

BUTTERFLY SURVEY REPORT 2023

by Pat Sheldon

INTRODUCTION

2023 was the first year in which the Biddenham Conservation Volunteers (BCV) conducted a survey of butterflies in Cowslip Meadow and its environs. The following report includes a map of the survey area with the transect route marked, a spreadsheet of the butterfly species seen over the survey period, and the numbers recorded in each transect, sector by sector, during the peak of the season. In future, following the weekly survey, the numbers of butterflies counted will be forwarded to a local co-ordination centre where they can be collated with other local groups before being passed up the chain to regional centres and eventually become part of a national monitoring scheme. This is how butterfly numbers monitored on the Biddenham transect can add to a bigger picture both regionally and nationally.

Butterflies are an important indicator of the health of the environment because they have short life cycles and therefore respond rapidly to changes in conditions. In their report for 2023, the UK Butterfly Monitoring Scheme (UKBMS) found that the numbers of Small Tortoiseshells had declined by 82% since 1976 and that 2023 was their worst year ever in England. Green Veined Whites and Ringlets also had a poor year. Of the other butterflies that frequented the transect, UKBMS found that Brimstones, Brown Argus, Marbled Whites, Commas and Holly Blues all had a good year.

Butterflies do not hibernate but enter an inactive period as the temperature cools in late summer and autumn. This is known as a diapause, a period of suspended development. The majority of butterflies overwinter as caterpillars with pupae being the next most common form followed by eggs and then adults. Some species, including Brimstones, Small Tortoiseshells, Peacocks and Commas have adapted to overwinter as adults. Of these only the Small Tortoiseshells and Peacocks regularly overwinter inside houses and may become active if the temperature becomes high enough. Speckled Woods may overwinter as caterpillars or pupae. Painted Ladies have evolved to migrate to warmer climates. Butterflies in all stages of development may overwinter in sheds, log piles or under foliage.

It has been discovered that butterflies which survive the winter as adults get rid of the water from their bodies which they no longer need. Crucially, they also store glycerol in their body fluids which acts as an "antifreeze" keeping them alive when temperatures drop below 0°C. The caterpillars of some species which overwinter in the larval stage also have the ability to avoid freezing in sub zero temperatures. Ringlets are one such species. These caterpillars have special molecules which they can site away from vital organs. These molecules act as focal points for ice crystal formation in sub-zero temperatures.

Although butterflies of a certain species may be seen in any location over a period of several months, as individuals, the majority only live for 2 to 4 weeks.

The lifespan of the developmental stages of a butterfly varies from generation to generation but is usually as follows:

Eggs - period dependent on temperature

Caterpillars - 2 to 5 weeks - may be prey for birds and other animals with early broods to feed

Pupae - 10 to 14 days - temperature is one of the main triggers for the passage from pupa to adult so species dormant in sheds and houses tend to emerge early.

THE TRANSECT



Figure 1: Map of the 2023 Transect

A transect is a planned route which is followed each week in the same direction but not necessarily at the same time.

The 2023 transect was planned to provide a circular walk which would cover the widest range of habitats for butterflies. It included meadowland, grassland, enclosed paths and a road with gardens. It was divided into 7 sectors. A count of butterflies took place once every week from the beginning of April to the end of September, a total of 26 weeks. The average time taken to complete the transect and record the butterflies was 2 hours and the number of volunteers varied between 2 and 6. Each count had a leader and a recorder.

The Biddenham survey followed the guidelines of the UKBMS who have produced a paper to advise on the conditions for butterfly surveys. This includes temperature, wind speed using the Beaufort Scale and time of day as follows:

Temperature: Between 13-17°C with at least 60% sunshine or if there is no sunshine the temperature must be 17°C or above.

Wind Speed: No greater than 5 on the Beaufort Scale.(18-23 mph) unless the site is sheltered from the wind

Time of Day: Ideally between 10.45am and 15.45pm although 10am to 5pm is allowable.

Time of the Week: The aim should be to walk the transect at the first opportunity as in some weeks there may not be a second opportunity.

