

**BUTTERFLY SURVEY  
of  
TOMMY THE MILLER'S FIELD  
BERWICK UPON TWEED  
April to September 2009**



Red Admiral by Enid Turnbull

**by  
Berwick Wildlife Group**

## A Report on the 2009 Butterfly Survey

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### Acknowledgements

The work grew out of the interest of Elizabeth Bamford who contacted Butterfly Conservation, gained permission from the field owners, organised the volunteers and, together with Fiona Aungier, laid out the transect and undertook an initial habitat survey.

The following members of the Group who took part in the fieldwork:  
Fiona and Maurice Aungier, Stephen Block, Maurice McNeely, Jenny Prince, John and Sally Rae, Enid Turnbull, Gill Young.

Credit should go to all who took part in the survey, as in places the field is very steep, with uneven footing, and the undergrowth and nettles later in the year made walking the transect extremely difficult. Despite this, apart from weeks 1, 14 and 20 when the weather was not suitable, a count was completed for all the other weeks of the survey.

Fiona Aungier undertook fieldwork when commitments prevented regular group members from participating, carried out the habitat survey and drew the maps. John Rae transferred the results to the database and tabulated and analysed them. John and Fiona wrote this report.

Finally we would like to thank Mr and Mrs MacPherson, Castle Hills Farm, the owners of the land, who readily gave permission for the survey to go ahead.

Picture 1 – View across Tommy the Miller’s field towards the Royal Border Railway Bridge.



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## Introduction

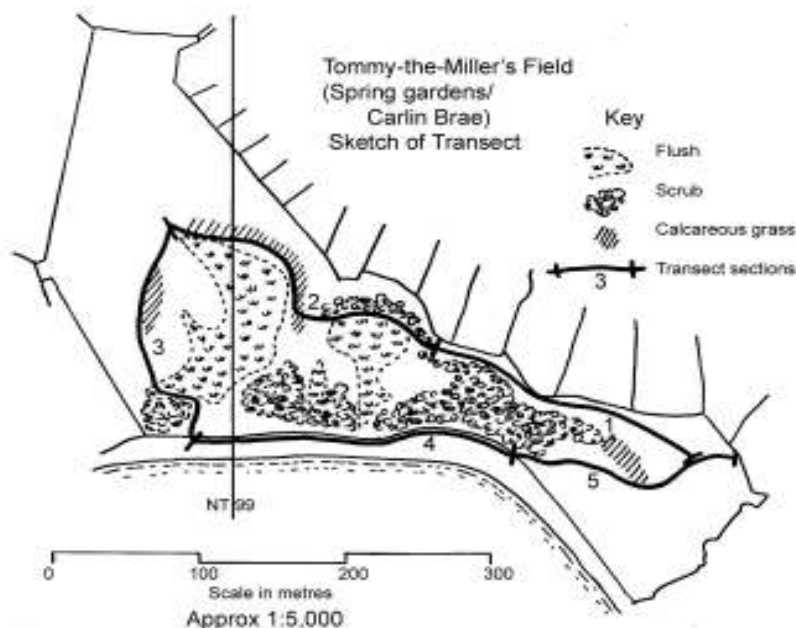
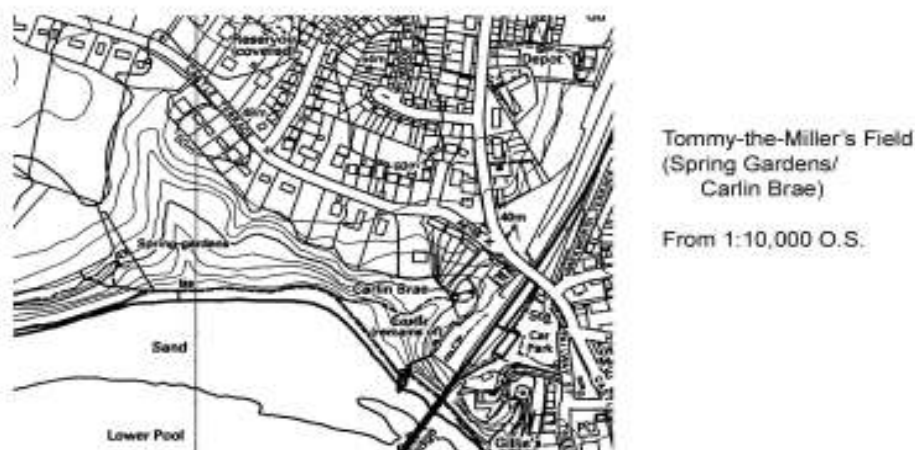
Between the beginning of April and the end of September 2009 volunteers from Berwick Wildlife Group undertook their fourth butterfly survey of Tommy the Miller's field in Berwick. (See Berwick Wildlife Group's website for a report on the 2006, 2007 and 2008 surveys)

<http://www.berwickwildlifegroup.org.uk/Local%20Wildlife.html>

As in previous years, the purpose of this survey was to gather observations of butterfly species and numbers for inclusion in the databases of both Butterfly Conservation and the National Biodiversity Network.

A total of 999 butterflies of 14 species were observed over the 26 week period, which is more than the 811 butterflies seen during 2008 and the 829 seen during 2007, but considerably less than the 1472 seen in 2006.

Maps 1 & 2: an overview of Tommy the Miller's field and detail of the survey transect.



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The field is situated on the north shore of the River Tweed, just upstream of the Royal Border Railway Bridge, and below Castle Terrace. It is south facing, is sheltered from north winds and is exposed to the sun throughout the day. Much of the ground underfoot has been pitted by the hooves of grazing cattle. Some grazing took place over the period of the survey. The habitat consists of dry, semi-improved grass and scrubland, with wet flushes on a steep south-facing slope.

Looking at the various sections of the transect walked:

### Section 1

This Section crosses steep terrain, patches of more open grassland among hawthorn scrub, with nettles and thistles prominent in places, and some privet hedging. Mainly Small White, Large White, Green-veined White, Ringlet, Meadow Brown, Peacock, Small Copper, Wall, Small Tortoiseshell and Painted Lady were recorded from here.

### Section 2

Section two leads past a rush-dominated marsh, bounded on its northern edge by a bluff covered in grasses, knapweed, scabious, harebells and yarrow. Green-veined White predominated in the wetter area, while the dry banks held good numbers of Small White, Meadow Brown, Ringlet, Peacock, Large White and Small Tortoiseshell among others.

### Section 3

The third section runs across a small grassy headland, the wind always playing a part in the number of butterflies recorded here. Grasses, sorrel, thistles and yarrow were plentiful, and Small Coppers were seen here well into September sipping nectar from yarrow heads in the warm sun. Large numbers of Common Blue, Small White, Painted Lady, Small Copper, Small Tortoiseshell, Peacock, Wall, Brown, Ringlet and Orange Tip were seen here.

### Section 4

'The New Road', a footpath along the bank of the Tweed, makes section four; a sheltered sunny section but often disturbed by walkers. Small White was predominant here together with Large White, Green-veined White, Ringlet, Peacock, Painted Lady and Orange Tip.

### Section 5

The final section runs through Tommy the Miller's Field again, from the Tweed back up to the top. Throughout the summer the grasses, knapweed and thistles proliferate. Small White were most numerous with Ringlet, Green-veined White, Small Tortoiseshell, Peacock, Meadow Brown, Small Copper, Common Blue, Wall and Orange Tip were seen here.

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### Method

Butterfly transects are a way of measuring changes in the abundance and variety of butterflies present at a site from year to year.

The method adopted for this survey follows that laid down by the Butterfly Conservation.

Full (all species) transects are labour intensive and require a commitment to carry out weekly recording throughout the six months of the survey, corresponding with most butterflies' flight period in the UK.

### Establishing the transect.

- The transect was identified in 2006 by Elizabeth and Fiona, and consists of a route 1025m in length that gives a fair representation of the habitats and other features present in the field.
- This transect was 'fixed' so the same route could be followed each week, and also each year, so comparisons can be made.
- It was subdivided into 5 sections, approximately equal in length, with each section representing a change in habitat or management type.

### When to record.

- Recording took place once a week from April 1st to the end of September.
- Transect counts were ideally made between 10:45 and 15:45 hours.
- Transect walks were only carried out in warm (13 °C or more) bright weather.
- The minimum criteria were 17°C if overcast, or 13°C if at least 60% sunshine.

### How to record.

- To aid species identification each group had a "Guide to the Butterflies of Britain" produced by the Field Studies Council.
- The transect was walked at a slow, steady pace counting all butterflies seen within a fixed distance of 2.5m either side of the transect line and 5m ahead.
- The same route along the transect was followed each time.
- Before starting, record was taken of Week No., Date and Recorders and, both before and after walking the transect, the Time, Temperature and Wind speed. % Sun was recorded at the end of each section of the transect.
- The transect was walked recording numbers of the various species of butterfly seen on that section of the transect.

After the transect had been walked the observations were given to Fiona, who entered them into a standard Excel document, one for each week's survey, and John transferred this to the main database.

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### **OBSERVATIONS** **Summary of Observations**

#### **By Date**

Date	Week	Large White	Small White	Green-veined White	Orange Tip	Small Copper	Common Blue	Red Admiral	Painted Lady	Small Tortoise shell	Peacock	Comma	Wall	Meadow Brown	Ringlet	Total Adult
4-Apr	1															
11-Apr	2		13							4	12					29
20-Apr	3	3	13	1	2											19
25-Apr	4		13	3	4											20
29-Apr	5	3	9	2						2	1					17
11-May	6	1	11	5	9						2					28
17-May	7	3	7	1	1	1							2			15
25-May	8	1	7		15	1										24
30-May	9	7	6	4			1									18
3-Jun	10	5	4	3			1		3							16
13-Jun	11	1					1									2
21-Jun	12	8					9		2	1				3	12	35
24-Jun	13	6	3				7							21	72	109
6-Jul	14															
13-Jul	15	2	8	17					2	1				16	4	50
20-Jul	16	4		11			1		1	4				20		41
27-Jul	17					1		1		1				6		9
3-Aug	18	12	19	33		4			3	14	11		3	4	3	106
5-Aug	19	21	45	31		6	1		10	13	12		3	5		147
15-Aug	20															
22-Aug	21	12	23	23		10	7		15	1	9	1	4			105
26-Aug	22	3	34	1		19	9		14	5	16		10			111
2-Sep	23	8	5			3	5		5	4	8		6			44
15-Sep	24	15	16				2		6	1	2		1			43
20-Sep	25	1	1			2	1		3							8
27-Sep	26					1				2						3
Grand Total		116	237	135	31	48	45	1	64	53	73	1	29	75	91	999

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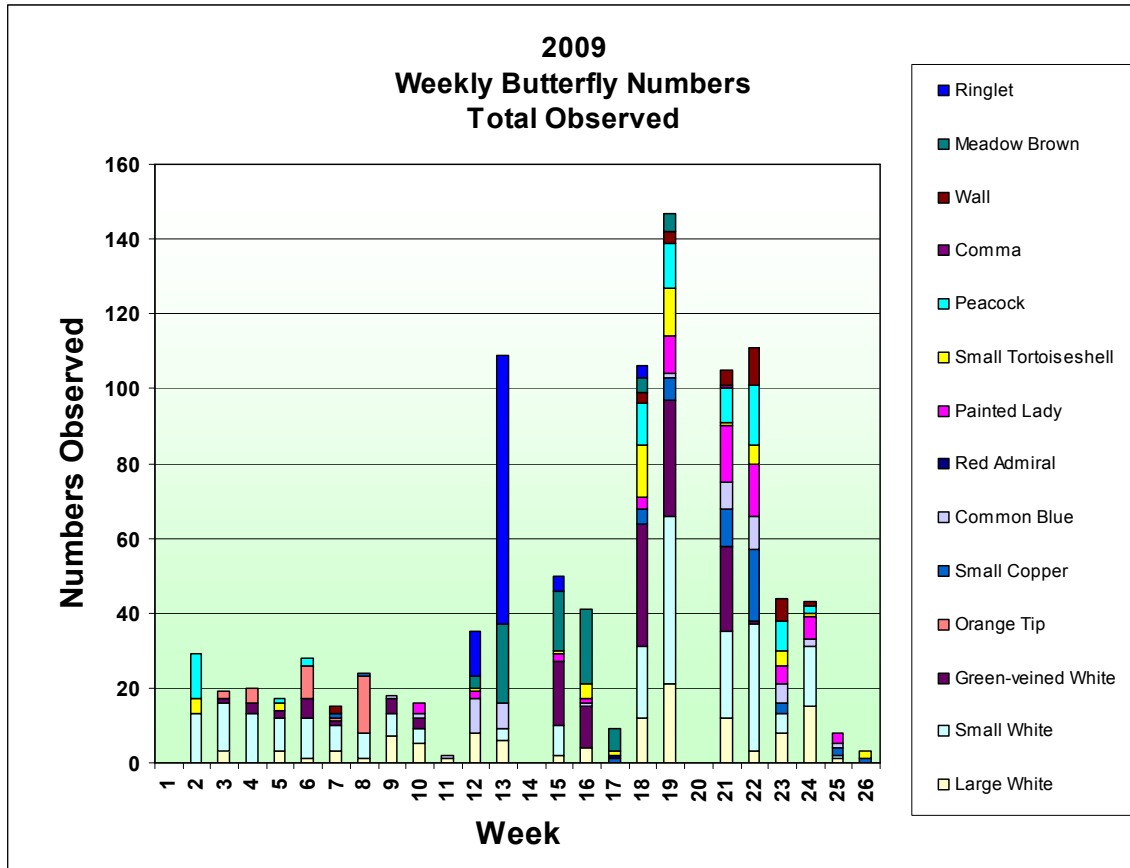
### By Section

Section	Large White	Small White	Green-veined White	Orange Tip	Small Copper	Common Blue	Red Admiral	Painted Lady	Small Tortoise shell	Peacock	Comma	Wall	Meadow Brown	Ringlet	Total Adult
1	56	87	49	15	19	11	1	16	16	24	1	17	32	42	386
2	18	35	46	4	8	4		15	11	20		2	30	11	204
3	13	21	12	3	16	21		18	13	13		7	6	6	149
4	23	50	17	6		3		6	2	5			1	13	126
5	6	44	11	3	5	6		9	11	11		3	6	19	134
<b>Total</b>	<b>116</b>	<b>237</b>	<b>135</b>	<b>31</b>	<b>48</b>	<b>45</b>	<b>1</b>	<b>64</b>	<b>53</b>	<b>73</b>	<b>1</b>	<b>29</b>	<b>75</b>	<b>91</b>	<b>999</b>

