

**BUTTERFLY SURVEY
of
TOMMY THE MILLER'S FIELD**

BERWICK UPON TWEED

April to September 2007

**by
Berwick Wildlife Group**

A Report on the 2007 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 field work:

Group 1: Enid Turnbull, John and Sally Rae, Jenny Prince, Gill Young.

Group 2: Molly Hardie, Leslie Cook, Janet Chubb, Elizabeth Martin Fisher, Elizabeth Bamford.

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 2 weeks at the very beginning of June when the weather was not suitable, a count was completed for all the other 24 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 data to the database, tabulated and analysed it. 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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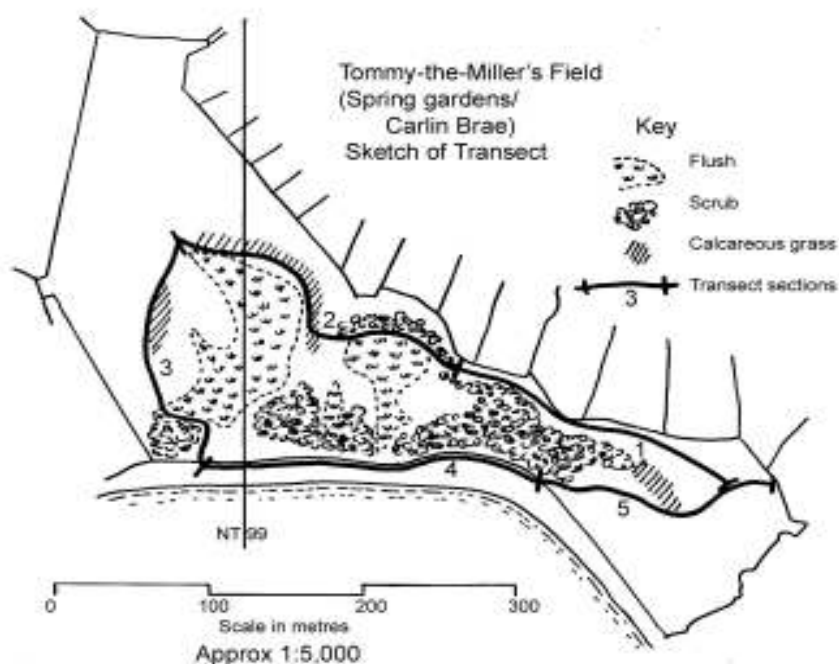
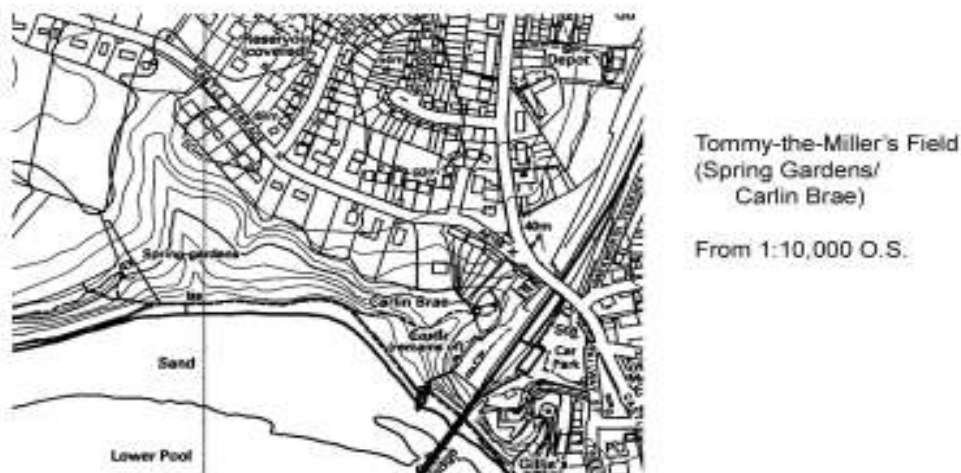
Introduction

Between the beginning of April and the end of September 2007 volunteers from Berwick Wildlife Group undertook their second butterfly survey of Tommy the Miller's field in Berwick. (See Berwick Wildlife Group's website for a report on the 2006 survey) <http://www.berwickwildlifegroup.org.uk/Local%20Wildlife.html>

As last year 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 829 butterflies of 12 species were observed over the 26 week period, which is considerably less than the 1472 seen last year.

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 and 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. No grazing took place over the period of the survey. The habitat consisted of dry semi-improved grass and scrub land with wet flushes on a steep south-facing slope.

Looking at the various sections of the transect walked –

Section 1

This Section crossed steep terrain, patches of more open grassland among hawthorn scrub, with nettles and thistles prominent in places. Mainly Sm. Whites, Ringlet, Meadow Brown, Large Whites, Sm. Tortoiseshell, Orange Tip, Peacock were recorded here.

Section 2

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

Section 3

The third section runs across a small grassy headland, the wind always playing a part in recording 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 Sm. Whites Meadow Browns were observed together with Meadow Browns, Ringlet, Large white, Orange Tip, Green Veined White and Common Blue.

Section 4

'The New Road', a footpath along the bank of the Tweed made section four; a sheltered sunny section but often disturbed by walkers. Small Whites were predominant here together with Peacock, Orange Tip and Large Whites.

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 proliferated, - Small White, Ringlet, Meadow Brown, Sm. Tortoiseshell, Orange Tip and Large White 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. This requires a commitment to record weekly throughout the main six-month period in which butterflies fly in the UK.

The method adopted for this survey is as laid down by the Butterfly Conservation.

Full (all species) transects are labour intensive and require a commitment to carry out weekly recording throughout the duration of the survey.

Establishing the Transect.

- The Transect was identified last year by Elizabeth and Fiona and consisted of a route 1025m in length that gave 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, Section No, Date, Recorders and both before and after walking the Transect the Time, Wind, Weather, % Sun etc.
- The Transect was walked recording count 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 Word document, one for each weeks survey, and John transferred this to the main database.

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OBSERVATIONS

Summary of Observations

By Date

Date	Common Blue	Green-veined White	Large White	Meadow Brown	Orange Tip	Painted Lady	Peacock	Red Admiral	Ringlet	Small Copper	Small Tortoise shell	Small White	Comma	Total Adults
4-Apr							3				4			7
12-Apr							1						1	2
15-Apr							9				6	5		20
28-Apr		1	1		3						3	23		31
30-Apr			2		13		5				2	33		55
9-May					3		1			1	2	1		8
15-May		4	6		18		5			1	2	20		56
21-May			1		3		3			1	2	22		32
31-May		2	4		2		1				1	42		52
3-Jun														
10-Jun														
18-Jun			1		1			2		1	1	3		9
30-Jun	2			1					32					35
5-Jul	1			10					44		2	1		58
9-Jul				10					27			2		39
20-Jul				23					9			3		35
23-Jul			4	50					12		8	28		102
30-Jul				23					16		1	7	2	49
5-Aug			1	11					1		1	20		34
17-Aug		8	17	7			4		1	1		5		43
23-Aug		1	12	4			13					27		57
27-Aug		3	9	6			3				2	46		69
4-Sep			6				3	1		1		10		21
11-Sep			5							1		3		9
20-Sep														
29-Sep								1			1	4		6
Grand Total	3	19	69	145	43		51	4	142	7	38	305	3	829

