OUSEBURN FARM

BUTTERFLY & DRAGONFLY

SURVEY, 2023

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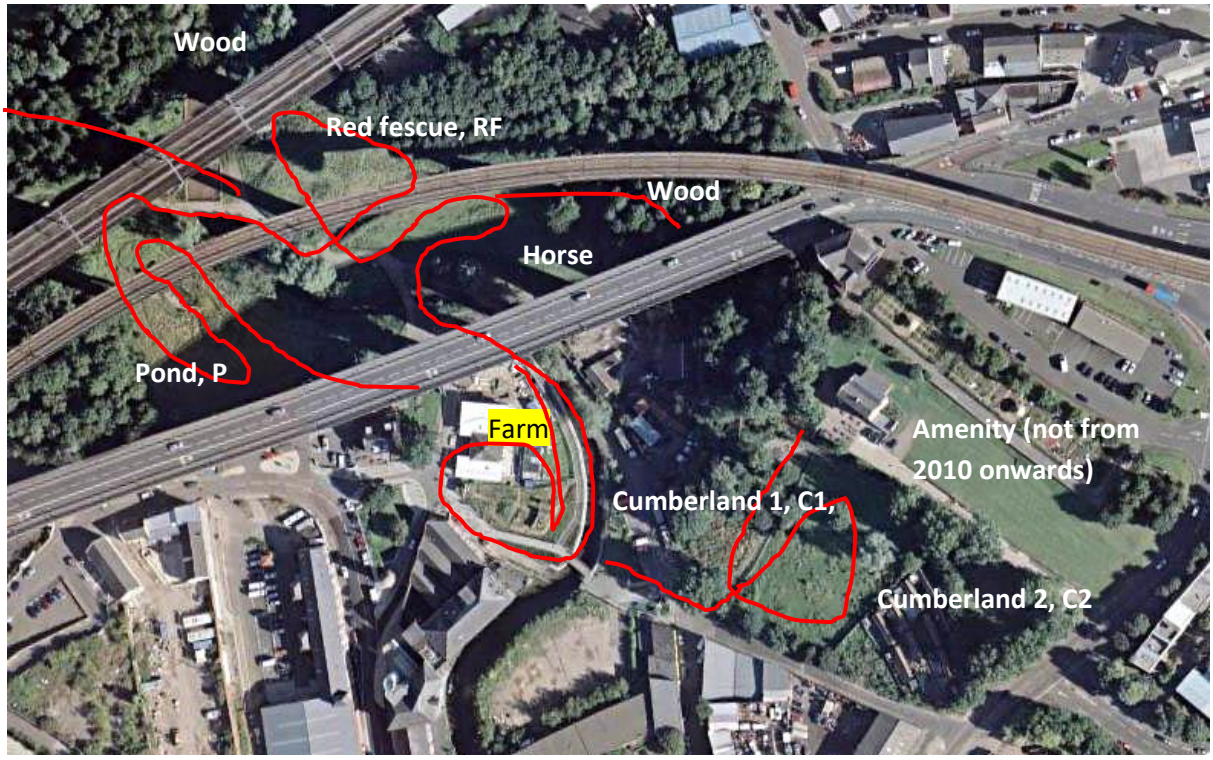
2023

Ouseburn Farm Butterfly, dragonfly and damselfly summary report 2023.

Butterflies, dragonflies and damselflies in and around the Ouseburn Farm were surveyed regularly in 2023, from late spring through to early autumn.

Similar surveys have been carried out in 2006 to 2022 (Jeffries, 2006 - 2022), making the 2023 survey the eighteenth survey since the farm re-opened. In 2023 twenty-eight walks were carried out, the first on the 19th March, the last on the 26th September. The surveys covered the pond meadow, red fescue meadow, farm grounds, horse meadow, woodland path from the horse meadow through to the Cumberland Arms, the old orchard, and the meadow below the Cumberland Arms (see map, Figure 1). Surveys were carried out where possible on warm, sunny days. The meadow below the Cumberland was not walked on all survey dates in 2023 because of horses in the field so the absence of records for some species from this patch is likely to reflect under-recording

Figure 1. The Farm environs, meadows and butterfly recording walk. The red line shows the approximate route used in 2023. The names used for each field are shown.