Times were chosen each week which best fulfilled those criteria. This was sometimes at short notice as weather conditions are so variable.

ANALYSIS OF THE RESULTS

SPECIES	WEEK 1 02.04.23	WEEK 2 09.04.23	WEEK 3 16.04.23	WEEK 4 23.04.23	WEEK 5 30.04.23	WEEK 6 07.05.23	WEEK 7 14.05.23	WEEK 8 21.05.23	WEEK 9 28.05.23	WEEK 10 04.06.23	WEEK 11 11.06.23	WEEK 12 18.06.23	WEEK 13 25.06.23	WEEK 14 02.07.23	WEEK 15 09.07.23	WEEK 16 16.07.23	WEEK 17 23.07.23	WEEK 18 30.07.23	WEEK 19 06.08.23	WEEK 20 13.08.23	WEEK 21 20.08.23	WEEK 22 27.08.23	WEEK 23 03.09.23	WEEK 24 10.09.23	WEEK 25 17.09.23	WEEK 26 24.09.23	TOTAL	
ADMIRAL RED														1	2	12		3	1						2	12	34	
BLUE, COMMON										1	1					1	12		6	6	9		1					37
BLUE, HOLLY				1		4	12	7	13	12							9	12	9	30	13	1			3	1	127	
BRIMSTONE	10			4		6	5	6								4		2		1							41	
BROWN ARGUS																1	7	35	14	5	6	11	1				80	
COMMA																	2									2	10	
GATEKEEPER												1	2	17	72	130	80	79	57	27	12	2	2	1			482	
MARBLED WHITE										3	54	70	12	9			2										54	
MEADOW BROWN										50	103	88	35	30	7	14	31	24	24	29	8	4	7	11			465	
ORANGE-TIP				4		5	11	8	1	5					1												35	
PAINTED LADY																											0	
PEACOCK	12	1		7		1	1									4	16	10	8	2				1			63	
RINGLET												6	11	7	2												26	
SKIPPER, LARGE										1			23	5	3	2	1	1									36	
SKIPPER, SMALL														23	18	14	5	4			1						65	
SMALL COPPER															1												1	
SMALL HEATH									1	2	11	8	12			3	2	1			14	6	2	2	4	1	70	
SM.TORTOISESHELL	2		1														1	2								2	8	
SPECKLED WOOD			1			3	7	6	13	8	3			3	3	12	6	7	9	25	17	12	4	6		145		
WHITE, G-VEINED			2	5		4	1									6		4	6	1	1	5	5	4			44	
WHITE, LARGE						2	2	2		1		1		22	15	9	10	5	9	15	6	5	3	7	1	1	116	
WHITE, SMALL	1			3		4	3	1	1		1	3		13	14	5	3	5	7	17	16	1	6	10		4	118	
TOTAL	25	1	4	24	0	22	41	32	22	38	74	173	203	142	190	239	180	179	137	168	112	38	28	44	19	18	2057	
NO.OF SPECIES	4	1	3	6	0	6	8	7	5	8	6	7	7	10	17	17	14	13	13	10	10	10	9	9	7	4		

Figure 2: Spreadsheet showing the Weekly Results of the Butterfly Survey 2023

This spreadsheet shows not only the recorded numbers of butterflies, species by species, but also the seasonality of the butterflies. It is clear to see how the numbers rapidly increased once the temperatures rose in the summer months and there was a sufficient source of food. The main season occurred between the second week of June and the end of August, a 10 week period in which the count exceeded 100 every week. This coincided not only with the high temperatures of summer but also with the period when grasses, wild flowers and other nectar sources were at their peak. The week of 27th August saw the numbers of butterflies spotted diminish dramatically as the period of abundance declined.

The butterflies recorded in the early weeks were those capable of overwintering in this country as adults. They feed on the blossom of fruit trees and other early blooming plants and are often seen sunbathing on paths in early Spring to warm themselves in order to fly.