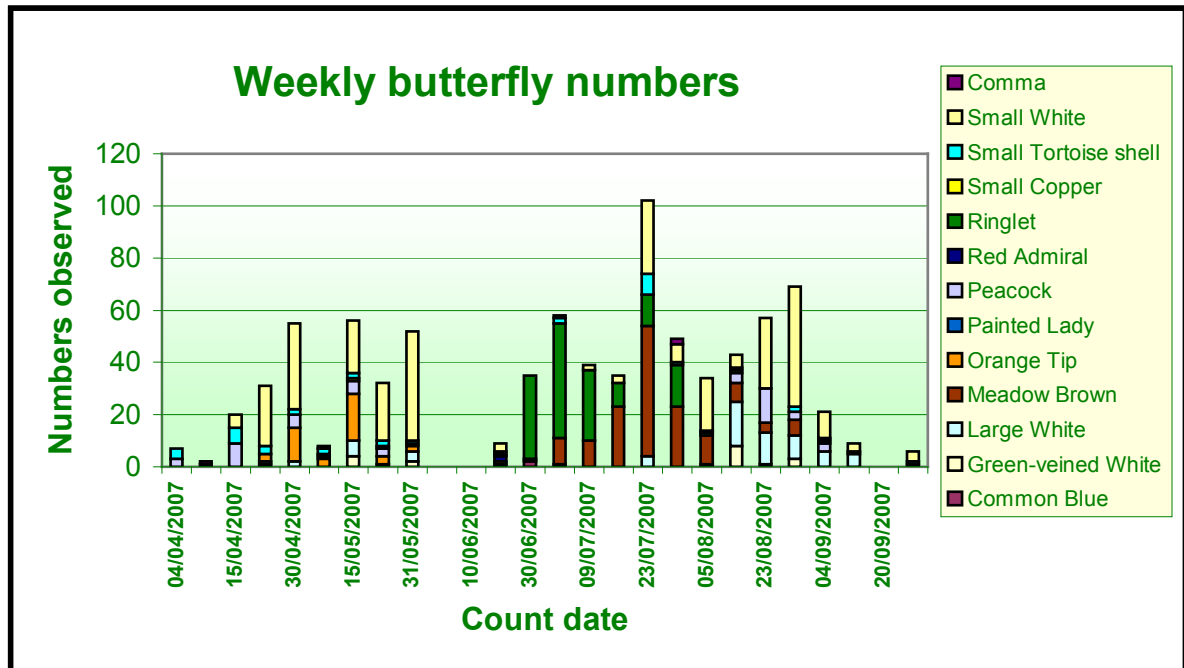
By Section

Section	Common Blue	Green-veined White	Large White	Meadow Brown	Orange Tip	Painted Lady	Peacock	Red Admiral	Ringlet	Small Copper	Small Tortoise shell	Small White	Comma	Total Adults
1		2	26	46	9		10	1	47	2	9	75		227
2	1	1	16	64	11		20		60	1	15	83		272
3	2	10	16	30	11		2	1	23	4	4	48		151
4		4	7		7		17	2	1		3	58	3	102
5		2	4	5	5		2		11		7	41		77
Grand Total	3	19	69	145	43		51	4	142	7	38	305	3	829

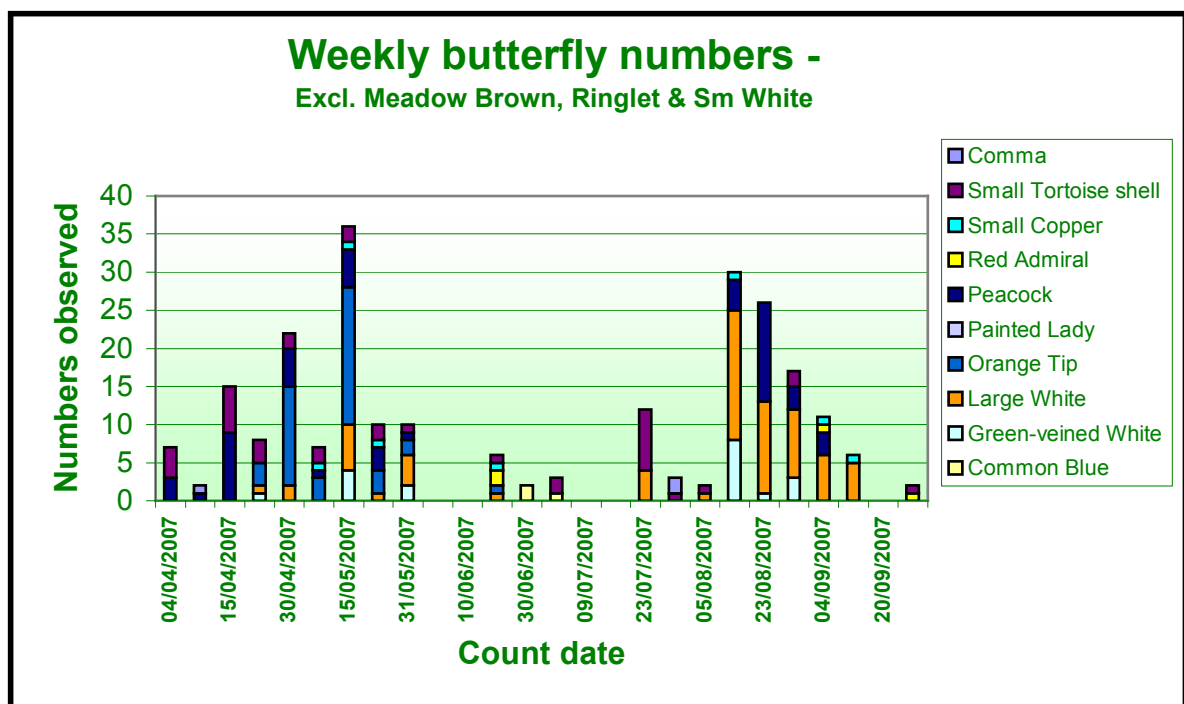
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Graphs – By Weeks

Total Butterfly Count Graphed by Weeks

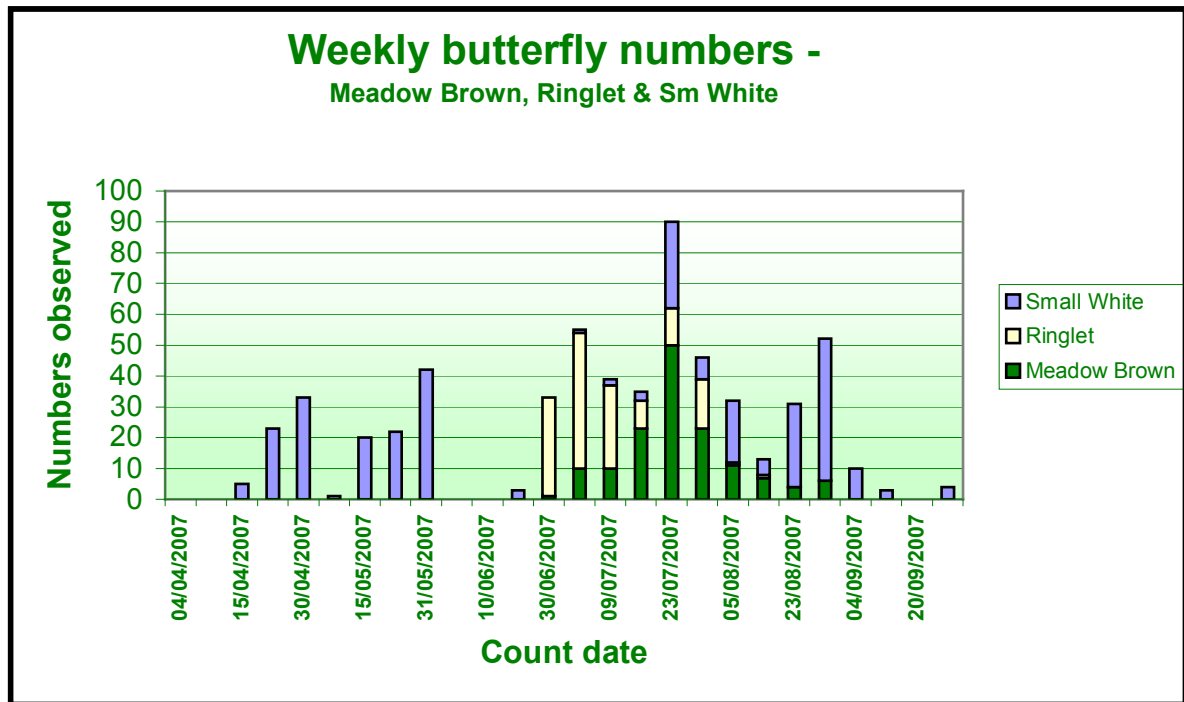


Total Butterfly Count (Excl. Meadow Browns, Ringlets and Small Whites)
Graphed by Weeks.