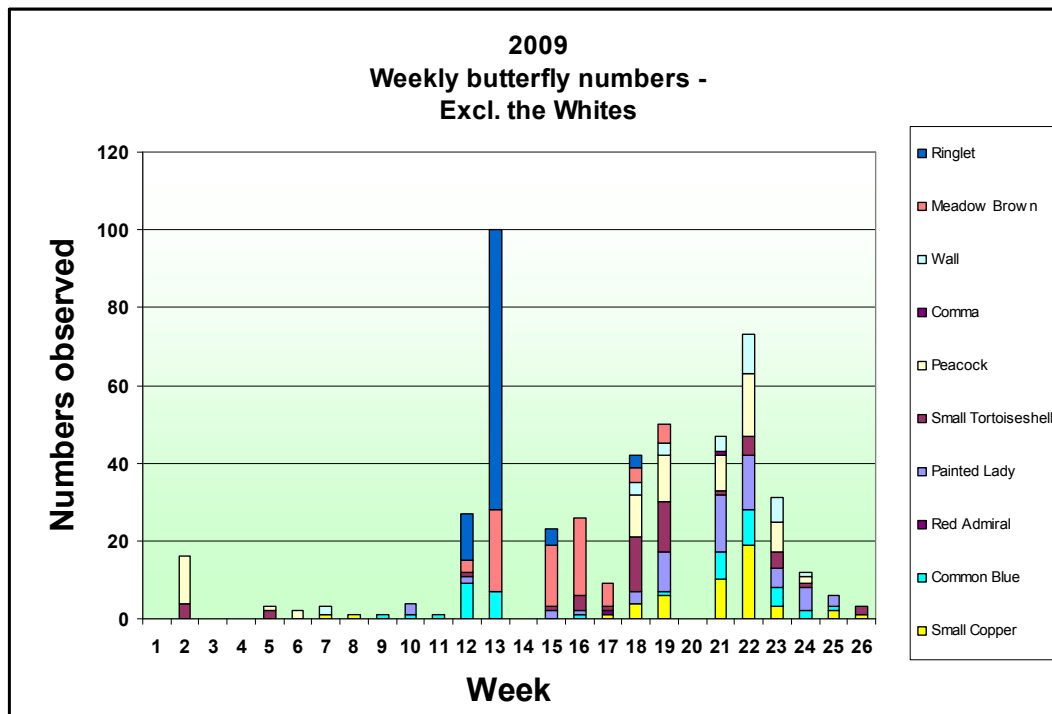
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## Graphs – By Weeks

Total Butterfly Count Graphed by Weeks

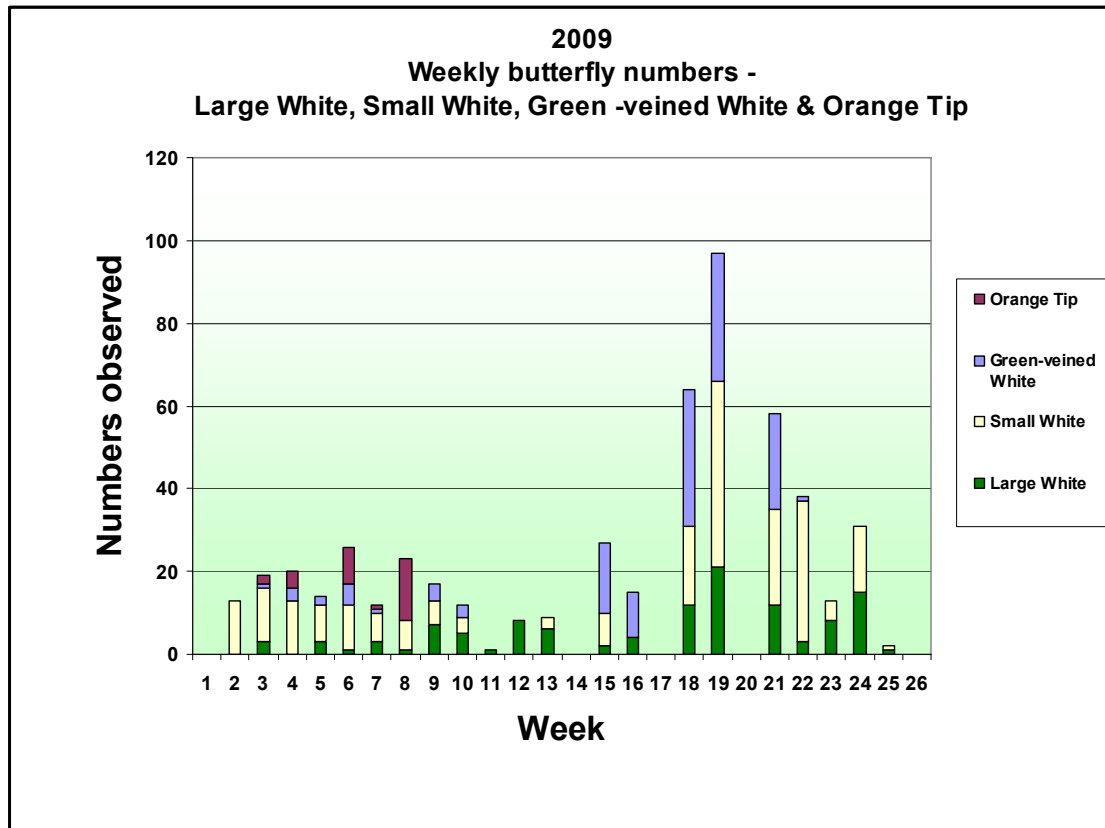


Total Butterfly Count excluding Large Whites, Small Whites, Green-veined Whites & Orange Tip Graphed by Weeks.



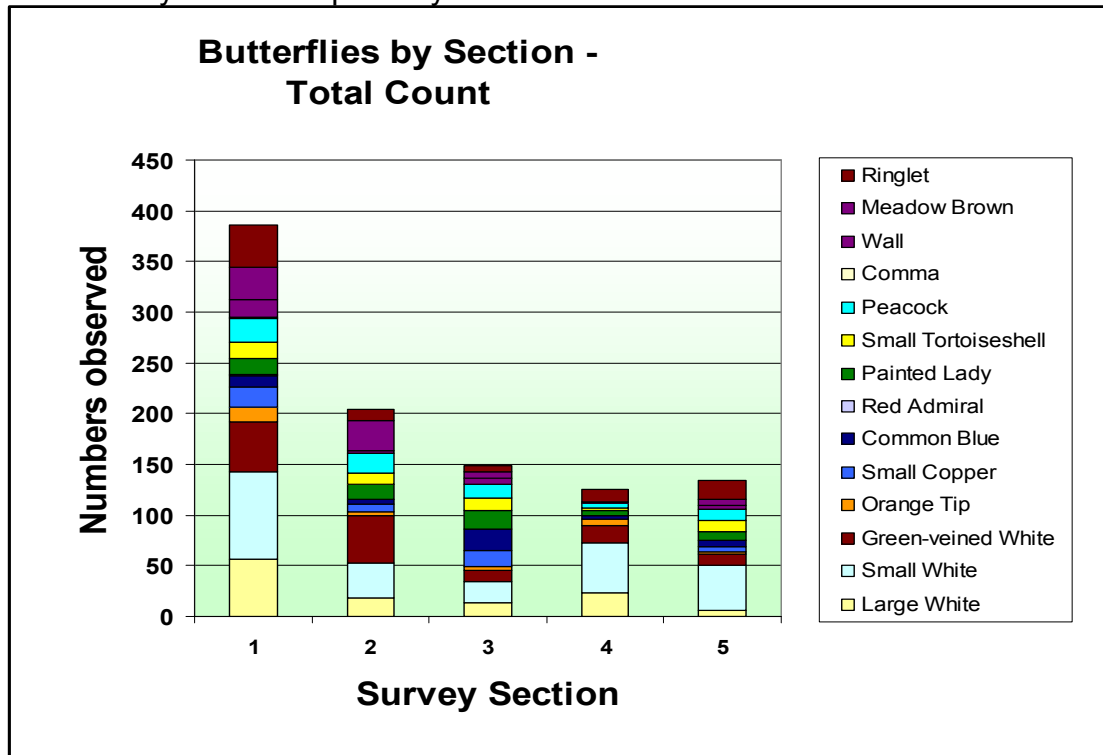
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Total Butterfly Count of Large Whites, Small Whites, Green-veined Whites & Orange Tips Graphed by Weeks.



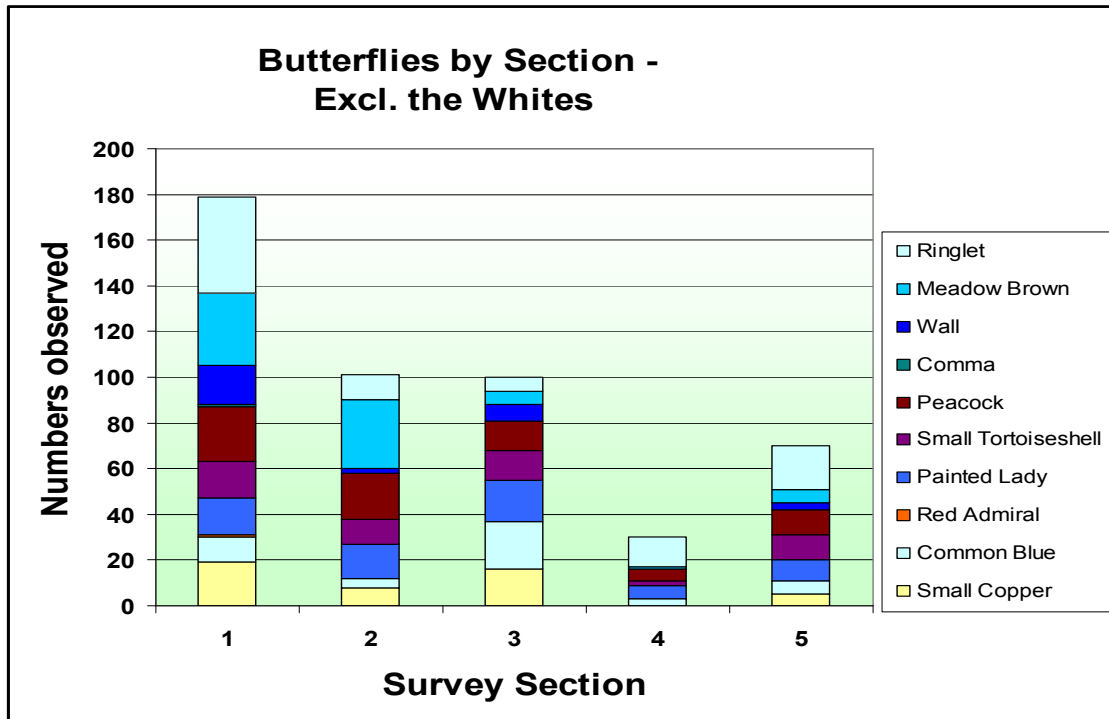
## Graphs – By Section

Total Butterfly Count Graphed by Section.

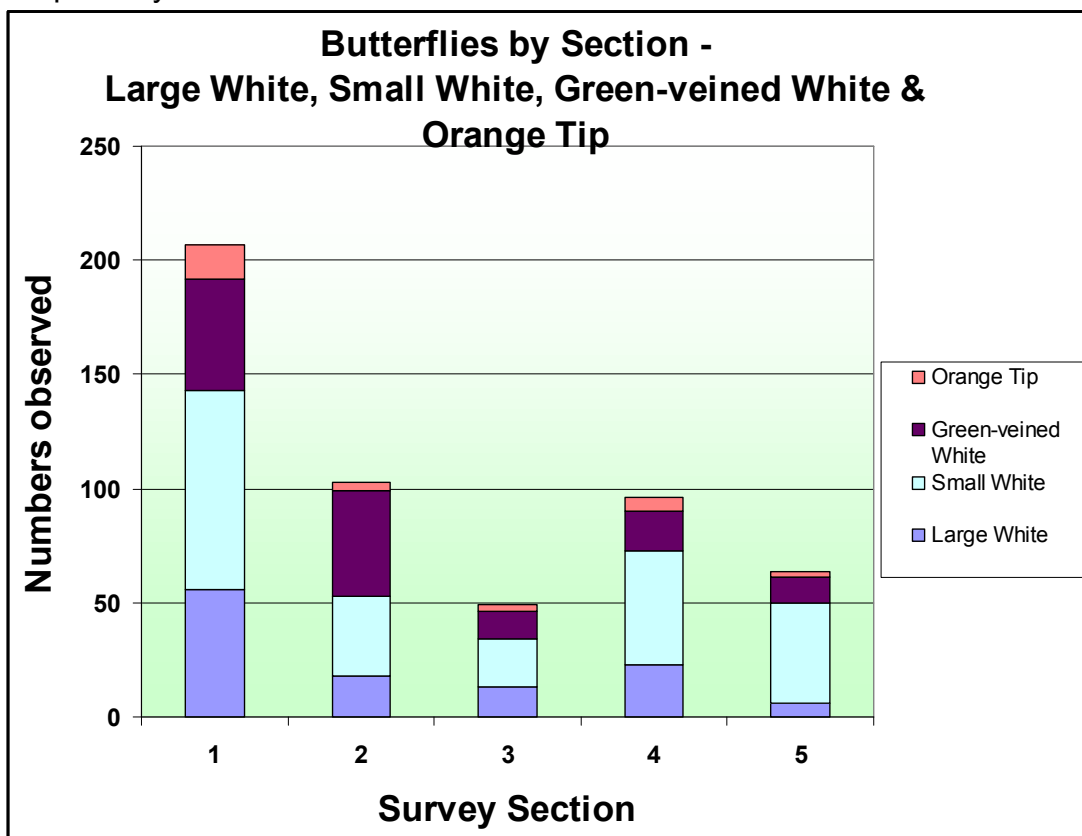


## A Report on the 2009 Butterfly Survey

Total Butterfly Count excluding Large Whites, Small Whites, Green-veined Whites & Orange Tips.  
Graphed by Section.