Butterflies were recorded by walking slowly and noting species seen to either side in front, although this was not so rigorously enforced as the formal national butterfly recording transect scheme walks and quite often butterflies would be followed to check identity. Nonetheless the technique has been consistent on the farm since 2006. Within the Farm the cabbage plants were searched for eggs and caterpillars of white butterflies. Numbers of Burnet moths and dragonflies and damselflies were also counted. The vegetation around the pond was searched for dragonfly exuviae too. Exuviae are the cast skins left behind when the adult emerges from the final larval stage. By counting up the cumulative numbers of new exuviae you get a minimum estimate of the numbers of adults that have hatched from a site.

In addition the main pond in the Orchard (= pond meadow) was used for pond dipping on several occasions, for example with Hotspur School, Northumbria University undergraduates and the Ouseburn Festival. The animals recorded were used to rate the quality of the pond using the Big Pond Dip, a citizen science tool devised by the Freshwater Habitat Trust (Freshwater Habitats Trust, n.d.). This uses the same scoring system as the older OPAL water quality survey (Imperial College, n.d.) used previously on the pond, (summarised Jeffries, 2020b) allowing easy comparison. In both 2010 and 2018 the pond scored as "Very healthy" (OPAL category, = "Brilliant" in Big Pond Dip). The pond had been largely cleared of choking vegetation in the first week of October 2021.

Results.

Butterfly species richness.

Only twelve species of butterfly were recorded in 2023, compared to sixteen in 2022, fourteen in 2020, 2019 and 2018 and sixteen in 2017 (2021 is omitted for comparison due to the absence of surveys June – September). Not only is the overall number of species down on previous years but some previously regular species were not found, notably the small and large skippers. Cain, from *Wild Intrigue*, did spot a small skipper at the Ouseburn Garden, a venue just over the road from the Pond meadow, so they are still present in the valley.

The overall number of individuals across all species also suggests a decline. In 2023 a total of 285 butterflies were counted during 28 visits. This compares to 570 from 32 visits in 2015 and 456 from 26 visits in 2008; 2008 and 2015 are used for comparison as the first year all meadows were surveyed throughout the season and as a half-way point respectively.

The numbers of individuals of each species fluctuate between the years. Table 1 shows the highest counts made on any visit, from 2008 to 2023.

Table 1. The highest counts of selected butterflies made on any single site visit between 2008 and 2013- 2023, in any meadow (no counts were made in June through to August 2021 so this year is omitted). In all years the counts were made on a weekly basis from spring to early autumn, on sunny days so should be broadly comparable.

	2008		2015	2016	2017	2018	2019	2020		2022	2023
Small skipper	11		1	1	1	3	1	2		4	
Orange tip	3		8	12	12	9	6	8		11	3
Ringlet	2		17	5	5	14	13	2		3	2
Meadow brown	19		18	5	5	3	5	8		8	3
Speckled wood	2		10	8	8	12	12	4		3	8
Comma	4		4	2	3	5	4	1		1	2

The pond meadow (= orchard) was once the core site for meadow species such as ringlet and meadow brown, during the 2010s, but they are now very few in number. Table 2 shows the maximum counts of main meadow species from the pond meadow, Cumberland Arms main meadow and red fescue meadow in 2008 and 2014-2023, which suggest the pond meadow is becoming much less attractive for these species.

Holly blues had a good year in 2023 with a total count of six. They never occur in large numbers and have a pattern of good then bad years. The total of six is more than the total of the classic garden butterflies the peacock and tortoiseshell, both recorded only once during the whole sampling period

Table 2. Maximum counts of classic meadow grassland butterflies in the three main meadows; pond, red fescue and Cumberland from 2008 and 2014-2023. No counts were made in June through to August 2021 so this year is omitted.

	2008	2014	2015	2016	2017	2018	2019	2020	2022	2023
Small skipper										
Pond	8	10	1	1	5	3	1	1		
Red fescue	11	1					1	1		
Cumberland	3	5	1					1	4	
Ringlet										
Pond	2	18	11	5	8	9	9	1	1	1
Red fescue		2	1		1		1		1	
Cumberland		3	6						3	
Meadow brown										
Pond	12	16	9	5	3	3	5	7		1
Red fescue	19	8	5	1		2	1	3	3	2
Cumberland	12	9	5			1			7	

Dragonflies and damselflies.