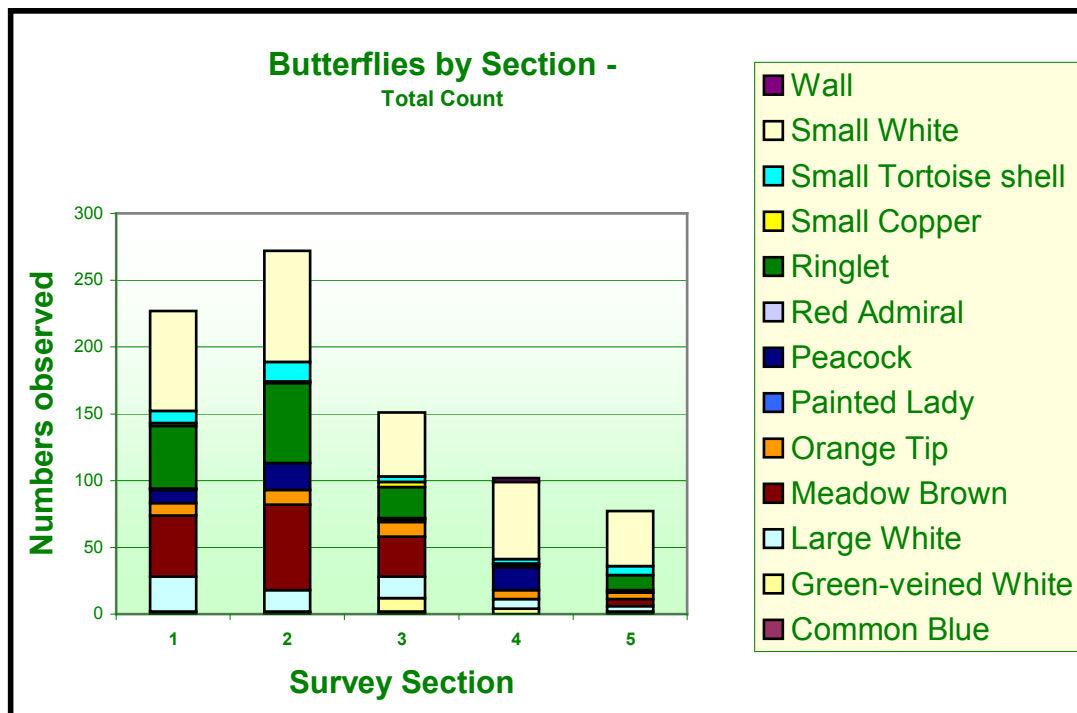
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Total Butterfly Count of Meadow Browns, Ringlets and Small Whites Graphed by Weeks.



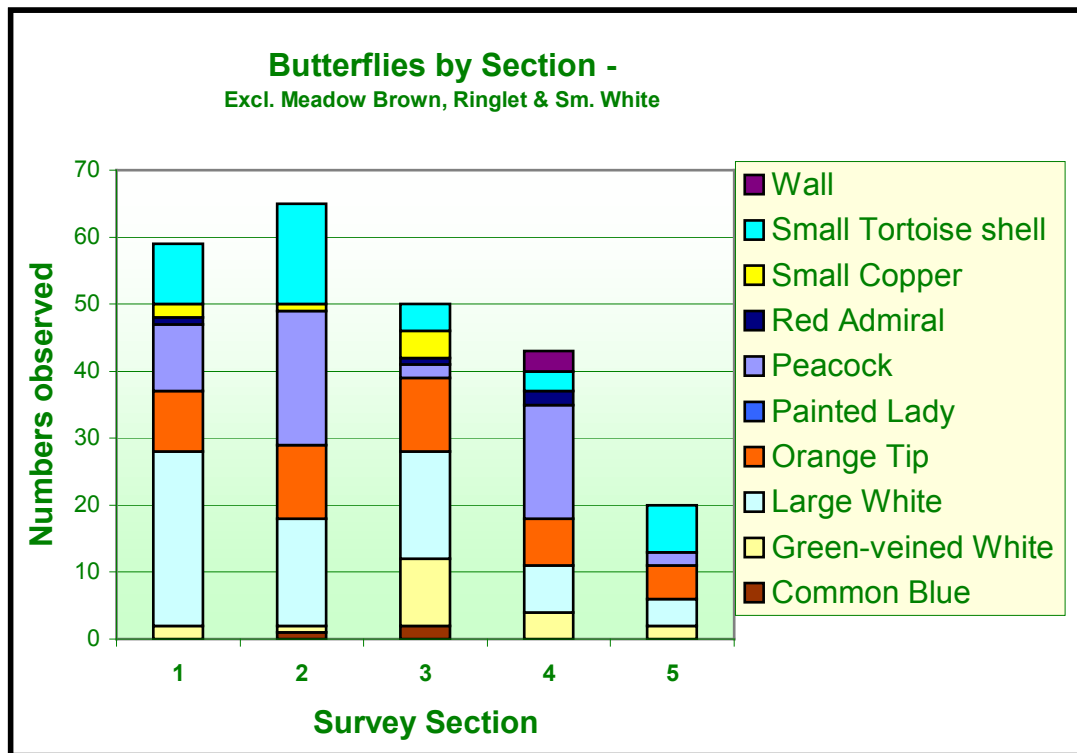
Graphs – By Section

Total Butterfly Count Graphed by section.