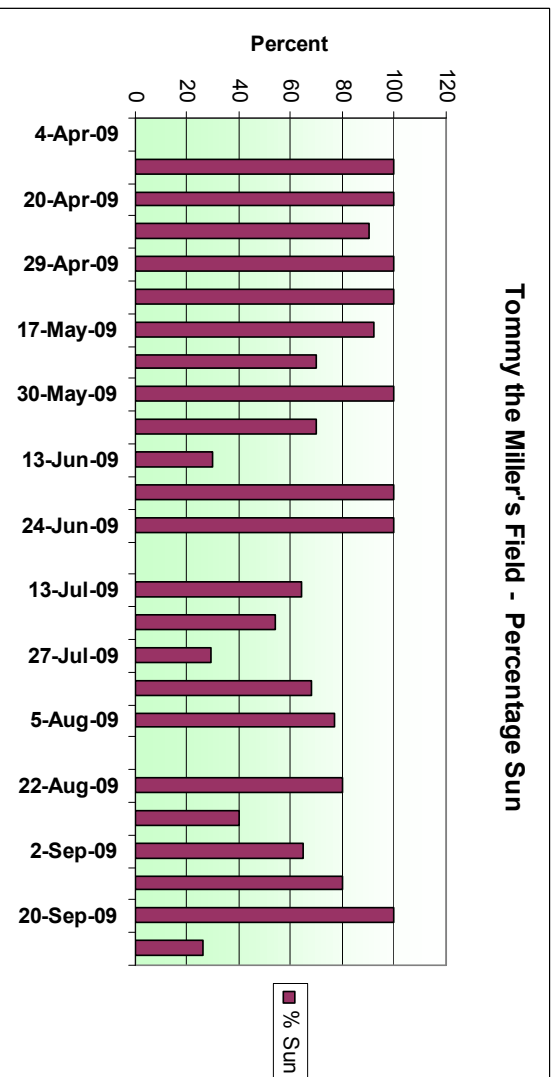
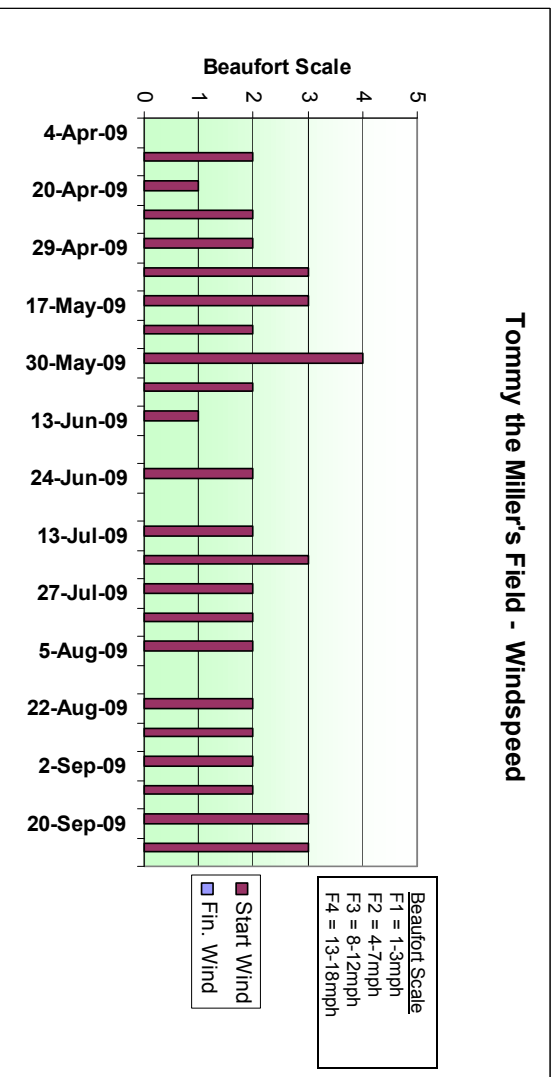
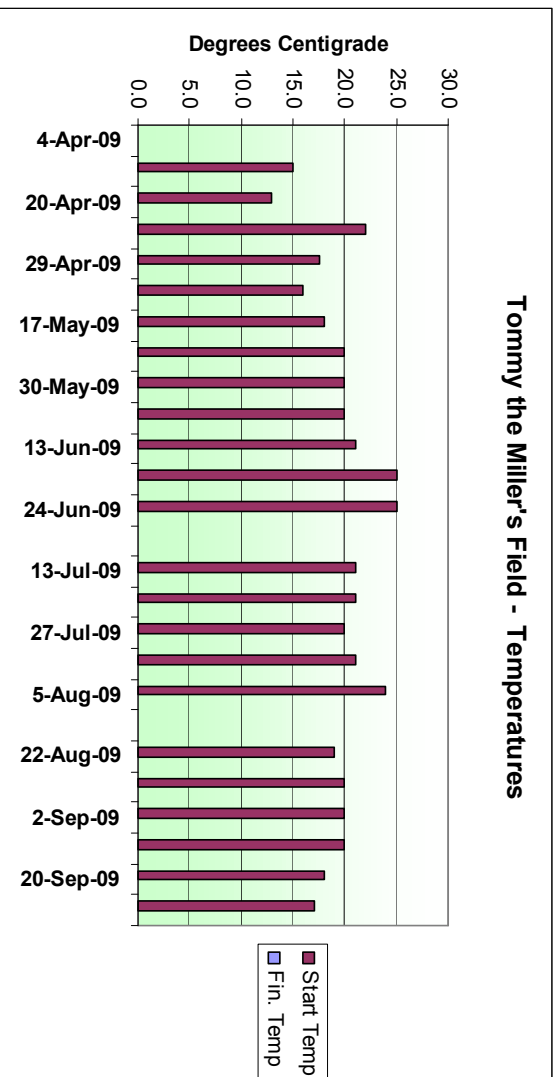


Total Butterfly Count of Large Whites, Small Whites, Green-veined Whites & Orange Tips.  
Graphed by Section.



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## Weather



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### Monthly weather reports

April was the third dry month in a row. High pressure dominated until the 27<sup>th</sup>, when an Atlantic low brought a little rain, the first for five weeks. Total rainfall for the month was 20mm (0.8 ins). There was a good deal of spring sunshine although hazy at times. Winds were light, often from a northerly direction, bringing cold nights and some frosts. Coldest nights occurred on 12/13<sup>th</sup> and 21/22<sup>nd</sup> with a slight frost putting early butterflies at risk, and checking the northward movement of spring migrants.

May was a bright, dry, but fairly windy month. At the end of the month high pressure brought clear sunny conditions and a temperature of 22.0°C (71.6°F) on the 28<sup>th</sup>, tempered by a cool SE wind. There were several cold nights during the first week with 3.3°C (37.9°F) recorded on the night of the 11<sup>th</sup>. Rainfall was again low with only 34mm (1.3 ins) recorded.

June was a warm and relatively dry. The mean max temperature was 16.2°C which is 0.3°C higher than the longterm average. And while there was 49.44mm of rainfall – just above average – two thirds of this fell in just one day on the 15<sup>th</sup>, when torrential rain fell during a two-hour spell during the evening. The total for the month was only 16.1mm or 36% of the normal for June. Most of the months rainfall was showery and localised, with places less than a mile apart experienced very different conditions.

For most of the month the wind was east/northeast and day time temperatures were limited by sea temperatures. It was only on the 30<sup>th</sup> that the maximum temperature topped 20°C. With the wind onshore there is always a risk of sea fog, there were five foggy days and the weather conditions on many days were rather murky.

The first week of July started with sunny, warm days (27.0°C, 80.6°F on 2<sup>nd</sup>), but this all seemed to go 'pear-shaped' through the rest of the month, with higher than normal rainfall. The total for the month was 165mm (6.5inches). A fast moving succession of low pressure systems brought spells of heavy rain and dry days alternately. Thunder occurred on several days with a storm late on the 15<sup>th</sup> bringing lightning strikes into the Berwick area, along with 15mm (0.6 ins) of rain, during the hour it lasted. A particularly wet spell came on the 17<sup>th</sup>/18<sup>th</sup> with persistent rain through the period and a strong to gale force NW wind. A total of 71mm (2.8 ins) of rain was recorded in 24 hour period at East Ord, with even higher figures recorded along the coast.

Although August was a drier month than July, it again brought a fast moving succession of low pressure systems causing spells with rain and dry days alternately. Average temperatures were recorded throughout with no really hot days. The remnants of "Hurricane Bill" came on the 23/24<sup>th</sup>, losing most of its ferocity in the west of the country. Here the 24 hour period brought 22mm (0.9 ins) of rain with a fresh/strong, mild west wind. Rainfall for the month came on 12 days with a total of 78mm (3.1 ins).

September was a mild and relatively dry month according to readings taken at the Spittal Weather Station. The mean maximum temperature of 17.3°C was 1.3°C higher than the longterm average, while the 45.5mm of rainfall recorded

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was below the September average. The Reverend Dr. John Harrison of St John's Vicarage said "The total rainfall for the month constituted 83% of the long term average but 33mm of this fell in 48 hours on the 2<sup>nd</sup> and 3<sup>rd</sup>. After this the remainder of the month was exceptionally dry with 19 days registering no measurable fall despite the winds being dominantly from the rain-bearing westerly direction".

The above weather information was obtained from Berwick Advertiser (July 9th and Oct. 8th, 2009), with permission of the Rev. Dr. John Harrison of St John's Vicarage, Spittal.

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### Comparison between the 2006, 2007, 2008 and 2009 Observations.

The surveys, in all years, took place between the 1<sup>st</sup> of April and the 29<sup>th</sup> of September, however the total number of butterflies observed during the 26 weeks of 2009 was 999, more than the 811 and the 829 during 2008 and 2007, but considerably less than the total number of 1472 seen during 2006.

The numbers of different species was 14 this year, compared with 14 in 2008, 12 in 2007 and 13 in 2006.

#### Species observed

2006	2007	2008	2009
Common Blue	Common Blue	Common Blue	Common Blue
Green-veined White	Green-veined White	Green-veined White	Green-veined White
Large White	Large White	Large White	Large White
Meadow Brown	Meadow Brown	Meadow Brown	Meadow Brown
Orange Tip	Orange Tip	Orange Tip	Orange Tip
Painted Lady			Painted Lady
Peacock	Peacock	Peacock	Peacock
Red Admiral	Red Admiral	Red Admiral	Red Admiral
Ringlet	Ringlet	Ringlet	Ringlet
Small Copper	Small Copper	Small Copper	Small Copper
Small Tortoise shell	Small Tortoise shell	Small Tortoise shell	Small Tortoise shell
Small White	Small White	Small White	Small White
Wall		Wall	Wall
	Comma	Comma	Comma
		Small Skipper	

### Weather

Much of the variation in butterfly numbers can be attributed to the poor weather experienced during the survey periods. Below is a comparison of weather records for 2006, 2007, 2008 and 2009, gathered from a continuous weather recording station at Letham Shank Farm. This is a small farm situated just to the west of the A1 on the north bank of the river Tweed. Letham Shank Farm, grid ref NT978537, is one kilometre west of the survey area.

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2006

Date	Av Barometer mb.	Max. Temp °C	Min. Temp °C	Av Wind Dir. (T)	Av Wind kt.	Rainfall mm.	Sunshine hr.
April	1004	11.7	3.1	248	8.1	9.3	174.2
May	1004	13.9	6.0	192	6.5	53.3	194.0
June	1012	18.0	9.5	189	4.6	16.7	170.3
July	1011	21.3	12.1	192	4.3	8.0	253.2
August	1004	18.0	11.4	225	5.2	96.3	130.3
September	1001	18.4	11.3	204	4.1	54.8	133.5

2007

Date	Av Barometer mb.	Max. Temp °C	Min. Temp °C	Av Wind Dir. (T)	Av Wind kt.	Rainfall mm.	Sunshine hr.
April	1019	15.0	7.3	162	4.1	0.9	53.7
May	1006	14.5	7.5	185	6.5	59.7	145.1
June	1010	15.1	10.2	158	4.8	65.8	78.6
July	1005	18.4	10.8	196	5.0	121.8	137.1
August	1011	17.9	10.7	216	6.3	61.1	131.6
September	1017	17.1	7.9	219	7.0	31.6	118.0

2008

Date	Av Barometer mb.	Max. Temp °C	Min. Temp °C	Av Wind Dir. (T)	Av Wind kt.	Rainfall mm.	Sunshine hr.
April	1007	10.7	4.3	171	7.9	64.0	140.60
May	1016	14.1	8.5	159	6.8	25.8	185.60
June	1011	17.3	9.5	205	6.2	67.5	141.80
July	1009	18.4	12.2	179	6.3	48.9	120.50
August	1004	18.2	12.5	197	5.5	168.9	76.90
September	1013	16.0	10.2	204	6.7	125.5	91.20

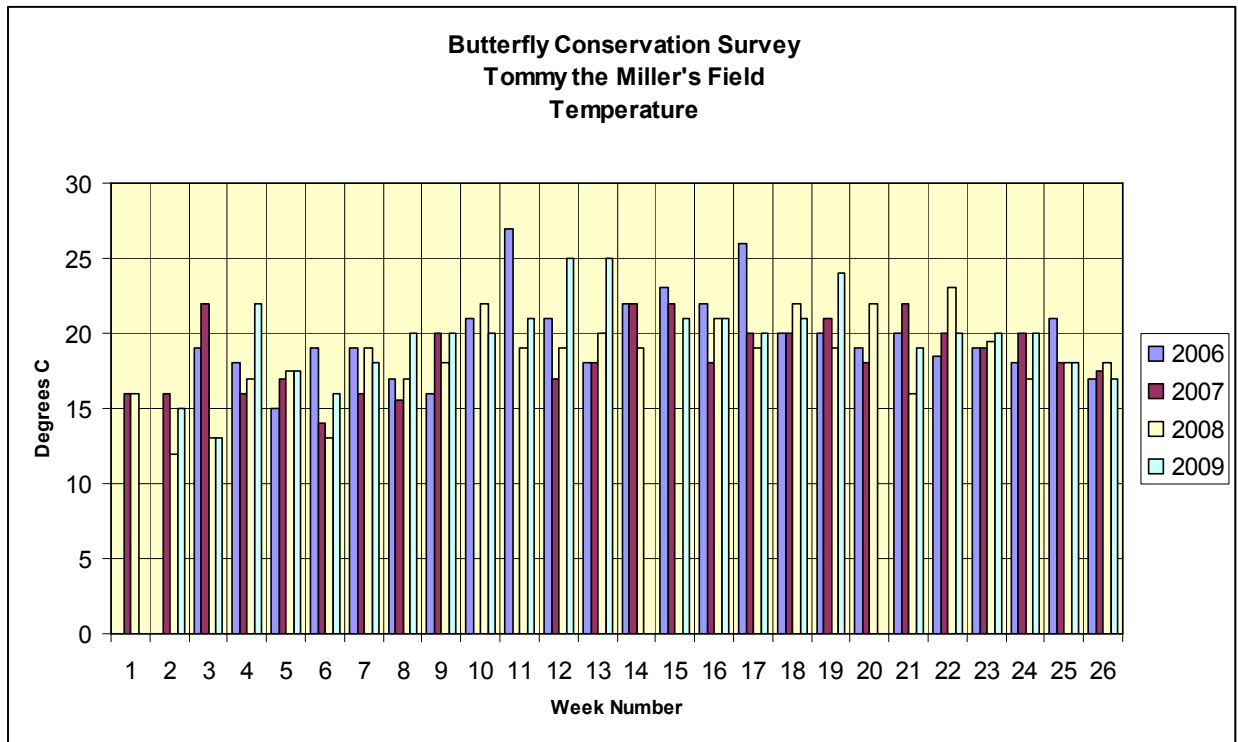
2009

Date	Av Barometer mb.	Max. Temp °C	Min. Temp °C	Av Wind Dir. (T)	Av Wind kt.	Total Rainfall mm.	Total Sunshine hr.
April	1010	12.8	5.7	177	7.2	8.3	153.8
May	1012	15.1	6.9	185	8.0	39.4	234.8
June	1016	16.0	10.0	161	5.9	22.0	182.0
July	1005	18.8	11.9	211	7.0	180.4	72.3
August	1008	18.9	11.9	214	6.2	64.4	30.5
September	1015	16.5	9.8	230	7.3	56.5	33.5

