
Latridiidae	*Cartodere nodifer*	2	
Latridiidae	*Cortinicara gibbosa*	5	
Latridiidae	*Cortinicara gibbosa*	4	
Ptiliidae	*Ptenidium nitidum*		1
Scraptiidae	*Anaspis frontalis*	2f	
Scraptiidae	*Anaspis maculata*	2	
Staphylinidae	*Atheta nidicola*	1	
Staphylinidae	*Hapalaraea pygmaea*	1	
Staphylinidae	*Leptusa fumida*	6	
Staphylinidae	*Leptusa ruficollis*	241	2
Tenebrionidae	*Isomira murina*	3m/f	
Tenebrionidae	*Nalassus laevioctostriatus*	83	14

Caroline Uff mentioned that it was of interest to find so many *Nalassus laevioctostriatus* beetles in the samples; the WFSG usually see these in large numbers on tree trunks on night walks in the Forest. The seed beetle *Bruchidius varius* was of note as there are not many UK records and Wyre is right on the edge of its range. It is probably associated with Red Clover growing nearby along the railway line. The tiny Dot Ladybird *Stethorus pusillus* is not easily recorded due to its small size - a maximum of 1.5mm. It feeds on spider mites and small aphids.

Bugs - Kieth Fowler

Hemiptera		Tree 1	Tree 2
Anthocoridae	*Cardiastethus fasciiventris*	81	
Aphrophoridae	*Aphrophora alni*	1m	
Cicadellidae	*Iassus lanio*	1	
Issidae	*Issus coleoptratus*	58	4
Microphysidae	*Loricula elegantula*	8m	1f
Microphysidae	*Loricula pselaphiformis*	1m	
Microphysidae	*Myrmedobia coleoptrata*	6m	
Microphysidae	*Myrmedobia distinguenda*	1f	1f
Miridae	*Phylus melanocephalus*	2m	

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Miridae	*Pinalitus cervinus*	1f	
Miridae	*Parapsallus vitellinus*	11m/f	
Miridae	*Psallus perrisi*	2m	
Pentatomidae	*Palomena prasina*	15	
Psyllidae	*Cacopsylla melanoneura*	4m	
Psyllidae	*Chamaepsylla hartigii*	1f	
Reduviidae	*Empicoris baerensprungi*	1	
Psocoptera			
Caeciliusidae	*Enderleinella obsoleta*	28	
Caeciliusidae	*Epicaecilius pilipennis*	2	
Caeciliusidae	*Valenzuela burmeisteri*	9	19
Caeciliusidae	*Valenzuela flavidus*		1
Ectopsocidae	*Ectopsocus briggsi*	7	1f
Ectopsocidae	*Ectopsocus petersi*	4	1m
Elipsocidae	*Elipsocus abdominalis*		2
Elipsocidae	*Elipsocus hyalinus*		1
Lachesillidae	*Lachesilla pedicularia*	19	
Lepidopsocidae	*Pteroxanium kelloggi*	1	
Mesopsocidae	*Mesopsocus immunis*	3f	
Mesopsocidae	*Mesopsocus unipunctatus*	1m	
Peripsocidae	*Peripsocus didymus*	1m	
Peripsocidae	*Peripsocus subfasciatus*	792	6f
Philotarsidae	*Philotarsus parviceps*	10m	
Philotarsidae	*Philotarsus picicornis*		10
Psocidae	*Atlantopsocus adustus*	4m	1m
Psocidae	*Loensia fasciata*	25	1m
Psocidae	*Metylophorus nebulosus*		2m, 5f
Psocidae	*Psococerastis gibbosa*		1m, 4f
Psocidae	*Trichadenotecnum sexpunctatum*		2m, 4f
Stenopsocidae	*Graphopsocus cruciatus*	28	6
Stenopsocidae	*Stenopsocus immaculatus*	10	
Trichopsocidae	*Trichopsocus brincki*	92	568
Trichopsocidae	*Trichopsocus dalii*	1	
Trogiidae	*Cerobasis guestfalica*	1	3

Keith Fowler reported that he was interested to see such an excellent selection of Psocoptera but a poor return of Hemiptera. *Empicoris baerensprungi* was a new species for him, and *Myrmedobia distinguenda* was only the second VC40 record. He noted that there were large numbers of nymphs and another fogging a little later in the summer would provide more identifiable adults. He was pleased to identify several species of Microphysidae which are difficult to obtain by conventional means.