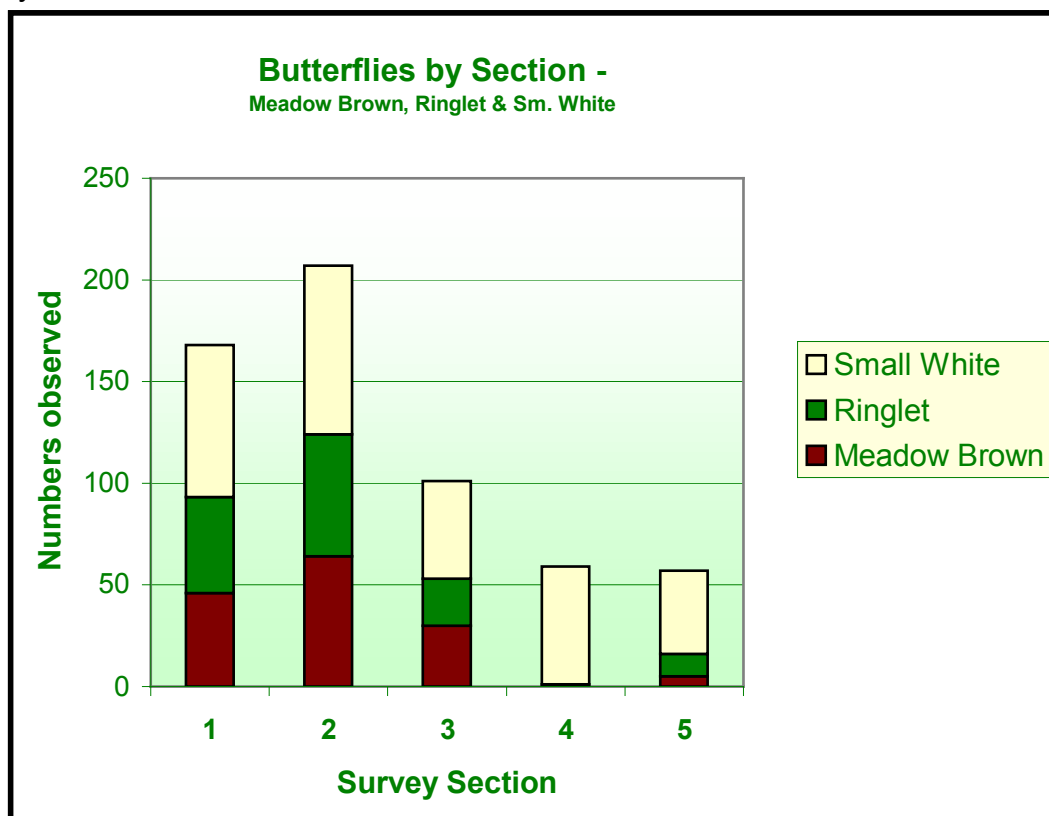


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Total Butterfly Count (Excl. Meadow Browns, Ringlets and Small Whites)
Graphed by Section.

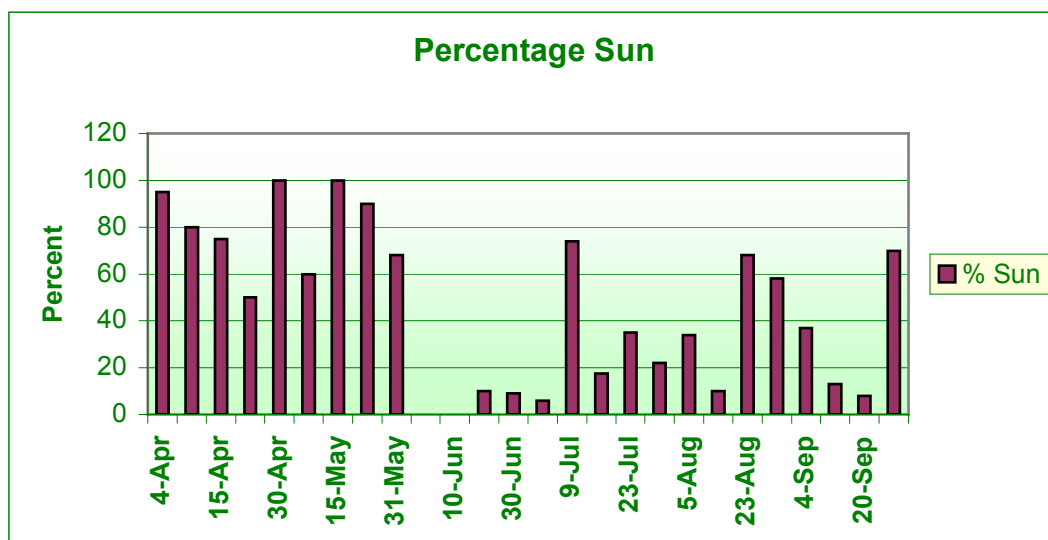
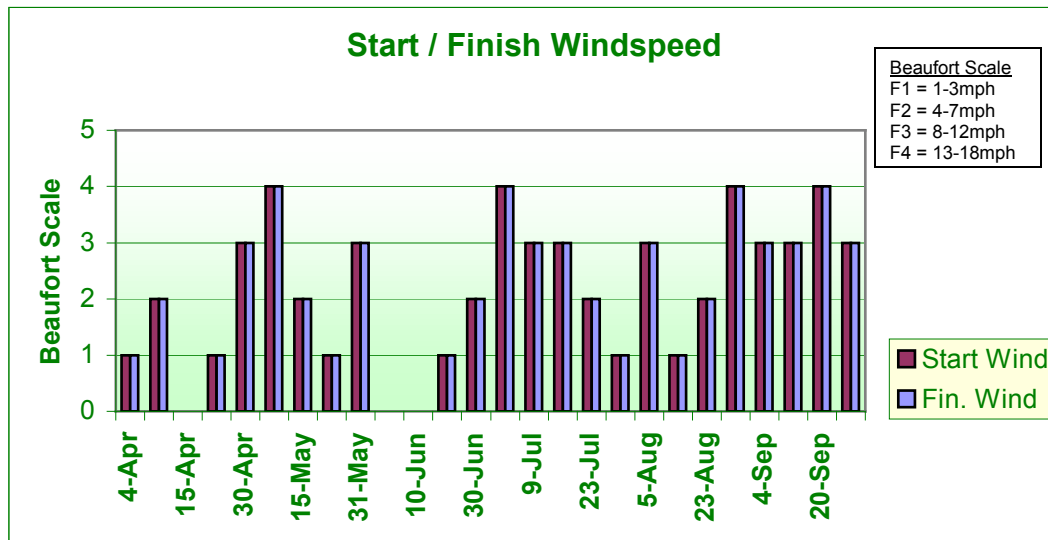
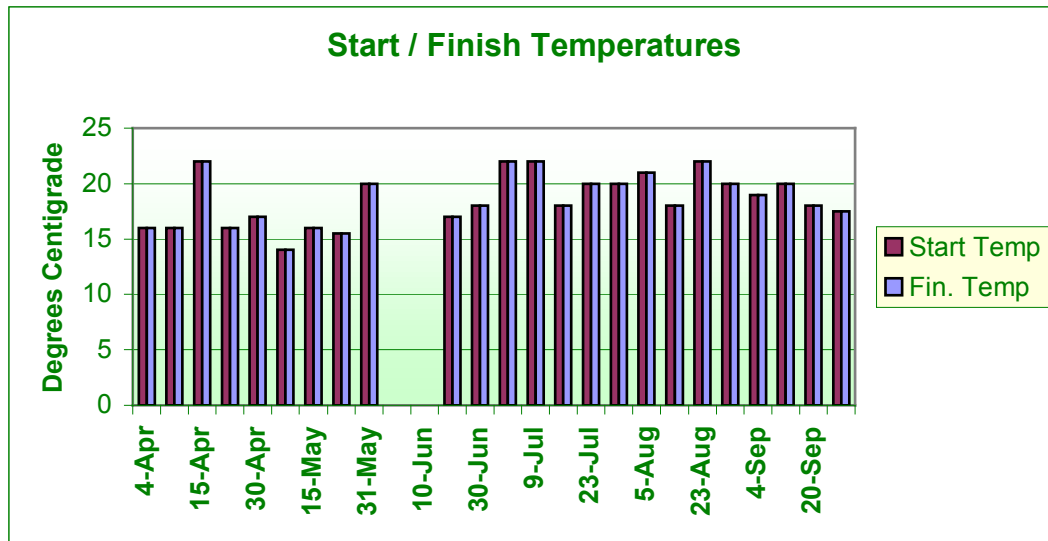


Total Butterfly Count of Meadow Browns, Ringlets and Small Whites Graphed by Section.



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Weather



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Comparison

Comparison between the 2006 and 2007 Observations

The surveys of both years took place between the beginning of April and the end of September, however the total number of butterflies observed during the 26 weeks of 2007, 829, is considerably less than the total number of 1472 seen last year.

The varieties of different species were 12 this year and 13 last.

Species observed :-

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

Weather

Much of this reduction in butterfly numbers can be attributed to the poor weather experienced during the survey period, especially during May, June and July. Below is a comparison of weather records for 2006 and 2007, 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. Rainfall and sunshine are particularly indicative.