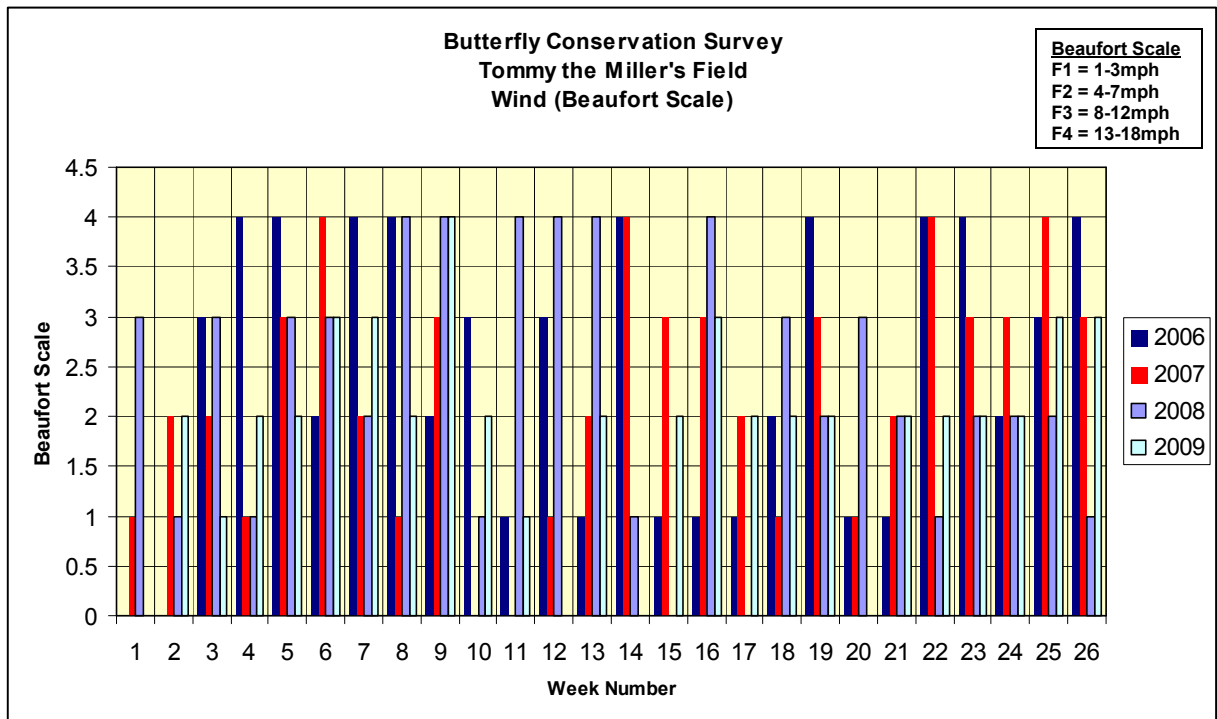
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## Weather records taken during surveys.

Temperature 2006, 2007, 2008 and 2009

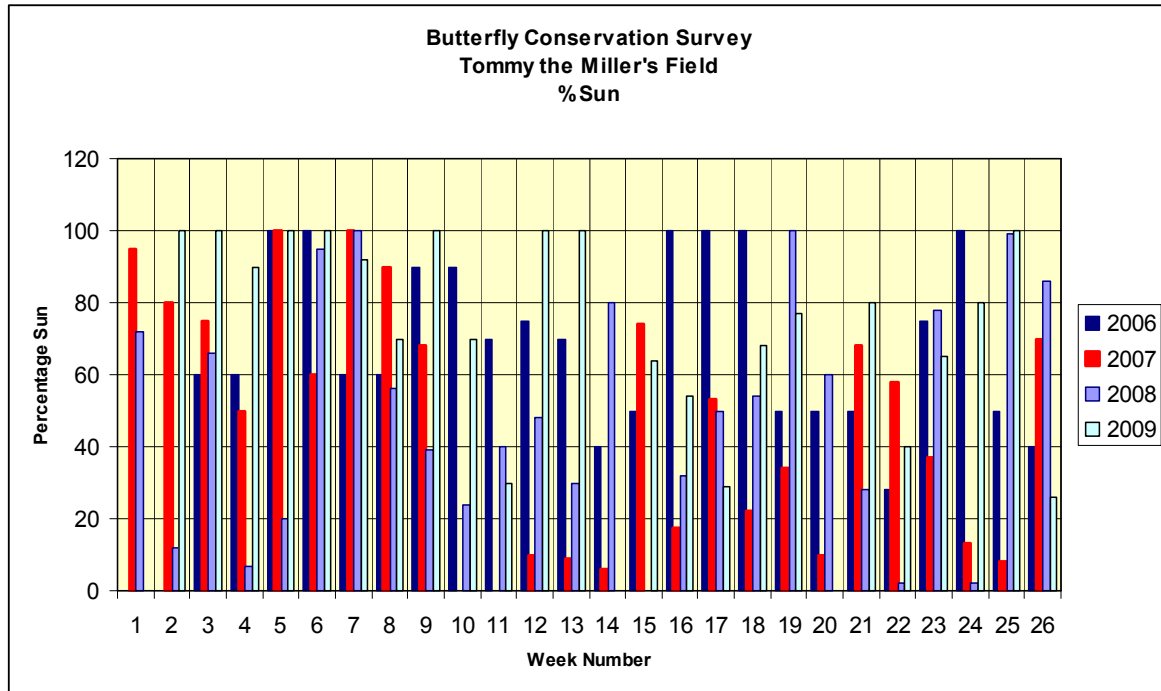


Wind 2006, 2007, 2008 and 2009



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% Sun 2006, 2007, 2008 and 2009



### Evaluation.

It should be understood that the 999 butterflies we recorded from Tommy the Miller's Field in 2009 are only a small sample of the population the field supports. The survey "area" is a moving cube 5m. x 5m. x 5m; butterflies only get counted if survey cube and flight-path coincide so the majority are not recorded. Tommy the Miller's Field must be host to thousands of butterflies each season. Lightly grazed and unfertilised pastureland is now in very short supply, so Tommy the Miller's Field is extremely important for butterflies and all sorts of wildlife.

Our butterfly samples are taken in the same way as at hundreds of other sites in the UK. The data have been sent to Butterfly Conservation ([www.butterfly-conservation.org.uk](http://www.butterfly-conservation.org.uk)), who co-ordinate "independent" transects for the United Kingdom Butterfly Monitoring Scheme (UKBMS, [www.ukbms.org.uk](http://www.ukbms.org.uk)). Butterfly transects give a true indication of change in species numbers (Thomas, 2005). They are especially valuable when they have been continued for a large number of years (some were initiated in 1976), when they allow monitoring of the effect on butterflies of changes in land use, habitat development, weather and climate (Brereton *et al*, 2006). Even when there are no long time-series of data, the large number of monitored sites allows comparison of data across the UK and provides reliable indices for rarer species. The results also contribute to the "sightings" sent to Butterfly Conservation by thousands of groups and individuals, and then collated and verified by local co-ordinators. These are especially useful for showing changes in distribution (Fox *et al*, 2006).

There is usually a marked correlation between butterfly numbers and weather conditions. See, for example, "No food, no sex – the summer of 2007 was dire for butterflies" (Butterfly Conservation, April 2008 (1)). 2008 was not much better. Data from butterfly transects show that 2008 was the poorest summer for

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butterflies for 25 years (Butterfly Conservation, April 2009 (1)). Although a run of poor seasons is not unusual and butterflies populations have always coped in the past, combined with the loss of crucial habitat such as flower-rich grassland a bad season or two means once-common species may be under threat in parts Britain.

Comparison of the results from a single site for four field seasons does not tell us a great deal about long-term trends – we need to continue the butterfly transect and comparisons for several years to come. However comparison of the observations of 2006, 2007, 2008 and 2009 (see graphs below) does illustrate the short-term effects of the weather on butterfly numbers.

Spring numbers of those species which over-winter as adults, such as Small Tortoiseshell, Peacock and Comma, depend on how many went into torpor the previous autumn and how many survived the winter (Toms, 2008). Indications both at Tommy the Miller's Field and nationally are that poor weather conditions in 2007 & 2008 contributed to low numbers of Peacock butterflies in spring 2009, but these bred very successfully, with good numbers in autumn to go into hibernation for winter 2009/10. Small Tortoiseshell, another species that hibernates as an adult, had a particularly poor year in 2008 nationally and at Tommy the Miller's. As well as inclement weather a parasite (a fly called *Sturmia bella*) is thought to be partially responsible in this case. Immigrants from continental Europe may have boosted the population late in 2008 (Butterfly Conservation, 2008 (2)), and numbers were looking better in late summer 2009 at Tommy the Miller's.

White butterflies usually over-winter as pupae, Orange-tips have a single generation each year while Small, Large and Green-veined whites have a winter and one or more summer generations. Orange-tips were notably scarce this spring, about the same numbers as in 2008. Whether they had a successful breeding season this year will not be known until adults from eggs laid this year are on the wing in 2010. Numbers of Large Whites and particularly Green-veined Whites built up steadily over the summer, but Small White showed a less marked seasonal increase than in previous years.

Common Blue and Small Copper over-winter as caterpillars, and have one or two additional summer generations. Small Coppers numbers were low in the spring of 2009 but high numbers were recorded from the second brood. Common Blues were observed in much greater numbers than 2008, with high counts from both the first and second broods.

Ringlets and Meadow Browns also over winter as caterpillars, but have a single generation each year. Numbers of both these butterflies in Tommy the Miller's Field were much lower in 2009 than in the hot summer of 2006, but we will not know if 2009 was a good breeding season until the 2010 adults emerge.

The Painted Lady is a migrant usually abundant in late summer. None were recorded from Tommy the Miller's in either 2007 or 2008 (nationally low years), but 2009 saw "the biggest migration of butterflies into the UK for more than decade", a phenomenon continuing late into the summer (Butterfly Conservation, 2009 (2)). The invasion was a result of unusually heavy autumn

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rains in the butterflies' wintering ground in Morocco, plenty of the thistles and mallows which are the caterpillars' food plant, and a bumper crop of black spiny caterpillars. When summer caused the plants to die, the adults headed north to southern Europe, and eventually succeeding generations reach Britain (Nesbit, 2009). 64 Painted Ladies were recorded on the transect in Tommy the Millers in 2009. Red Admirals, another migrant, were plentiful towards the end of 2008 but only one was sighted during 2009. They were scarce this year throughout the Berwick area.

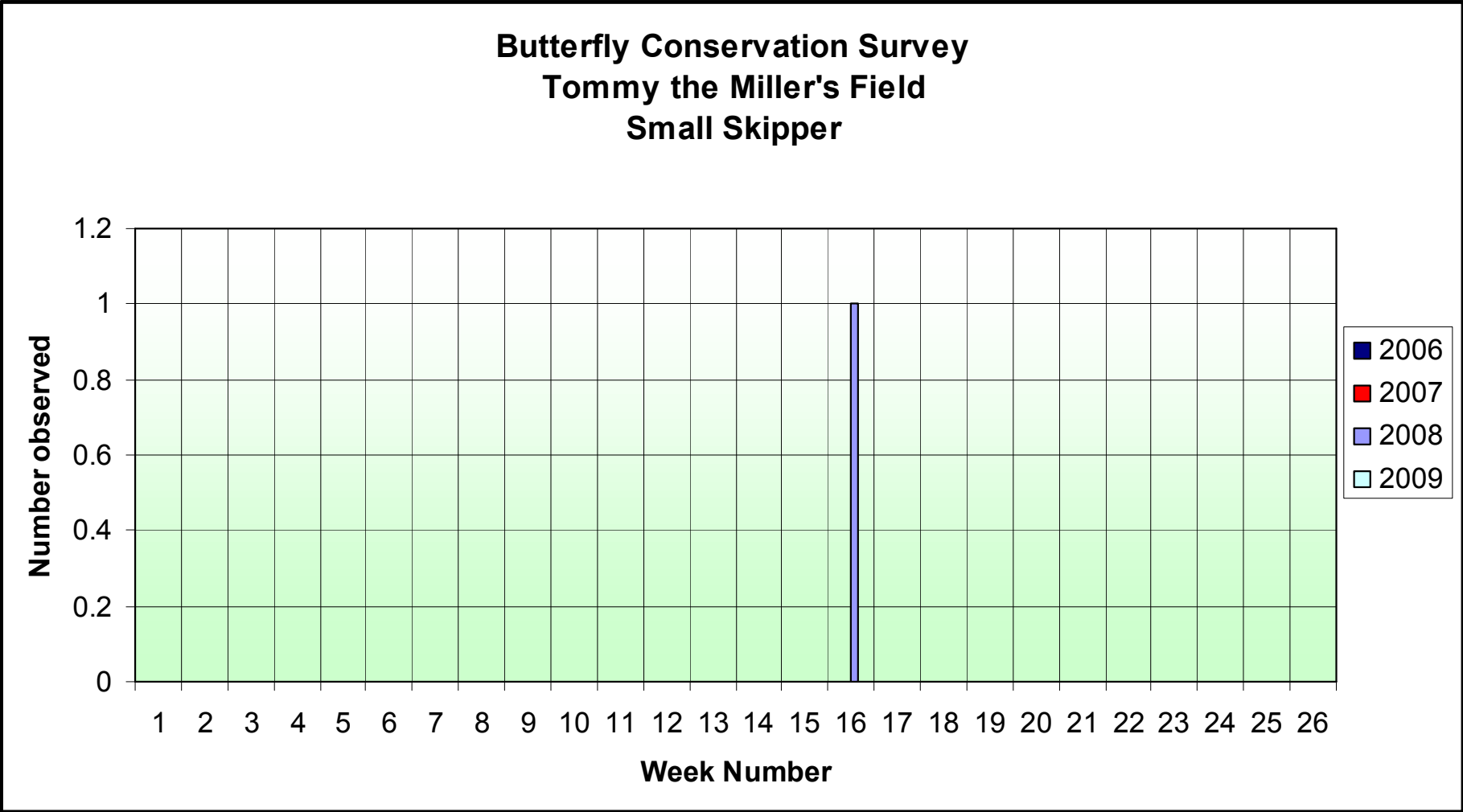
Some "southern" butterflies are moving north into our area, presumably in response to climate change (Butterfly Conservation, 2008 (3)). No Small Skippers and only one Comma were recorded in 2009, which was disappointing. However two Walls were observed from the first brood and 27 from the second brood, which is very encouraging and reflects a national trend for increasing numbers since 1976 (Luck, 2009).