In the UK there are 59 species of butterflies. Of those 57 are resident and 2, the Painted Lady and Clouded Yellow, are regular migrants. In 2023, twenty-one species of butterfly were recorded in the transect. The most common butterflies recorded were Gatekeepers closely followed by Meadow Browns. No Painted Ladies were recorded and there was only one Small Copper although several were seen in nearby areas.

Because of the short lifespan of the butterfly, many will have more than one brood and, if conditions are favourable, some may have three broods.

SPECIES	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4	SECTOR 5	SECTOR 6	SECTOR 7	TOTAL
ADMIRAL, RED		3		1		1		5
BLUE, COMMON	12	11	1	3	2	1	1	31
BLUE, HOLLY	1	47	5	13	9	6	3	84
BRIMSTONE	3			1				4
BROWN ARGUS	21	7	1	7				36
COMMA							1	1
GATEKEEPER	27	66	3	84	8		7	195
MARbled WHITE	27	15	7	18			1	68
MEADOW BROWN	73	88	48	92	1	1	1	304
ORANGE-TIP				6				6
PAINTED LADY								0
PEACOCK	4	1		1			4	10
RINGLET	4		2	5				11
SKIPPER, LARGE	2	1		4				7
SKIPPER, SMALL	10	2	2	13				27
SMALL COPPER								0
SMALL HEATH	4	20	3	14	1		1	43
SM.TORTOISESHELL							1	1
SPECKLED WOOD	8	38		43	5		2	96
WHITE,G.VEINED	1	6		2	3		3	15
WHITE, LARGE	16	14	2	17	1	3	4	57
WHITE, SMALL	12	13	4	14	2	7	7	59
TOTAL	225	332	78	338	32	19	36	1060
	SECTOR 1	SECTOR 2	SECTOR 3	SECTOR 4	SECTOR 5	SECTOR 6	SECTOR 7	
	Mainly meadow	FP with hedges on both sides initially but later opening out to overlook old golf course.	Grassland across old golf course	FP with hedges on both sides and alongside old golf course.	FP alongside cultivated field with hedge on one side	Main Road with houses and gardens on both sides	FP partly walled passing pond, open grassland, and the churchyard	

Figure:3 Spreadsheet showing Butterflies counted Sector by Sector during the Peak of the Season

This spreadsheet shows the butterflies recorded sector by sector from June to the end of August which covers the peak of the season. Whilst it is not possible to have a complete record of the count due to lack of available data, this spreadsheet is complete enough to indicate how the spread of butterflies occurred throughout the transect during the peak months for butterfly activity. It is clear that areas such as the Cowslip Meadow, sector 1, with its wide variety of food plants had a much greater yield than the monoculture of grass found on the old golf course in sector 3 or the roadway in sector 6. The two footpaths, sectors 2 and 4 also yielded well but are home to more specific species such as the Holly Blue and the Speckled Wood and it is only where these footpaths have open access to the edges of the golf course that a wider variety of species occurs.

CONCLUSION

Many factors govern the success of butterflies. These include availability of habitat, favourable temperatures and access to food plants. Butterflies are habitat specialists, each species having its own requirements. Because of their short lifespans they disappear rapidly if the environment in which they prosper changes. Loss of habitat is the main reason for their decline. Intensive farming and forestry, the reduction of meadowland to provide housing, road developments and climate change all have a part to play.

What is clear from figure 3 is that areas rich in wild flowers and hedges are able to support a wider range and larger numbers of butterflies than those in which there is a monoculture of plant life, busy roads or areas inhabited by man. Chemicals used on farmland and gardens interrupt the chain of development and limit the numbers of butterflies and other insects. No chemicals are used in Cowslip Meadow. It is carefully managed by the BCV. The presence of so many different nectar producing plants and trees provides food and shelter for a wide range of insects. Hence butterflies live there in large numbers and in a wide range of species.

*References: UK Butterfly Monitoring Scheme (UKBMS) 2023 report. UKBMS.org
Nature's Calendar of the Woodland Trust. naturescalendarwoodlandtrust.org.uk
Butterfly Conservation Organisation. butterfly-conservation.org
Woodland Trust. [Woodland trust.org](http://Woodlandtrust.org)*

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