2006

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

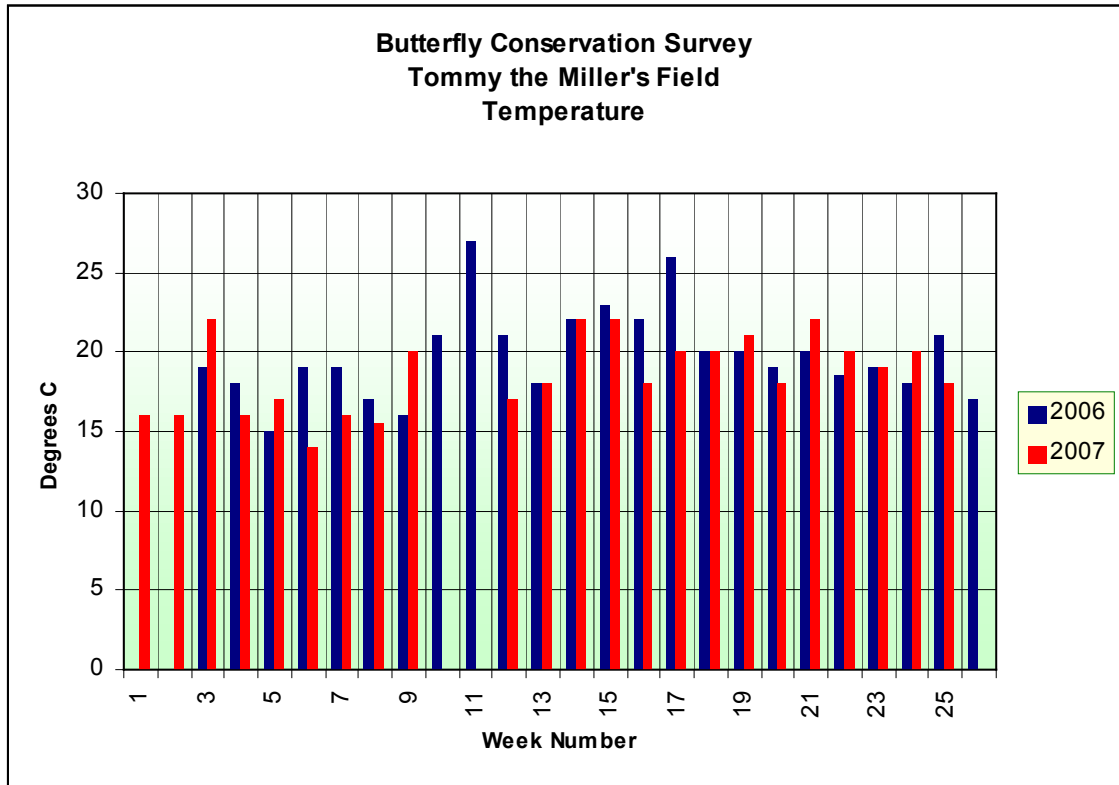
2007

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

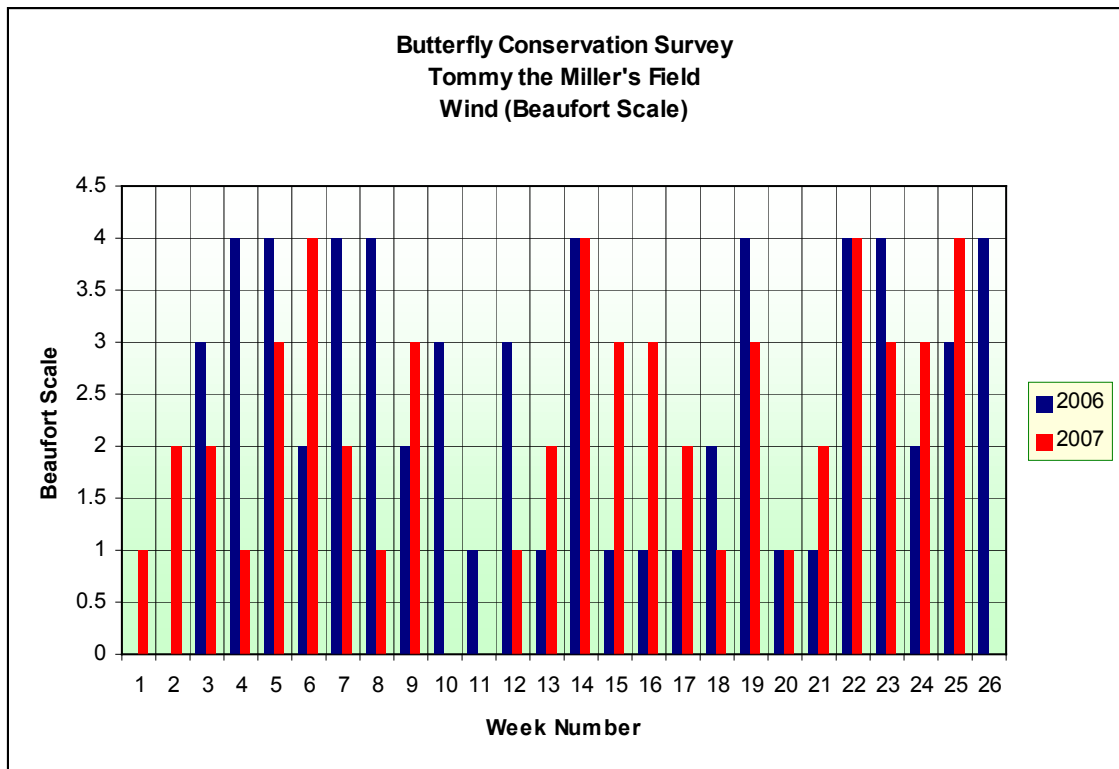
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Weather records taken during surveys.