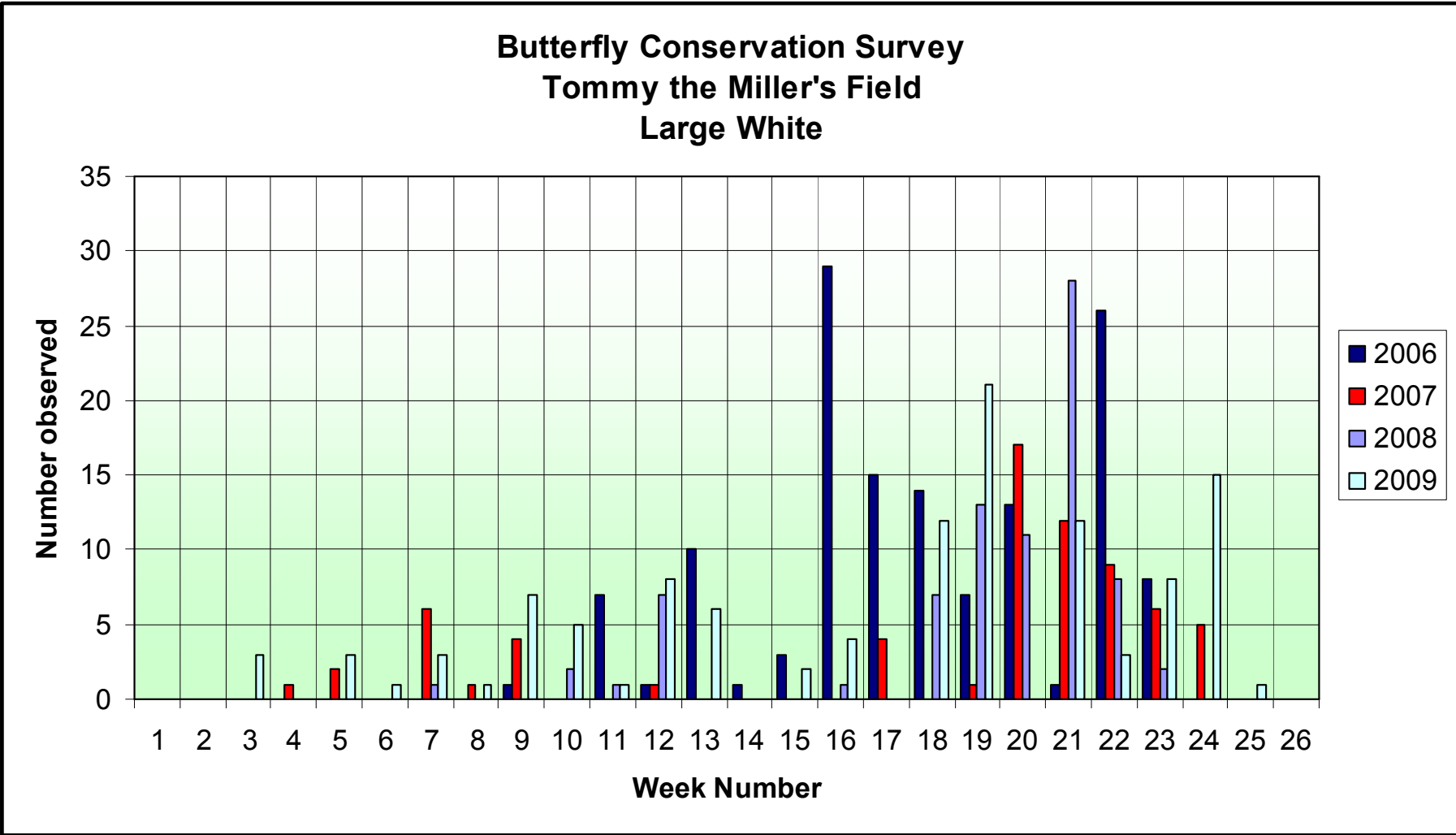
In general, more butterflies have been observed during the 2009 season compared with 2008. This is probably due to April, May and June in 2009 being a little warmer and much drier than the same months in 2008. This period is crucial in many butterflies' life cycles, as it is when the overwintering caterpillars pupate or overwintered chrysalises turn into adults. Those species with an early summer generation (such as Small Copper and Peacock) had good egg-laying conditions early in the year, and second broods of Green-veined Whites and Common Blues overcame the damper conditions later. Those with a single generation may also have bred well.

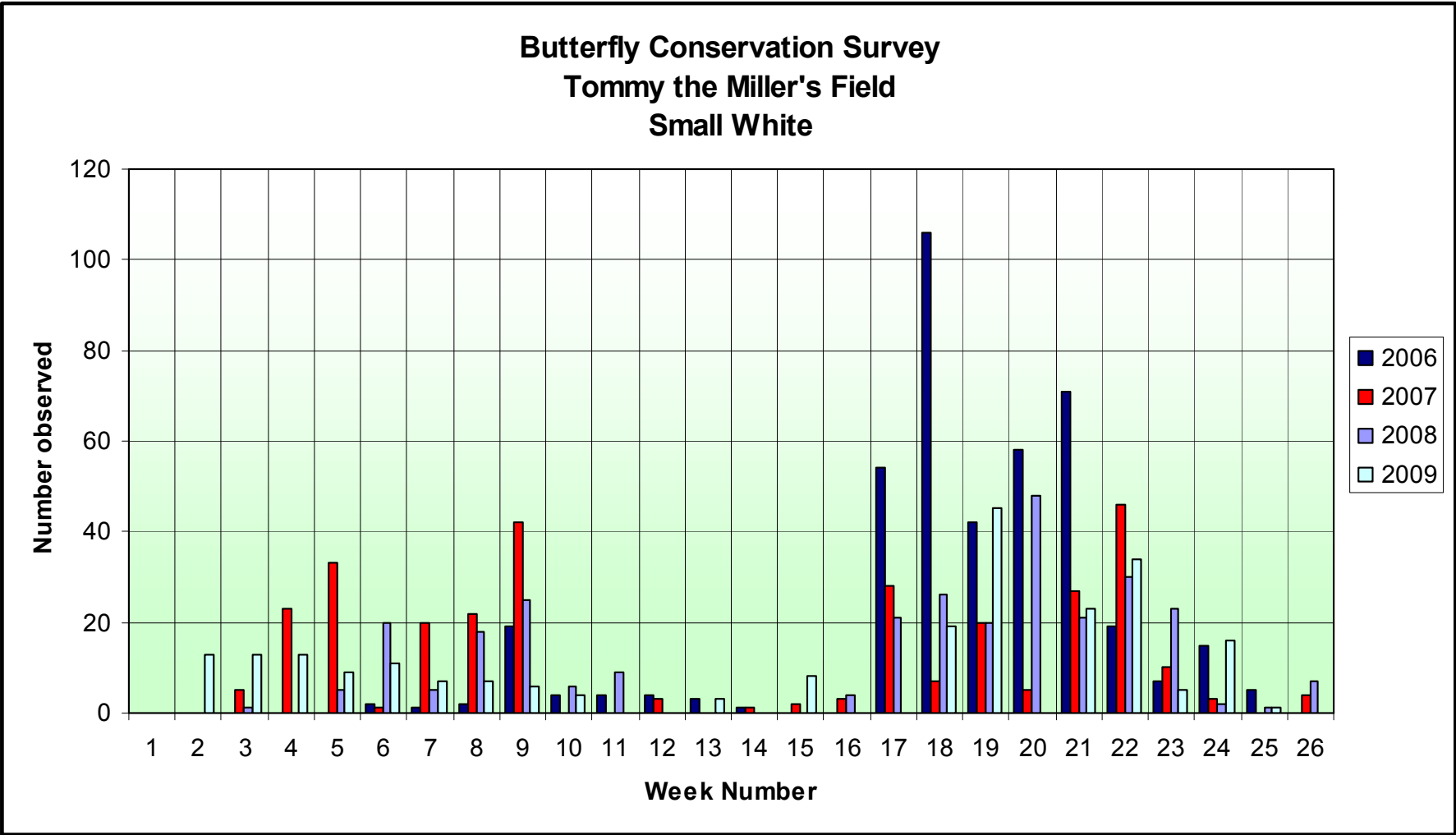
We can't wait to see what adults fly in 2010!