Damselflies and dragonflies were also recorded.

Following the restoration of the pond in 2021 there is evidence of a return by species that had been lost, notably the higher number of broad bodied chasers and the reappearance of azure and large red damselflies. The azures had been regulars at the pond but absent since 2019. Large reds had only been recorded on the farm once and that was not at the pond. Both were present in small numbers on several visits during 2023 and were observed egg laying in the main pond.

Table 3 shows the maximum counts of dragonflies and damselflies, on any single survey date, from 2007 to 2023.

Pond dipping was carried out on several occasions over the last two years on the large pond. The animals caught were used to score the quality of the pond using the Big Pond Dip. Different animals are worth different numbers of points. The total number of points is added up to give a rating or either “could be better”, “good” or “brilliant”. The results are shown in Table 4.

Table 3. Maximum counts of adult damselflies and dragonflies between 2007 and 2023. For the southern hawker counts were also made of exuviae (cast skins left behind once adults emerge) and are shown in brackets.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		2022	2023
Damselflies																	
Large red														1			3
Blue tailed				1	2	33	7	14	5								
Azure					5	28	7	87	54	29	2	20					3
Banded demoiselle																1	
Common emerald								1	2								
Dragonflies																	
Southern hawker (exuviae)			1			(2)	1	1	2 (18)	1	1	1 (2)		(16)		2	1
Migrant hawker								1			1		1				1
Board bodied chaser				2	2	3	2	4	5	4	5	3	2	1		1	6
Red darter dragonfly		7	2	1	1	2	3	34	8	3	4	1	1			11	7
Emperor dragonfly																1	

Table 4. Pond dipping results for main pond in the orchard

Date & participants	**Big Pond Dip Score & rating**
Ouseburn Festival, 2022	28, "Good"
8th July 2022, Mike Jeffries & Jack Marley	28, "Good"
28th October 2022, Northumbria University	48 "Brilliant"
13th June 2023, Hotspur School	40 "Brilliant"
5th August 2023, Ouseburn Trust walk,	32 "Brilliant"

Counts of butterflies and dragonflies throughout 2023 are given in two tables. Table 5 is simply the total of each species seen on each survey date. Table 6 presents data broken down for each section of the farm allowing comparisons between meadows.

References.

Freshwater Habitats Trust, (n.d.) https://freshwaterhabitats.org.uk/get-involved-2/big-pond-dip/.

Jeffries, M.J. (2006) – (2022). Ouseburn Farm butterfly & dragonfly surveys. Department of Geography, Northumbria University, Newcastle upon Tyne. Copies of all the annual reports by Mike Jeffries can be obtained from michael.jeffries@northumbria.ac.uk.

Jeffries, M.J. (2020b) Ouseburn Farm Ponds, 2020. History and Data compilation. Department of Geography, Northumbria University, Newcastle upon Tyne.

Imperial College, (n.d.) https://www.imperial.ac.uk/media/imperial-college/research-centres-and-groups/opal/WATER-16pp-booklet_legacy.pdf.

Table 5. Total numbers of butterflies, burnet moths, dragonflies and damselflies counted during 2023. Counts were made on sunny days except where indicated by "cloudy" or "windy". Counts of eggs, caterpillars ("cats") and pupae ("pup") are approximate. "Exuviae" refers to the cast skins left behind when a dragonfly emerges; only new examples were recorded on each date and give a minimum estimate of the numbers hatching on site. "Unid white" refers to adults flying at a distance when precise identification could not be made.