Temperature 2006 and 2007

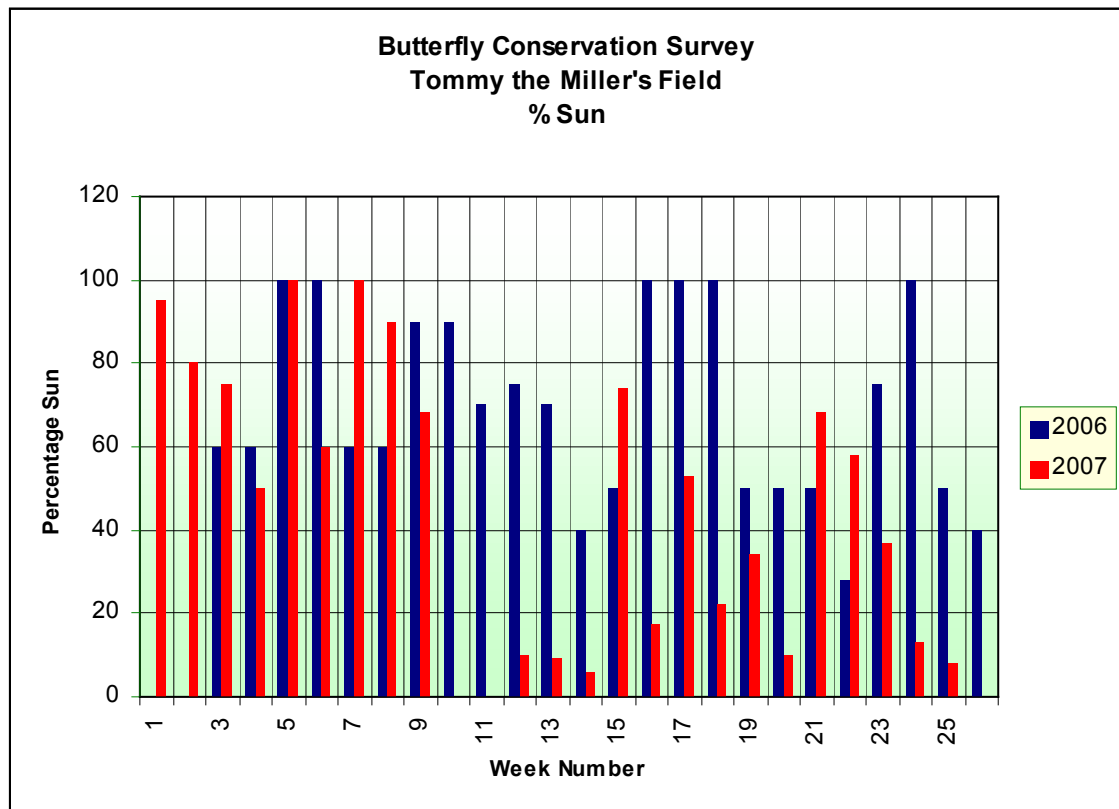


Wind 2006 and 2007



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% Sun 2006 and 2007-11-01



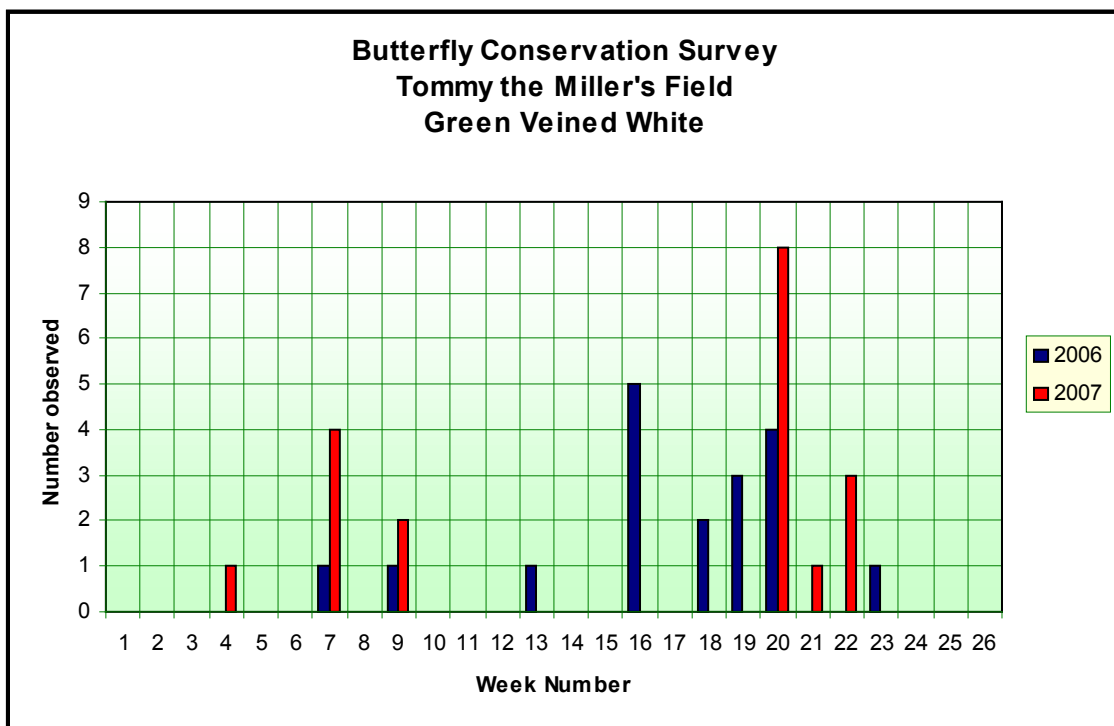
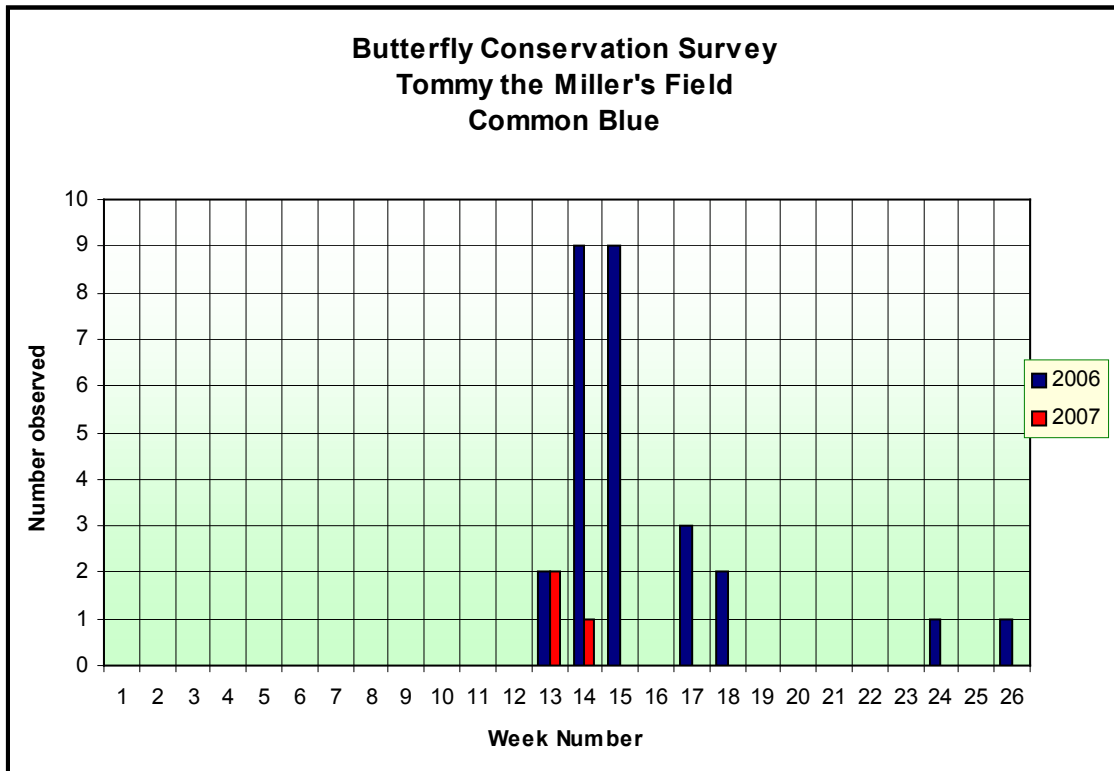
Comparisons of the results from a single site for two field seasons does not tell us a great deal – we need to continue the butterfly transect and comparisons for several years to come. However the comparison of the observations of 2006 and 2007 illustrate the dependence of and the effect on butterfly numbers that the weather has.