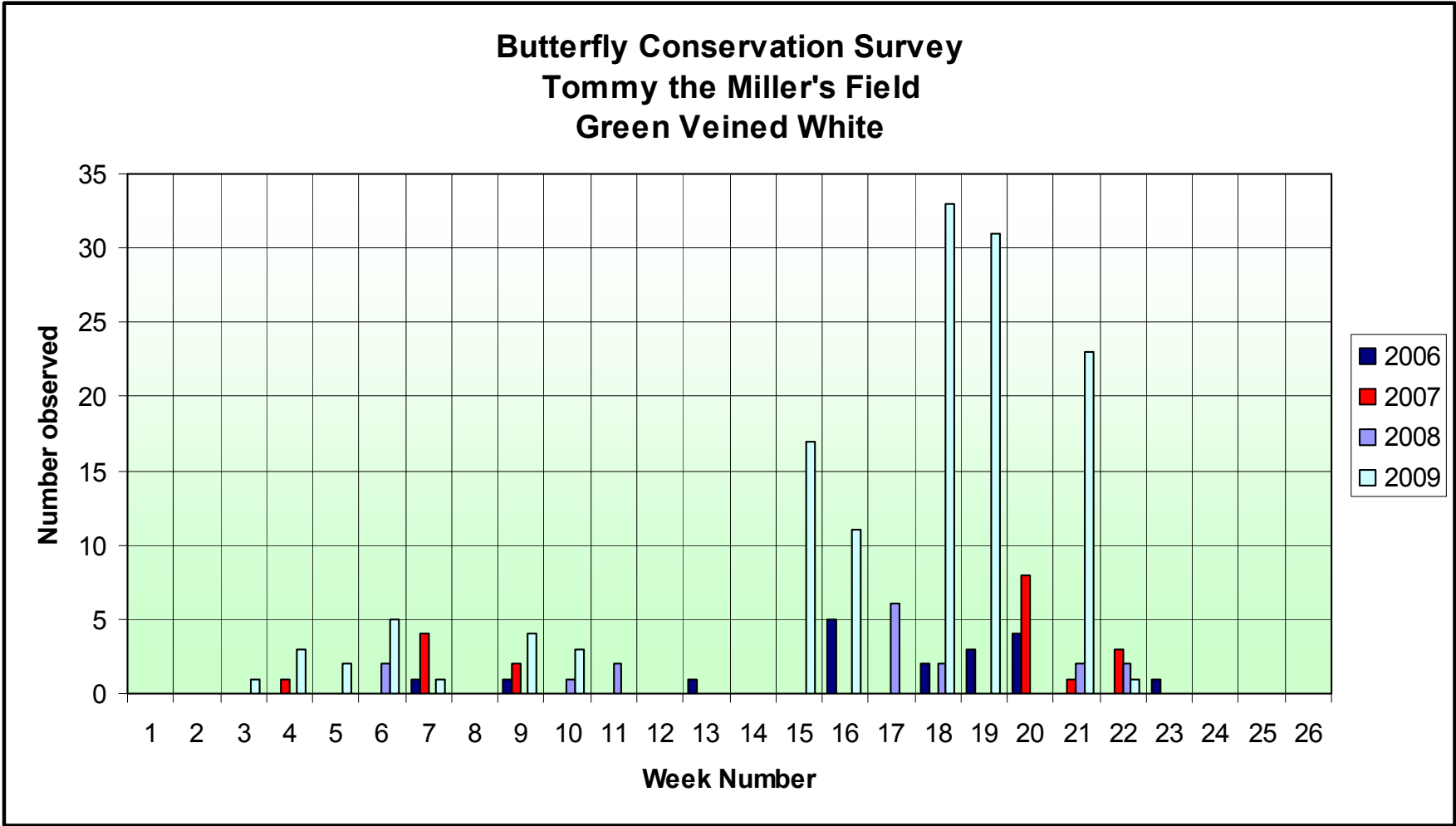
**Butterfly Species**



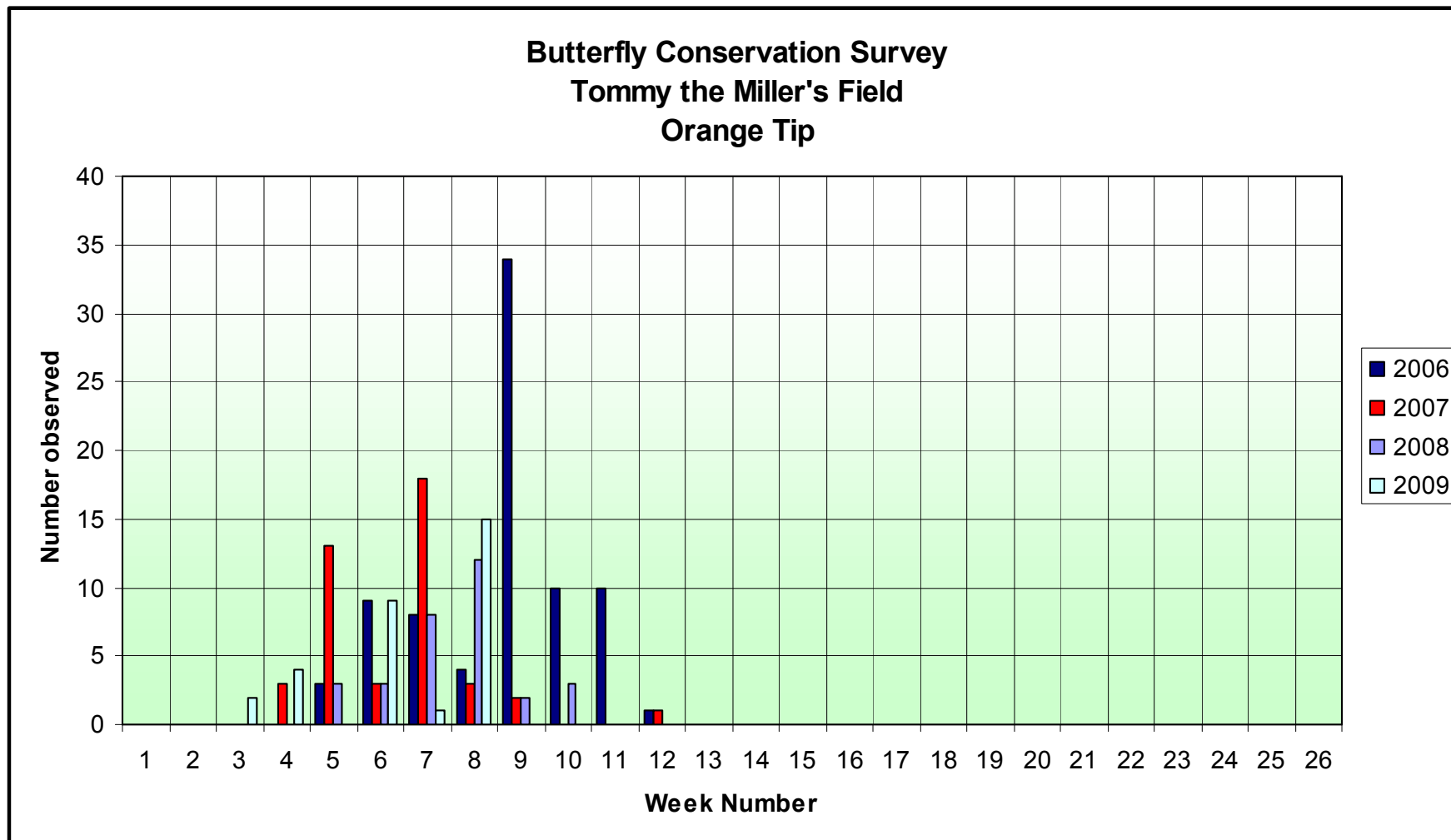




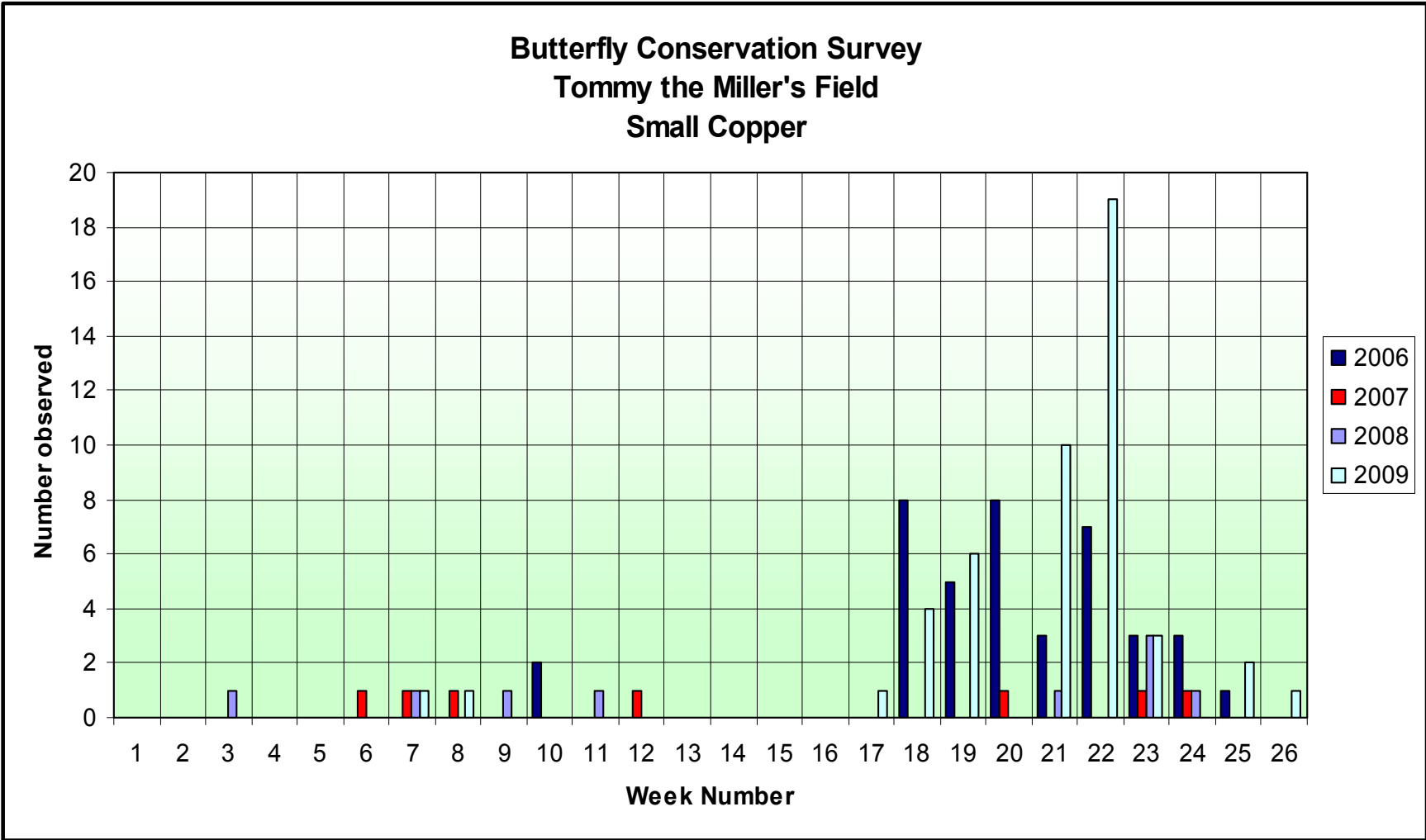
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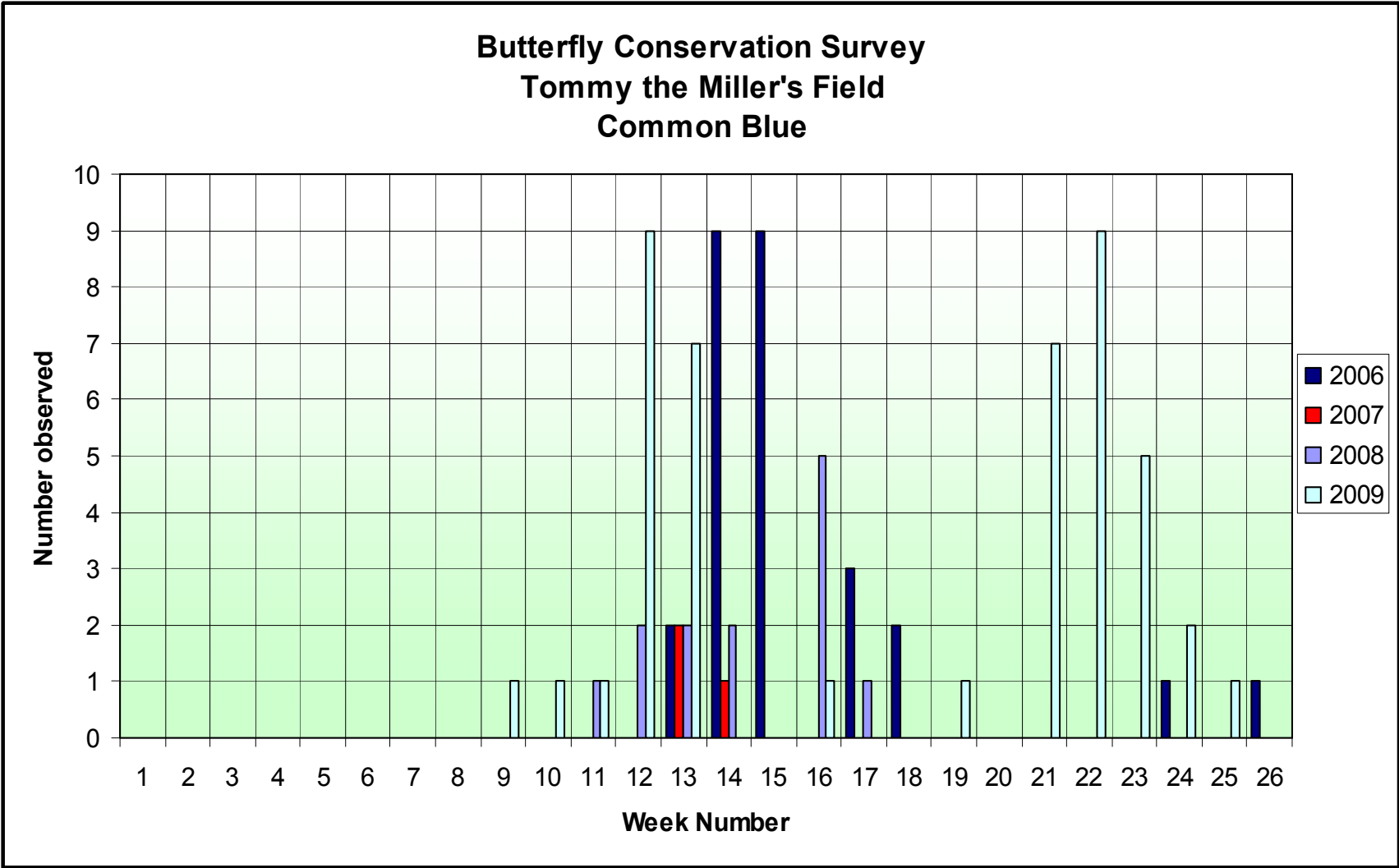


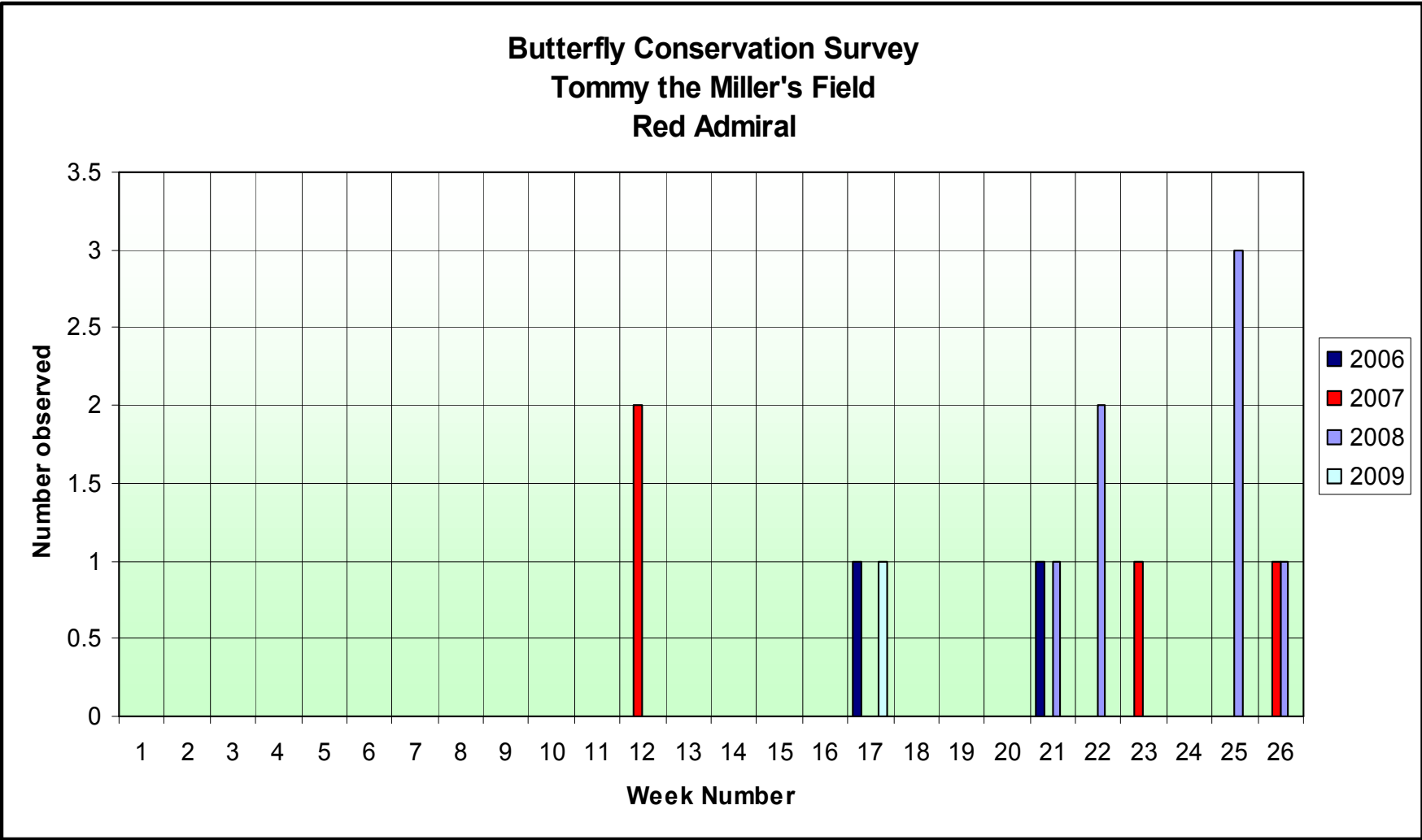
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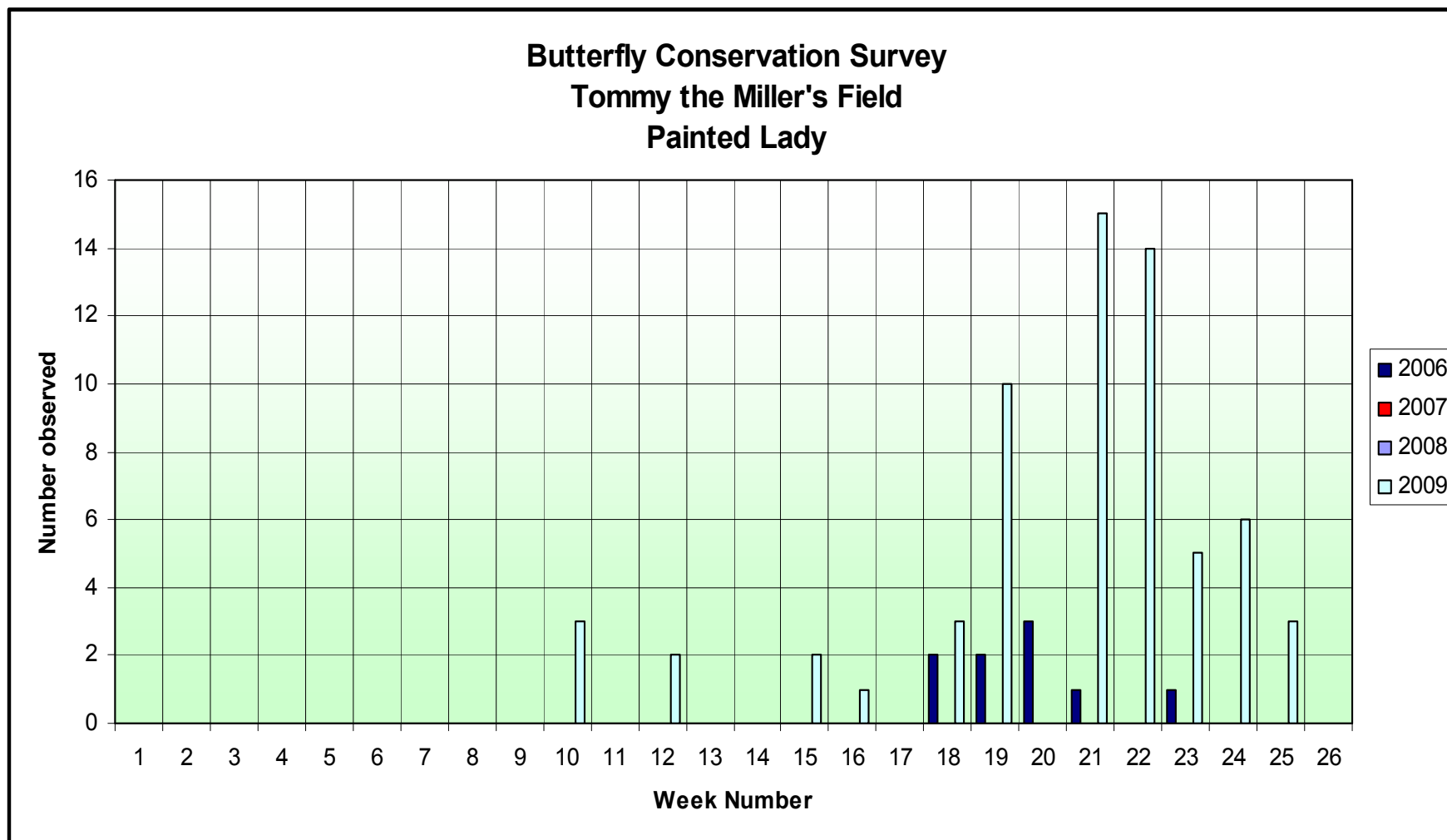