	19th Mar	21st Mar	30th Mar	18th Apr	20th Apr	26th Apr	6th May	7th May	11th May	17th May	27th May	2nd June	10th June	13th June
Small skipper (none in 2023)														
Large skipper (none in 2023)														
Green veined white										1	1	1		
Small white								1		1	1		1	
Large white										1				
Orange tip					2	2		2	2	3	3			
Unid. white					2	1		2	5	3	5	2	2	
Small copper (none in 2023)														
Holly blue									1	1				
Common blue (none in 2023)														
White letter hairstreak (none in 2023)														
Tortoiseshell														
Comma		1	1	1						1				
Peacock														
Painted Lady (none in 2023)														
Red Admiral												1		

	19th Mar	21st Mar	30th Mar	18th Apr	20th Apr	26th Apr	6th May	7th May	11th May	17th May	27th May	2nd June	10th June	13th June
Small heath (none in 2023)														
Wall (none in 2023)														
Meadow brown														
Ringlet														
Speckled wood					1	3					3		1	
6 spot burnet moth (none in 2023)														
Red darter dragonfly														
Migrant hawker dragonfly														
Southern hawker dragonfly														
Broad bodied Chaser dragonfly											2	5	2	1
Large red damselfly											1	2		3
Blue tailed damselfly (none in 2023)														
Azure damselfly											3	2	1	3
Common Emerald damselfly (none in 2023)														

Table 5 continued

	17th June	21st June	7th July	11th July	20th July	5th Aug	8th Aug	19th Aug	26th Aug	30th Aug	5th Sept	8th Sept	23rd Sept	26th Sept
Small skipper (none seen in 2023)														
Large skipper (none seen in 2023)														
Green veined white		1	1	1	4	2	4	2		1				
Small white	1	1	3	8	5		6	6	8	21	7	5		3
Large white						1			1					
Orange tip														
Unid. white		1	5	10	6	6	4	9	10	5	9	3		1
Small copper (none seen in 2023)														
Holly blue					1	1	1		1					
Common blue (none seen in 2023)														
White letter hairstreak (none seen in 2023)														
Tortoiseshell				1										
Comma			2				1							
Peacock											1			
Painted Lady (none in 2023)														
Red Admiral		1	1	3	3							1		

	17th June	21st June	7th July	11th July	20th July	5th Aug	8th Aug	19th Aug	26th Aug	30th Aug	5th Sept	8th Sept	23rd Sept	26th Sept
Small heath (none in 2023)														
Wall (none in 2023)														
Meadow brown		2		1	3	3	2							
Ringlet			1	2										
Speckled wood	1		1				3	1	5	6	8	4		
6 spot burnet moth (none in 2023)														
Red darter dragonfly		1	2	3	4	6	2	7	6	7	4		1	1
Migrant hawker dragonfly								1						
Southern hawker dragonfly				1		1	1							
Broad bodied Chaser dragonfly														
Large red damselfly		1												
Blue tailed damselfly (none in 2023)														
Azure damselfly		1												
Common Emerald damselfly (none in 2023)														

Table 6. Numbers of butterflies, dragonflies, damselflies and burnet moths counted within individual sections of the farm, 2023. The sections are coded as P = pond meadow, RF = red fescue meadow, H = horse meadow, W = woodland on northern slopes, F = farm grounds including adjacent river path, C1 = orchard below Cumberland Arms, C2 = meadow below Cumberland Arms. Counts were made on sunny days except where indicated by "cloudy" or "windy". Counts of eggs, caterpillars ("cats") and pupae ("pup") are approximate. "Exuviae" refers to the cast skins left behind when a dragonfly emerges; only new examples were recorded on each date and give a minimum estimate of the numbers hatching on site.

	19th Mar	21st Mar	30th Mar	18th Apr	20th Apr	26th Apr	6th May	7th May	11th May	17th May	27th May	2nd June	10th June	13th June
Small skipper (none seen in 2023)														
Large skipper (none seen in 2023)														
Green veined white										P 1	P 1	P 1		
Small white								H 1		F 1	P 1		RF 1	
Large white														
Orange tip					P 1, H 1	P 2		P 1, H 1	H 2	RF 1	P 1, W 1, RF 1			
Unid. white					RF 2	P 1		H 1, F 1	W 1, RF 2, C1 1, C2 1	W 1, P 1, RF 1	W 3, F 1, C2 1	RF 1, C2 1	P 1, H 1	
Small copper (none seen in 2023)														
Holly blue									P 1	P 1				
Common blue (none seen in 2023)														
White letter hairstreak (none seen in 2023)														
Tortoiseshell														
Comma		P 1	P 1	P 1						F 1				
Peacock												P 1		
Painted Lady (none in 2023)														
Red Admiral												P 1		