The overcast wet weather during May, June and July of this year disrupted the normal life cycle of the species found in Tommy the Miller's field resulting in the low numbers observed during 2007. On the whole wet weather is associated with lower adult populations (possibly because of a detrimental effect on the larval stage),

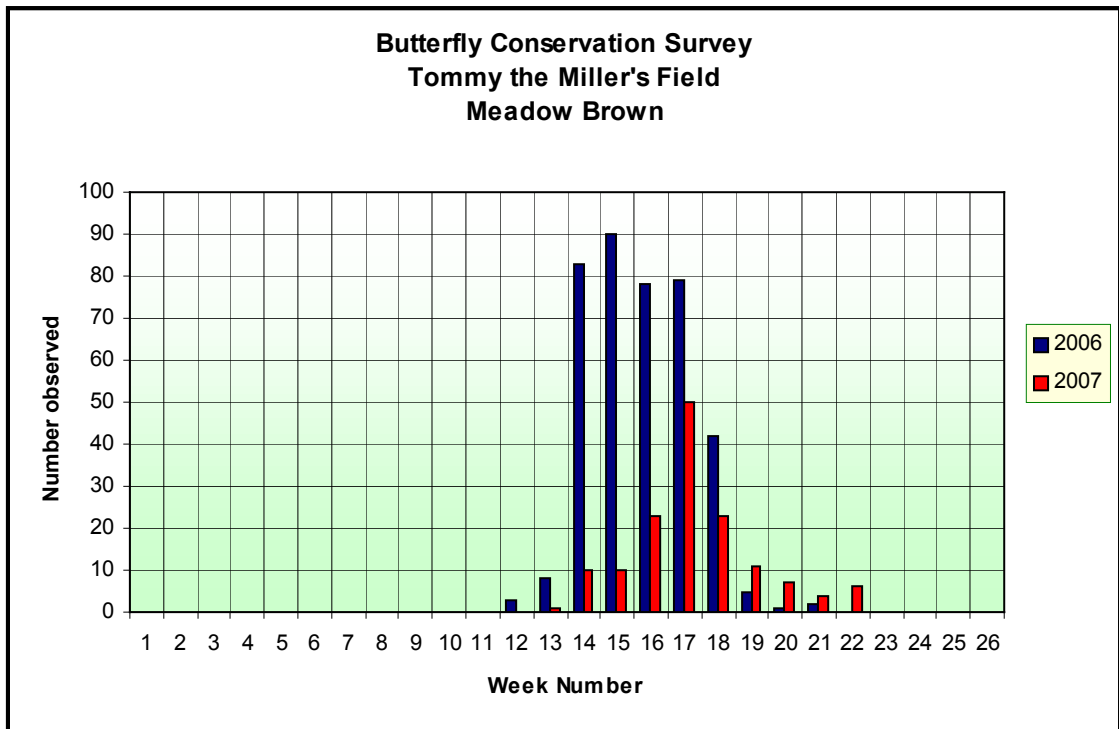
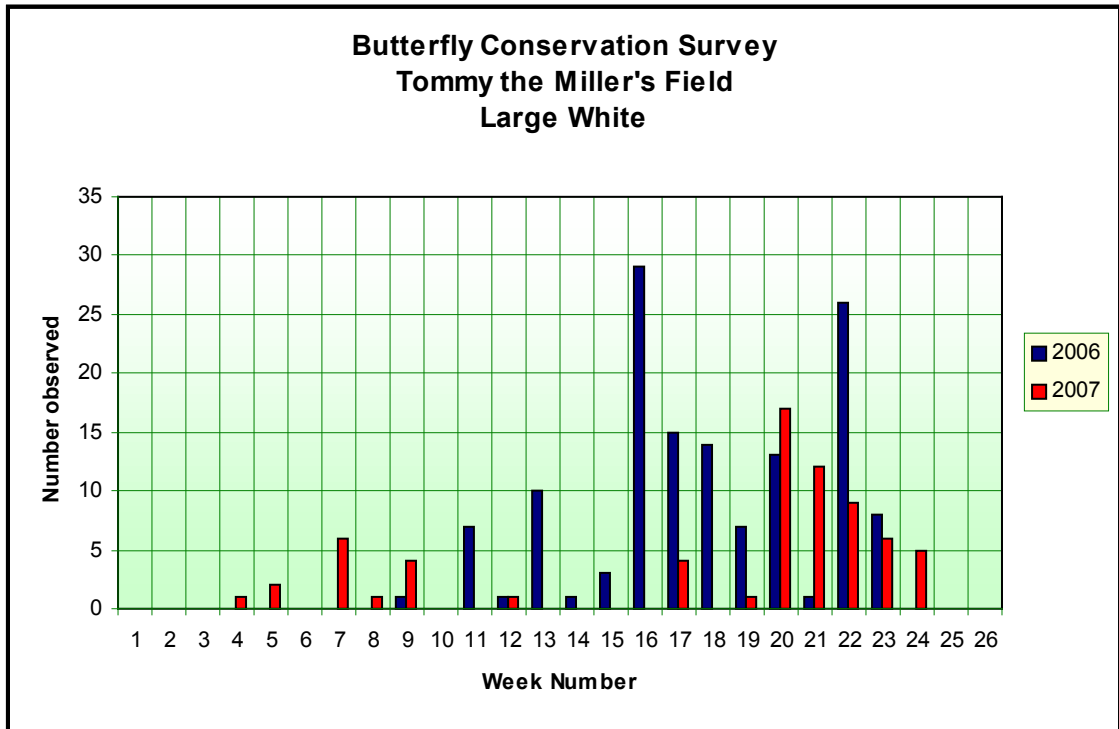
It will be interesting to see what effect this may have on butterfly numbers surveyed next year.

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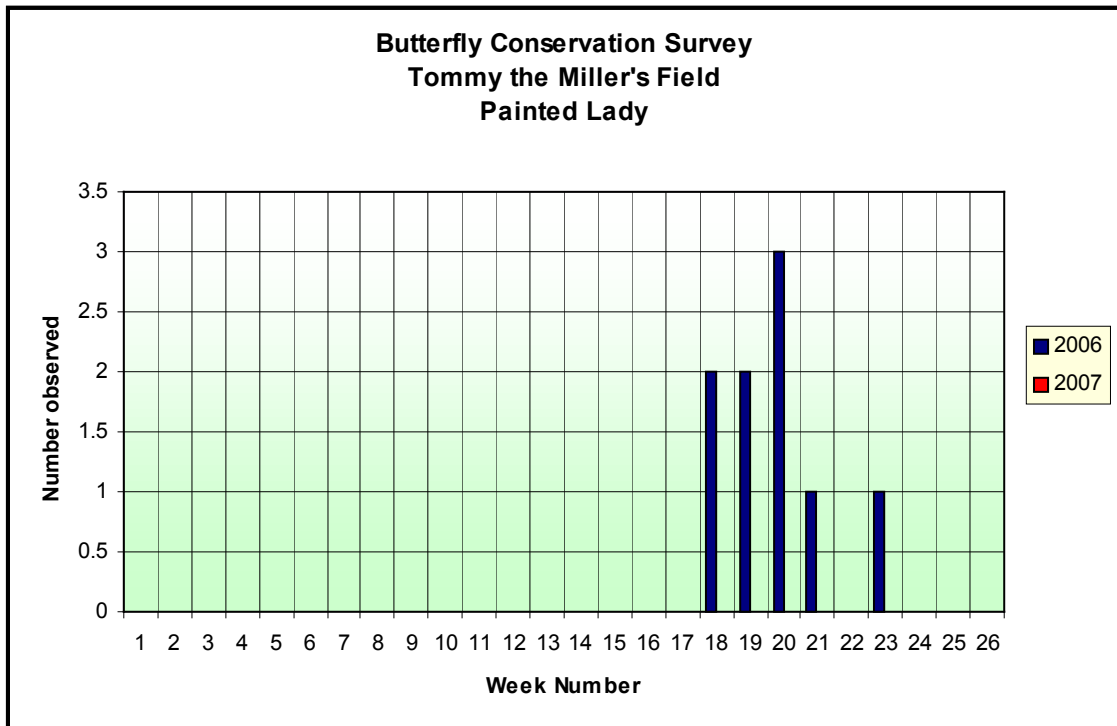
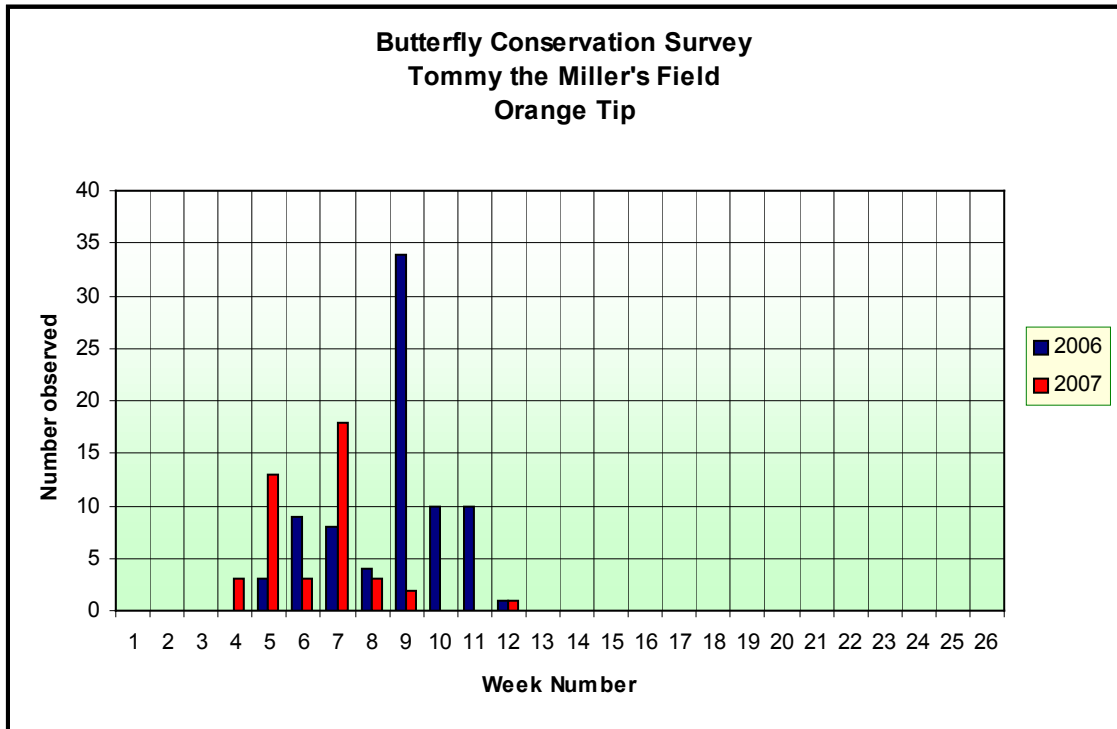
Butterfly Species