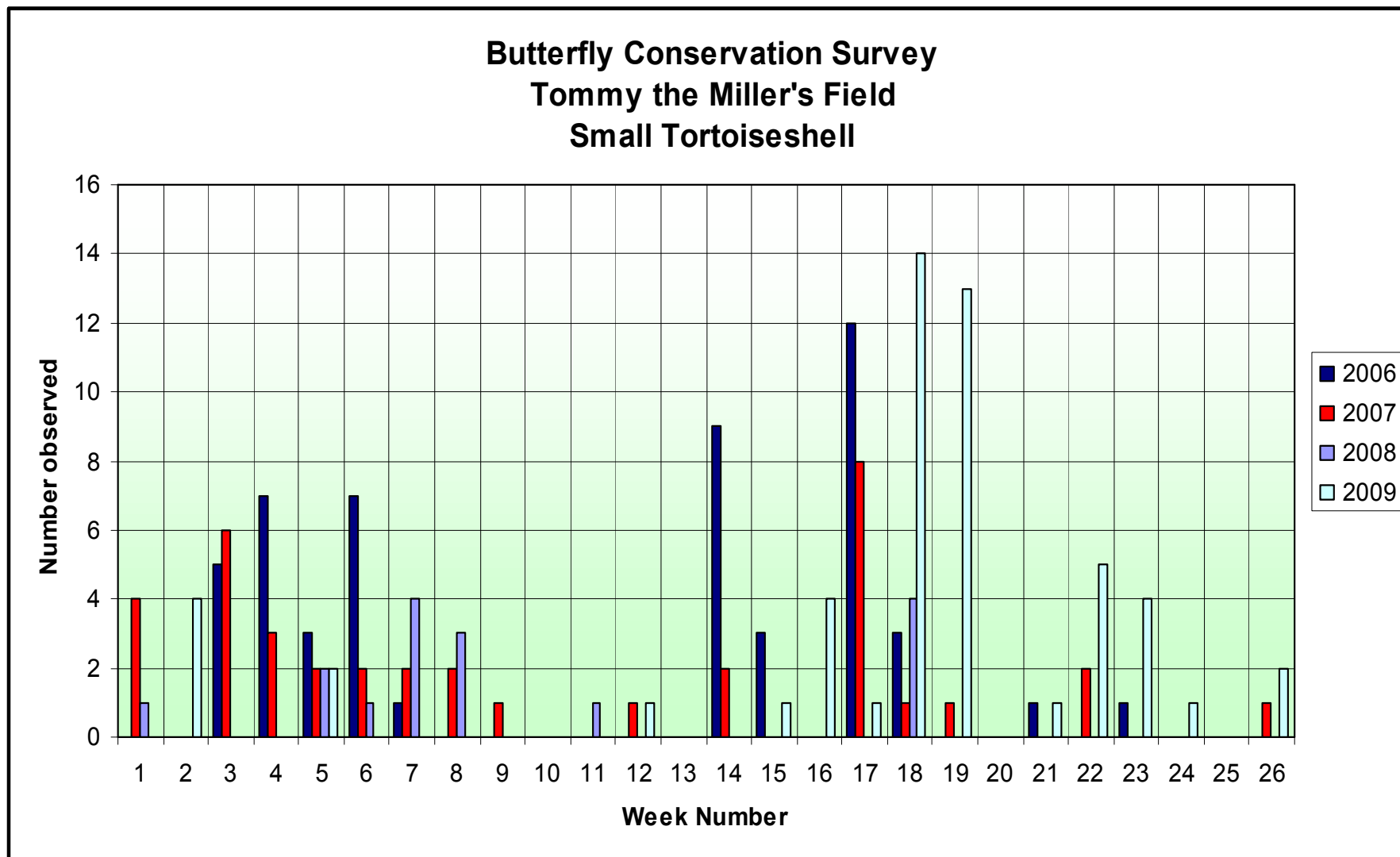
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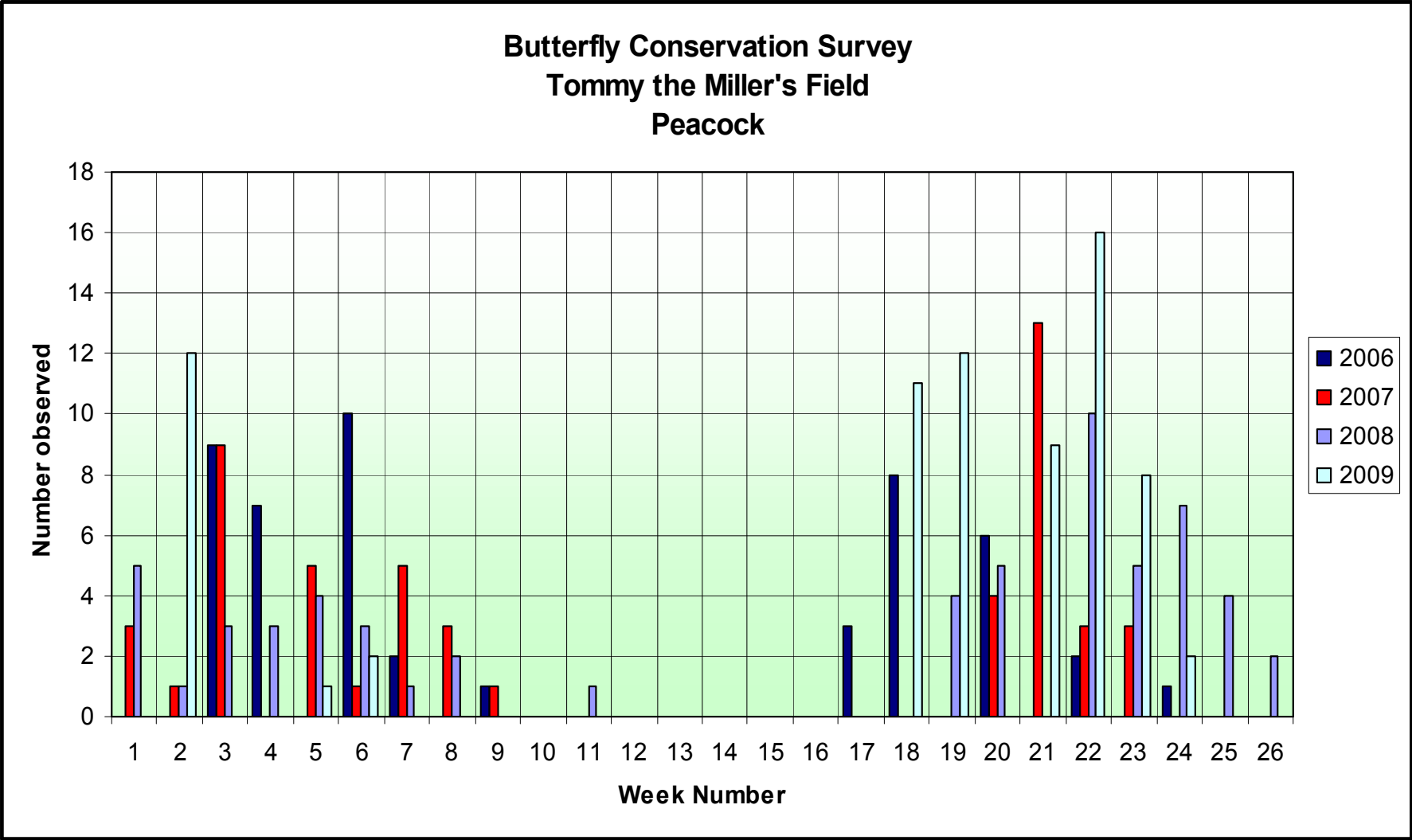