Diptera – Mick Blythe

Diptera - Tree 1		M	F
Agromyzidae	*Phytomyza ranunculi*	5	8
Agromyzidae	*Phytomyza spp*	3	15
Anisopodidae	*Sylvicola cinctus*	31	203
Asilidae	*Dioctria linearis*	2	4
Bibionidae	*Bibio nigriventris*	1	
Calliphoridae	*Lucilia caesar*		1
Calliphoridae	*Lucilia ampullacea*	1	1
Ceratopogonidae	*Allohelea tesselata*	1	1
Ceratopogonidae	*Atrichopogon sp*		1
Ceratopogonidae	*Bezzia pygmaea*	1	
Ceratopogonidae	*Ceratopogon* sp		1
Ceratopogonidae	*Culicoides festivipennis*	1	
Ceratopogonidae	*Culicoides obsoletus*	1	
Ceratopogonidae	*Culicoides obsoletus gp*		1
Ceratopogonidae	*Culicoides subfasciipennis*	1	
Ceratopogonidae	*Culicoides tbilisicus*	1	

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Ceratopogonidae	*Dasyhelea calycata*	2	
Ceratopogonidae	*Dasyhelea lucida*	1	
Ceratopogonidae	*Forcipomyia costata*	1	
Ceratopogonidae	*Forcipomyia tenuis*	1	
Ceratopogonidae	*Forcipomyia titillans*	1	
Ceratopogonidae	*Kolenohelea sharpi*	1	3
Ceratopogonidae	*Palpomyia distincta*		1
Ceratopogonidae	*Serromyia femorata*		1
Ceratopogonidae	*Serromyia morio*		1
Ceratopogonidae	*Stilobezzia ochracea*	2	5
Chloropidae	*Chlorops speciosus*	1	
Chloropidae	*Conioscinella frontella*	5	17
Chloropidae	*Conioscinella gallarum*		18
Chloropidae	*Gaurax flavomaculatus*		1
Chloropidae	*Neohaplegis tarsata*		3
Chloropidae	*Tricimba cincta*		6
Culicidae	*Ochlerotatus sp*		1
Dolichopodidae	*Chrysotimus flaviventris*	5	3
Dolichopodidae	*Chrysotus gramineus*	11	12
Dolichopodidae	*Chrysotus obscuripes*	1	
Dolichopodidae	*Dolichopus ungulatus*	1	
Dolichopodidae	*Gymnopternus cupreus*		1
Dolichopodidae	*Medetera sp*		1
Dolichopodidae	*Neurigona pallida*		2
Dolichopodidae	*Poecilobothrus nobilitatus*	1	1
Dolichopodidae	*Sciapus platypterus*	16	40
Drosophilidae	*Amiota basdeni*		1
Drosophilidae	*Lordiphosa andalusiaca*	1	
Drosophilidae	*Scaptomyza pallida*		1
Drosophilidae	*Stegana similis*	2	
Empididae	*Empis aestiva*	7	19
Empididae	*Empis grisea*	6	7
Empididae	*Empis stercorea*	1	
Empididae	*Hilara galactoptera*	1	1
Empididae	*Hilara griseifrons*	1	1
Empididae	*Hilara intermedia*		1
Empididae	*Hilara interstincta*	1	4
Empididae	*Hilara lurida*	1	1
Empididae	*Hilara manicata*	1	
Empididae	*Hilara medeteriformis*	1	1
Empididae	*Hilara rejecta*	3	
Empididae	*Phyllodromia melanocephala*	3	18
Empididae	*Rhamphomyia flava*	1	
Empididae	*Rhamphomyia longipes*	325	302
Empididae	*Trichopeza longicornis*	6	4
Ephydridae	*Hyadina guttata*	1	
Ephydridae	*Scatella tenuicosta*		1
Heleomyzidae	*Heteromyza oculata*	2	3
Heleomyzidae	*Heteromyza rotundicornis*	2	1
Heleomyzidae	*Tephrochlamys rufiventris*	1	
Heleomyzidae	*Tephrochlamys tarsalis*	1	
Hybotidae	*Bicellaria intermedia*	97	130
Hybotidae	*Bicellaria nigra*	12	21
Hybotidae	*Bicellaria vana*	2	
Hybotidae	*Euthyneura myrtilli*		2
Hybotidae	*Hybos culiciformis*	4	1
Hybotidae	*Leptopeza flavipes*	2	1
Hybotidae	*Oedalea holmgreni*	7	5
Hybotidae	*Oedalea stigmatella*	1	2
Hybotidae	*Oedalea zetterstedtii*	2	6
Hybotidae	*Platypalpus cothurnatus*	1	1
Hybotidae	*Platypalpus longicornis*	1	1
Hybotidae	*Platypalpus luteus*		5
Hybotidae	*Platypalpus optivus*		1
Hybotidae	*Platypalpus pectoralis*	1	
Hybotidae	*Platypalpus pseudociliaris*		1
Hybotidae	*Platypalpus rapidus*	1	4
Hybotidae	*Tachypeza nubila*	1	3
Hybotidae	*Trichina elongata*		3
Lauxaniidae	*Calliopum aeneum*	2	2
Lauxaniidae	*Meiosimyza platycephala*	2	16
Lauxaniidae	*Pseudolyciella pallidiventris*	2	
:Lauxaniidae	*Pseudolyciella subpallidiventris*	1	