	19th Mar	21st Mar	30th Mar	18th Apr	20th Apr	26th Apr	6th May	7th May	11th May	17th May	27th May	2nd June	10th June	13th June
Small heath (none in 2023)														
Wall (none in 2023)														
Meadow brown														
Ringlet														
Speckled wood					P 1	P 2, W 1					P 1, W 2		W 1	
6 spot burnet moth (none in 2023)														
Red darter dragonfly														
Migrant hawker														
Southern hawker dragonfly														
Broad bodied Chaser dragonfly											P 2	P 6, ovi	P 2	P 1
Large red damselfly											P 1	P 2		P 3, ovi
Blue tailed damselfly (none in 2023)														
Azure damselfly											P 3	P 2	P 1	P 3, ovi
Common Emerald damselfly (none in 2023)														

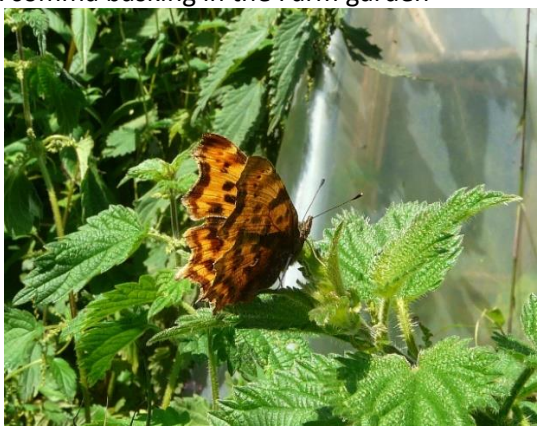
Table 6 continued

	17th June	21st June	7th July	11th July	20th July	5th Aug	8th Aug	19th Aug	26th Aug	30th Aug	5th Sept	8th Sept	23rd Sept	26th Sept
Small skipper (none seen in 2023)														
Large skipper (none seen in 2023)														
Green veined white		P 1	C2 1	P 1		P 1, RF 1	P 1, W 1, F 1	P 1, W 1		RF 1				
Small white	F 1	RF 1	P 2, F 1	P 5, F 3	W 3, RF 2		P 1, W 1, F 4	P 1, F 5	P 1, F 7	F 21	F 7	F 5		F 3
Large white						F 1			C 1					
Orange tip														
Unid. white		P 1	RF 2, W 1, F 1, C2 1	P 1, W 2, RF 2, H 1, C1 2, C2 2, F1	P 2, W 2, RF 1, C1 1	P 3, RF 3	P 1, W 2, RF 1	P 3, W 2, RF 1, H 1, C2 1, F 1	P 1, RF 3, H 1, C2 2, F 3	P 1, RF 4	P 1, RF 2, W 1, H 1, F 4	RF 1, C2 2		H 1
Small copper (none seen in 2023)														
Holly blue					P 1RF 4	P 1	F 1		RF 1					
Common blue (none seen in 2023)														
White letter hairstreak (none seen in 2023)														
Tortoiseshell				F 1										
Comma			P 1, F 1	P 1			F 1							
Peacock											P 1			
Painted Lady (none in 2023)														
Red Admiral		P 1	P 1	P 1, C2 1	W 2, RF 1							F 1		