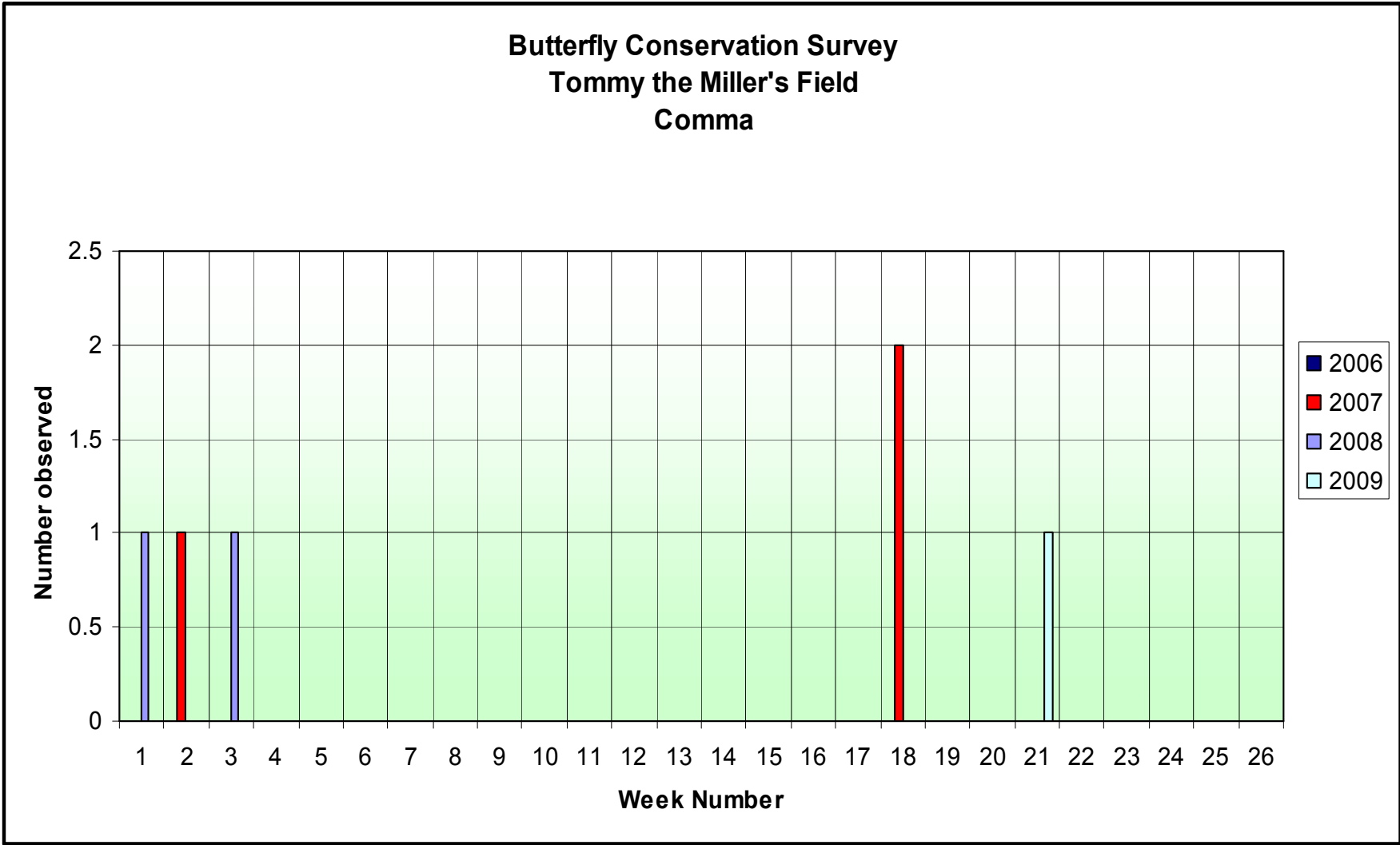




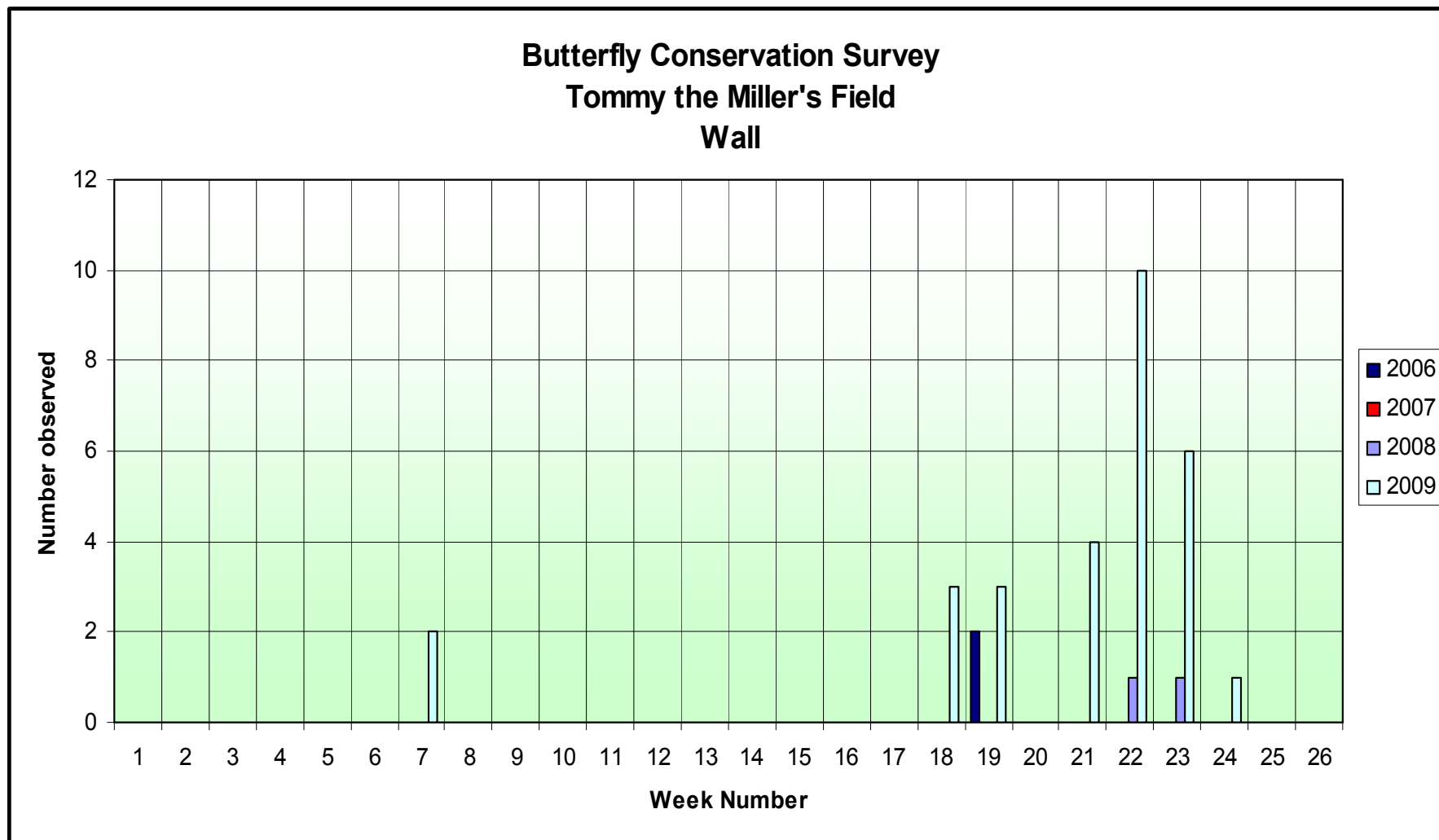


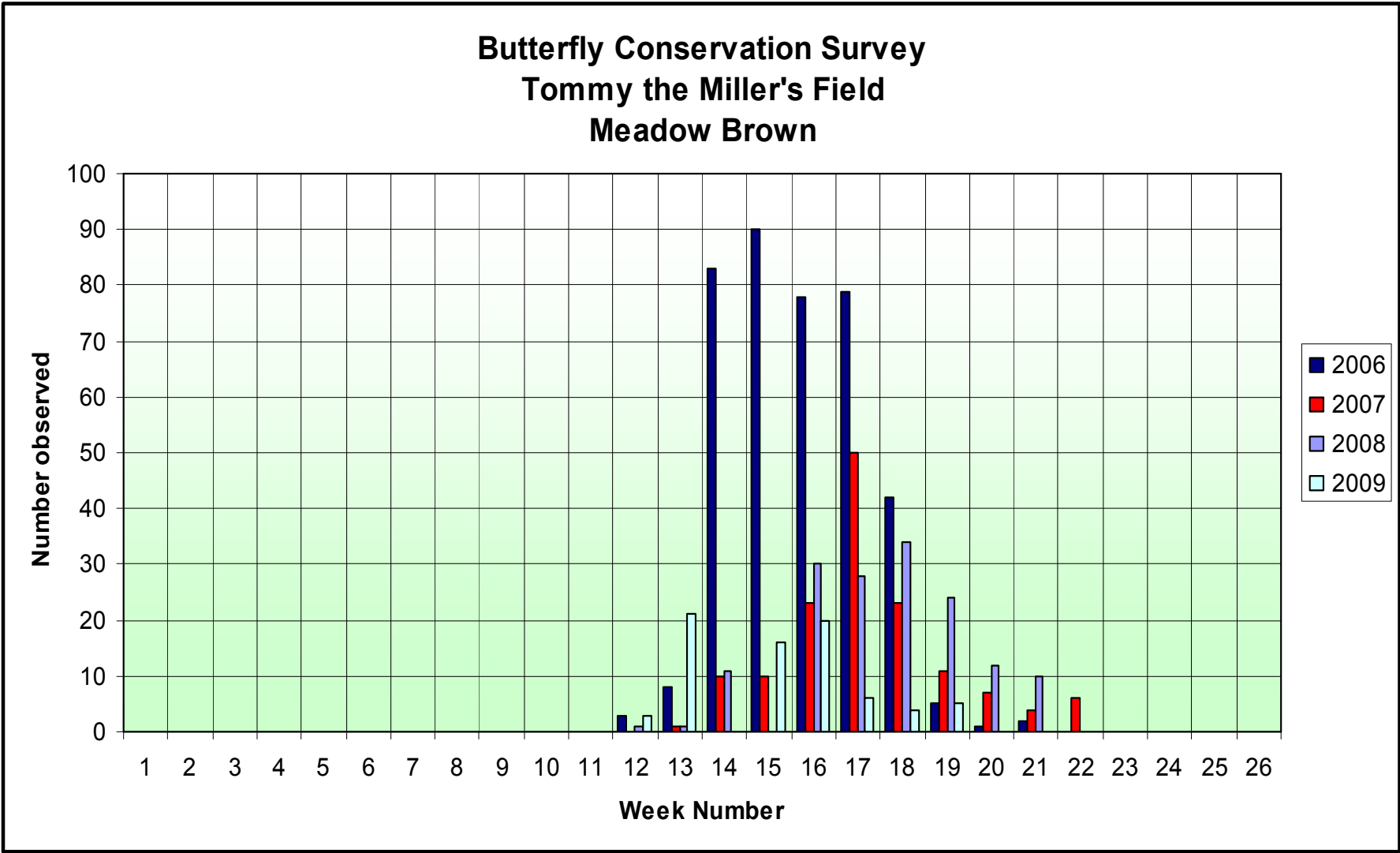


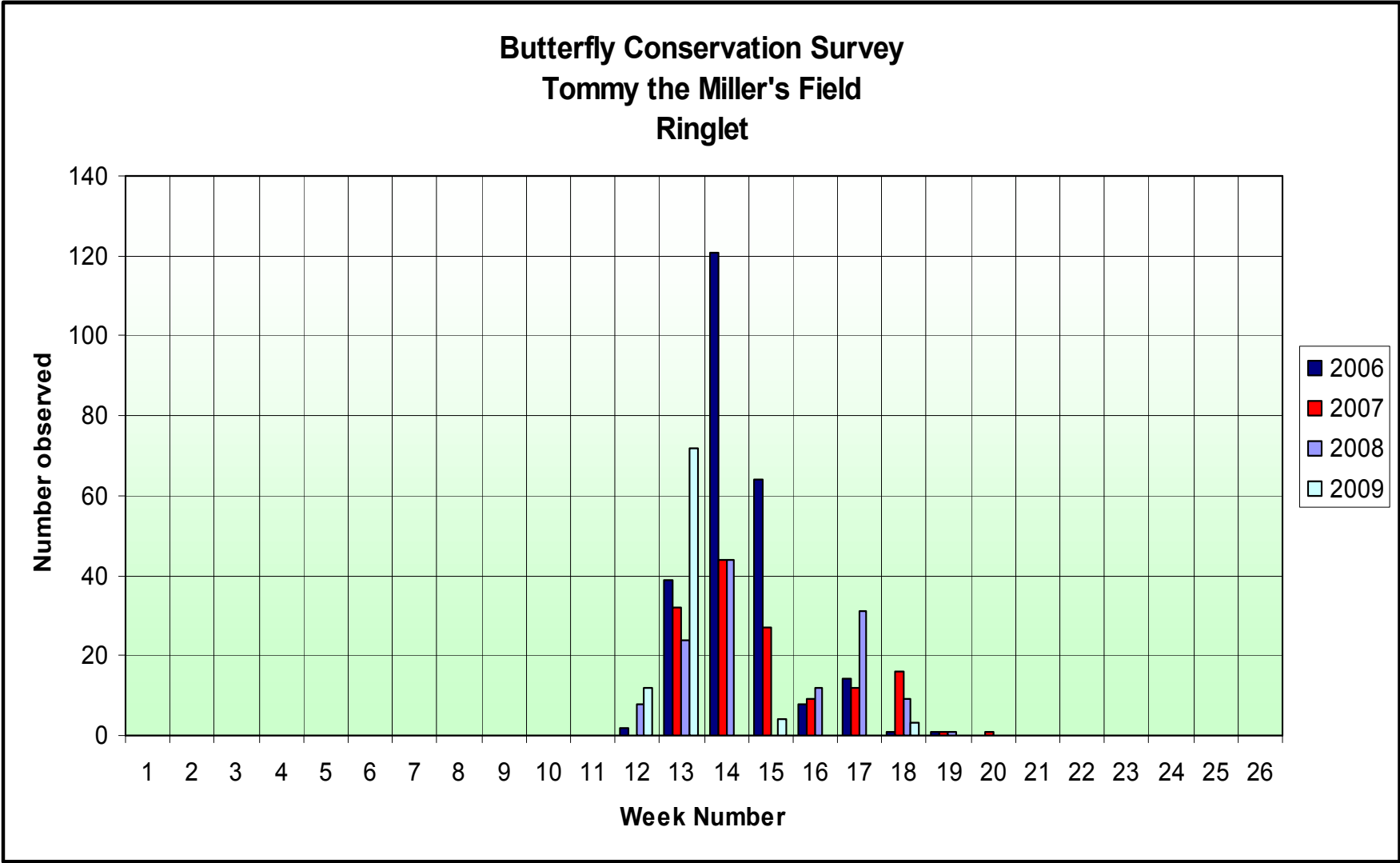
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United Kingdom Butterfly Monitoring Scheme (UKBMS). Website – [www.ukbms.org.uk](http://www.ukbms.org.uk) .

**Appendix 1**

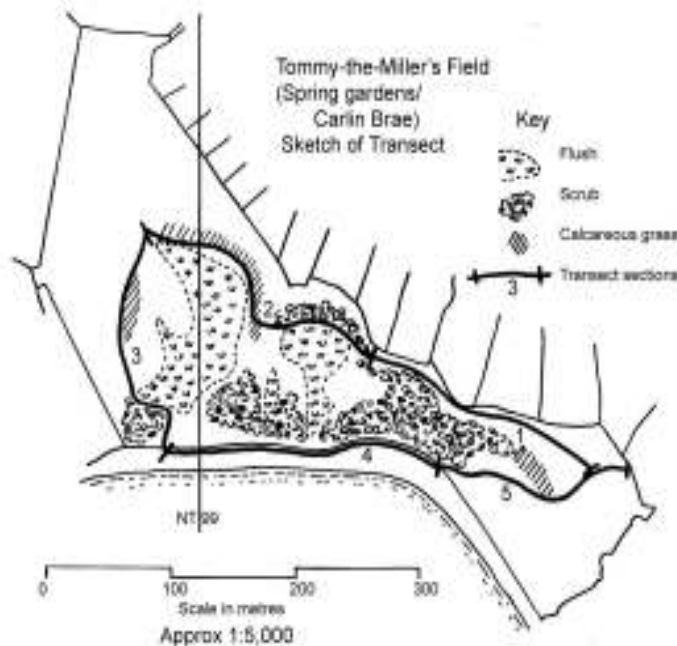
Details of Survey Area as supplied to Butterfly Conservation

<b>Site Name</b>	Carlin Brae / Spring Gardens (names on OS map) (Tommy-the-Miller's Field usual local name)		<b>County</b>	Northumberland	
<b>OS Grid ref. (6 fig.)</b>	NT 991 535	<b>OS map no. (1:50 000)</b>	75	<b>Year transect established</b>	2006
<b>Transect length (m)</b>	1,025m		<b>Transect width</b>	5M	
<b>Overall habitat description</b>	Dry semi-improved grassland with wet flushes on steep south-facing slope				
<b>Sites conservation status</b>	None				
<b>Owner details</b>	Mr and Mrs MacPherson, Castle Hills Farm, Berwick upon Tweed, TD15 1PB				

**SITE MAP:** 1:10 000 or 1:12 500 photocopy based on an OS map, showing scale and sections



Tommy-the-Miller's Field  
(Spring Gardens/  
Carlin Brae)  
From 1:10,000 O.S.



**TARGET NOTES**

As you can see, the area slopes steeply towards the south, sheltered from cold winds.

The main habitat is semi-improved, dry, flower-rich neutral grassland (E2.1) with rush-dominated flushes (D4) (Sections 1&2), but there are areas of more calcareous grassland (E1.2) (Sections 1&3), substantial amounts of impenetrable hawthorn scrub (F3.1) which were necessarily skirted by the transect route (Sections 1,2&4) and Section 4 runs near the Tweed Estuary (A2) on one side (although also including bramble scrub and a warm, sunny wall). To the north of the field (outside the transect) are large mature gardens (privet, buddleja, cabbages, etc).

The field is grazed very rarely by beef cattle – much higher grazing densities would benefit the butterflies' food-plants (e.g. Sorrel, Birdsfoot Trefoil). Hardheads was an excellent nectar source later in the year, as were the numerous thistles.

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## Summary of Habitat

			<u>HABITAT</u>	<u>MANAGEMENT</u>
Section No.	Grid Ref.	Section Length (m)	Description/notes & main species	Description/notes
<b>1</b>	NT 992 535	200	Semi-improved grassland – a mix of neutral (on drift) and calcareous (on shallower soils) with dense hawthorn scrub invading rapidly. Mature gardens to north.	Very occasional grazing by cattle, scrub invading rapidly
<b>2</b>	NT 990 536	225	Steep bluffs with shallow calcareous soils and flower-rich grassland, deeper neutral soils mostly semi-improved, and flushes with rushes and willow herb on spring line.	Very occasional grazing by cattle.
<b>3</b>	NT 989 536	200	Dry neutral grassland (finer grasses and sorrel), steep bluffs with calcareous soils (birdsfoot trefoil, etc) and flushed areas adjacent (outside transect)	Very occasional grazing by cattle
<b>4</b>	NT 991 535	225	Tarred path (frequently used), with old sunny wall to north separating off dense bramble scrub. To south is rough grass and salt marsh on edge of estuary.	Ungrazed. Verges of path sometimes strimmed, very occasionally treated with weed killer.
<b>5</b>	NT 993 535	175	Narrow, well-used tarred path through field with mostly neutral grassland. Some flower-rich calcareous grass and invading hawthorn scrub nearby.	Very occasional grazing by cattle

## **Appendix 2**

Observed species details and status in the United Kingdom Butterfly Monitoring Scheme database.

**Common Blue** - <http://www.ukbms.org/species106/description.htm>

**Green-Veined White** - <http://www.ukbms.org/species99/description.htm>

**Large White** - <http://www.ukbms.org/species98/description.htm>

**Meadow Brown** - <http://www.ukbms.org/species75/description.htm>

**Orange Tip** - <http://www.ukbms.org/species4/description.htm>

**Painted Lady** - <http://www.ukbms.org/species123/description.htm>

**Peacock** - <http://www.ukbms.org/species84/description.htm>

**Red Admiral** - <http://www.ukbms.org/species122/description.htm>

**Ringlet** - <http://www.ukbms.org/species8/description.htm>

**Small Copper** - <http://www.ukbms.org/species68/description.htm>

**Small Tortoiseshell** - <http://www.ukbms.org/species2/description.htm>

**Small White** - <http://www.ukbms.org/species100/description.htm>

**Comma** - <http://www.ukbms.org/species104/description.htm>

**Wall Brown** - <http://www.ukbms.org/species94/description.htm>

**Small Skipper** - <http://www.ukbms.org/species120/description.htm>