Lauxaniidae	*Pseudolyciella spp*		7
Lauxaniidae	*Sapromyza albiceps*	1	
Lauxaniidae	*Sapromyza hyalinata*	6	4
Limoniidae	*Austrolimnophila ochracea*	4	3
Limoniidae	*Dicranomyia* (damaged)		4
Limoniidae	*Dicranomyia chorea*	1	
Limoniidae	*Ellipteroides lateralis*		4
Limoniidae	*Erioptera lutea*	1	3
Limoniidae	*Limonia nubeculosa*		2
Limoniidae	*Neolimnophila carteri*	1	
Limoniidae	*Neolimonia dumetorum*	2	3
Limoniidae	*Ormosia nodulosa*	14	13
Limoniidae	*Phylidorea fulvonervosa*		3
Limoniidae	*Rhipidia maculata*	2	1
Milichiidae	*Phyllomyza securicornis*	1	2
Psilidae	*Loxocera ichneumonea*	1	
Rhagionidae	*Chrysopilus cristatus*		4
Rhagionidae	*Rhagio lineola*	1	
Rhagionidae	*Rhagio scolopaceus*	1	1
Sarcophagidae	*Sarcophaga sp*		1
Scatopsidae	*Anapausis soluta*	1	
Scatopsidae	*Efcookella albitarsis*	1	2
Sciomyzidae	*Pherbellia dubia*		3
Sciomyzidae	*Pherbellia scutellaris*	1	
Stratiomyidae	*Beris vallata*	1	2
Stratiomyidae	*Microchrysa polita*		1
Stratiomyidae	*Oxycera terminata*		1
Syrphidae	*Criorhina berberina*	1	1
Syrphidae	*Epistrophe eligans*		1
Syrphidae	*Xylota segnis*	5	
Tachinidae	*Admontia maculisquama*	1	1
Tachinidae	*Campylocheta inepta*	2	
Tachinidae	*Carcelia bombylans*	3	3
Tachinidae	*Drino lota*		1
Tephritidae	*Tephritis formosa*	1	
Tipulidae	*Nephrotoma quadrifaria*		3
Tipulidae	*Tipula scripta*	1	2

Key to highlighted Diptera text.	New to the UK		
	Nationally special		
	New to Worcs.		
	No records in NBN		

Mick Blythe reported that he had never seen ceratopogonids in such numbers and wondered whether this was due to the close proximity of the Great Bog, or whether these little flies were feeding on the Yew needles, or just using the canopy for cover.

A fly of particular note was *Forcipomyia (Forcipomyia) tenuis* (Winnerts, 1852) not previously recorded from the UK. Mick identified this from the paper by Remm (1962a) and Professor Ryszard Szadziewski of the University of Gdansk kindly confirmed his identification. Seven other fly species were new to Worcestershire and others had notable UK status.

Conclusions

The sampling of arthropods by fogging these Yew tree canopies has provided many valuable records which cannot easily be obtained by other methods. Some results were surprising and have provided a new insight into this treetop habitat.

It was unfortunate that the Shropshire Yew canopy was not fogged successfully due to the fire, and it would be good to undertake this again in the future.

The Wyre Forest Study Group would like to thank Alice James from Natural England for setting up this survey and providing local recorders with the opportunity to check specimens. We are grateful to Mick Blythe who sorted the catch and identified many flies. Caroline Uff willingly checked the beetles (with help from Clive Washington for the small staphylinids) and Keith Fowler identified the bugs although it was unfortunate that these Shropshire recorders had only a small number of VC40 specimens to look at. John Partridge was pleased to look at the spiders and harvestmen from this habitat and Gary Farmer checked out the Scorpion Flies and Woodlice. Martin Skirrow did a wonderful job taking on the tiny thrips, springtails, lacewings and caddisflies and spent many hours at the microscope. There were some groups which we were not able to identify and these included the many parasitic hymenoptera (which were sent to the Natural History Museum), the mites, ticks, aphids and some fly genera.

This was a most interesting survey providing a tantalising insight into life in the Yew canopy.