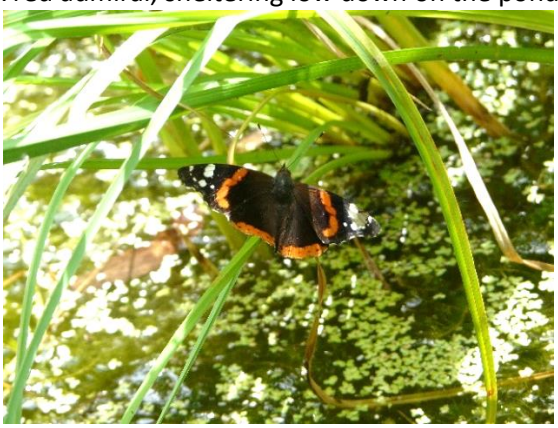
	17th June	21st June	7th July	11th July	20th July	5th Aug	8th Aug	19th Aug	26th Aug	30th Aug	5th Sept	8th Sept	23rd Sept	26th Sept
Small heath (none in 2023)														
Wall (none in 2023)														
Meadow brown		RF 2		P 1	P 1, RF 2	P 1, RF 2	RF 2							
Ringlet			P1											
Speckled wood	P 1		W 1	W 1, C1 1			W 2, F 1	W 1	P 1, W 1, RF 2, H 1	P 3, RF 1, W 1, C2 1	P 1, RF 4, W 2 C2 1	P 2, W 1, H 1		
6 spot burnet moth (none in 2023)														
Red darter dragonfly		P 1	P 2	P 3	P 4	P 6	P 2	P 6, H 1	P 6	P 7	P 4		P 1	P 1
Migrant hawker dragonfly								W 1						
Southern hawker dragonfly				W 1		P 1	P 1							
Broad bodied Chaser dragonfly														
Large red damselfly		P 1												
Blue tailed damselfly (none in 2023)														
Azure damselfly		P 1												
Common Emerald damselfly (none in 2023)														

2023 photos

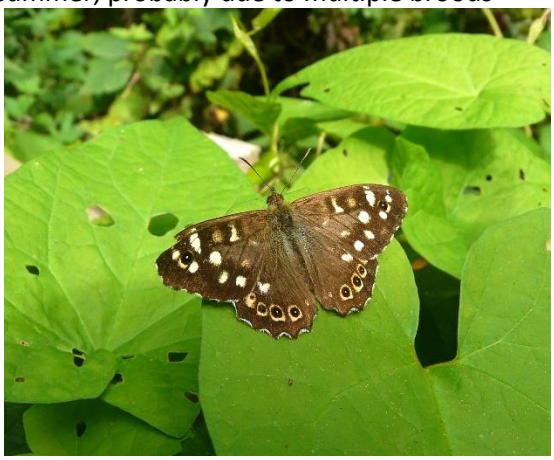
A comma basking in the Farm garden



A red admiral, sheltering low down on the pond



Speckled woods continue throughout the summer, probably due to multiple broods



A green veined white on wild carrot

A small white on lavender in the Farm garden

At least seven small whites in the poly tunnel in late summer. The mix of warmth, flowers and cabbages makes this a top spot for small whites

The poly tunnel has its hazards though. This small white was stuck to the condensation. It was rescued

Female orange tip. Many of the unidentifed whites in springtime are likely to be female orange tips. The males are easy to tell due to their orange tipped wings

A holly blue on the path through the orchard

This tatty peacock is also on the path, basking in the warmth of the dark gorund

A mating pair of red darters on the fence alongside the pond

A male broad bodied chaser dragonfly

A newly hatched red darter from the pond. This stage is called “teneral”, before the full colours develop. It has moved away from the pond to hide as it cannot yet fly strongly

Azure damselflies were back, courting and laying eggs. The teasel leaves made good perches for watchful males

Large red damselflies were also present on the pond and laying eggs

The pond-side teasels are also a good place to spot these Dolichopodidae (“long legged”) flies

An unusual stand-off. A greater waterbotmen (top left), probably emerging to fly from the pond, attracts the attention of a pond skater (bottom right)

Honey bees drinking on exposed mud during hot weather

The pond in June

Good swards of stonewort (C*hara* sp.) developed in the pond

Orchard (= pond) meadow, June

Horse meadow, June

Red fescue meadow in June, with evident burnt section on lower slopes as in other recent hot summers

For comparison, the red fescue meadow in May

Cumberland meadow, C2, which had horses on for much of the summer. The vegetation was conspicuosusly shorter and grazed down

There was frogspawn in the main pond in the spring, which did hatch into tadpoles. No frogs have ever been recorded on site so it is not clear how this got here. No tadpoles were recorded in pond dips later in the summer suggesting that none survived.

The second pond in the pond meadow was also sampled. There are many fewer types of animal present, although mosquito larvae were abundant. They don't occur in the main pond which has many predators, unlike this smaller pool

View from the smaller pond down to the main pond, March 2023