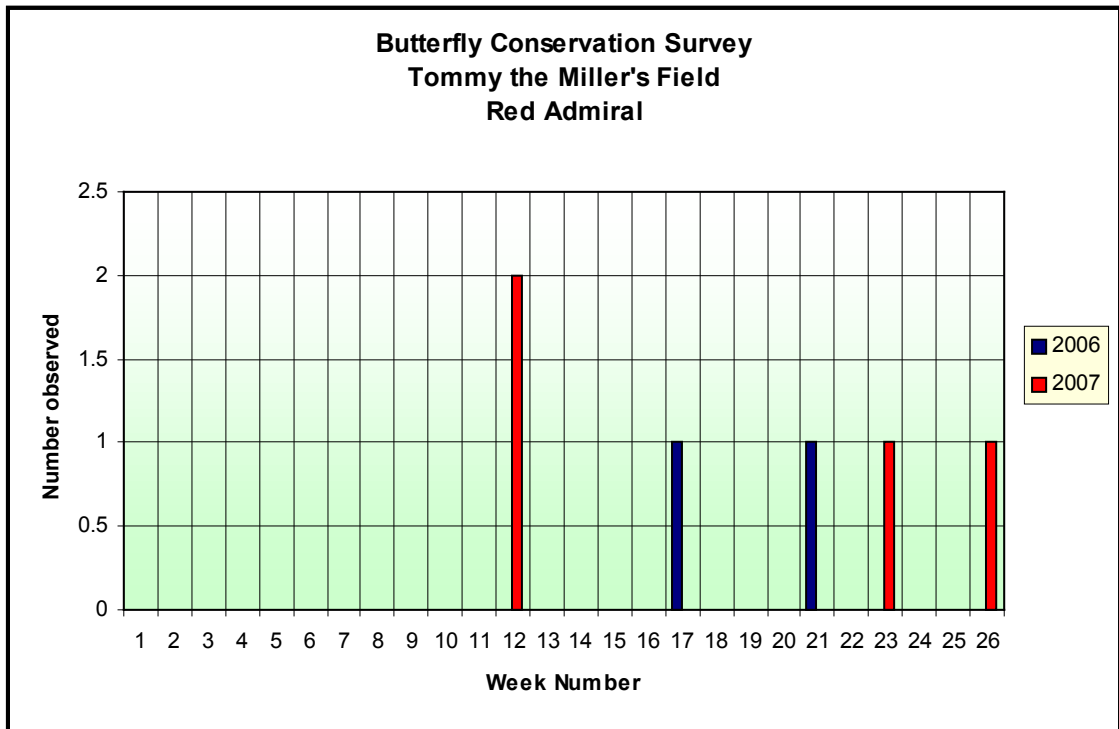
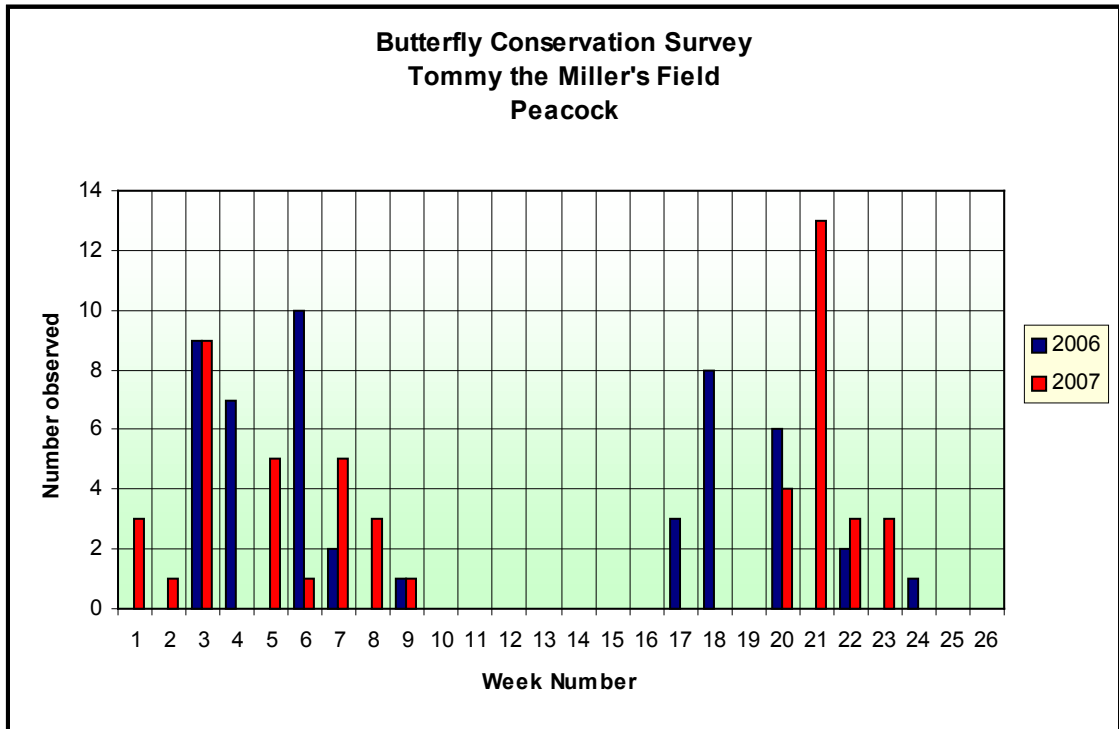
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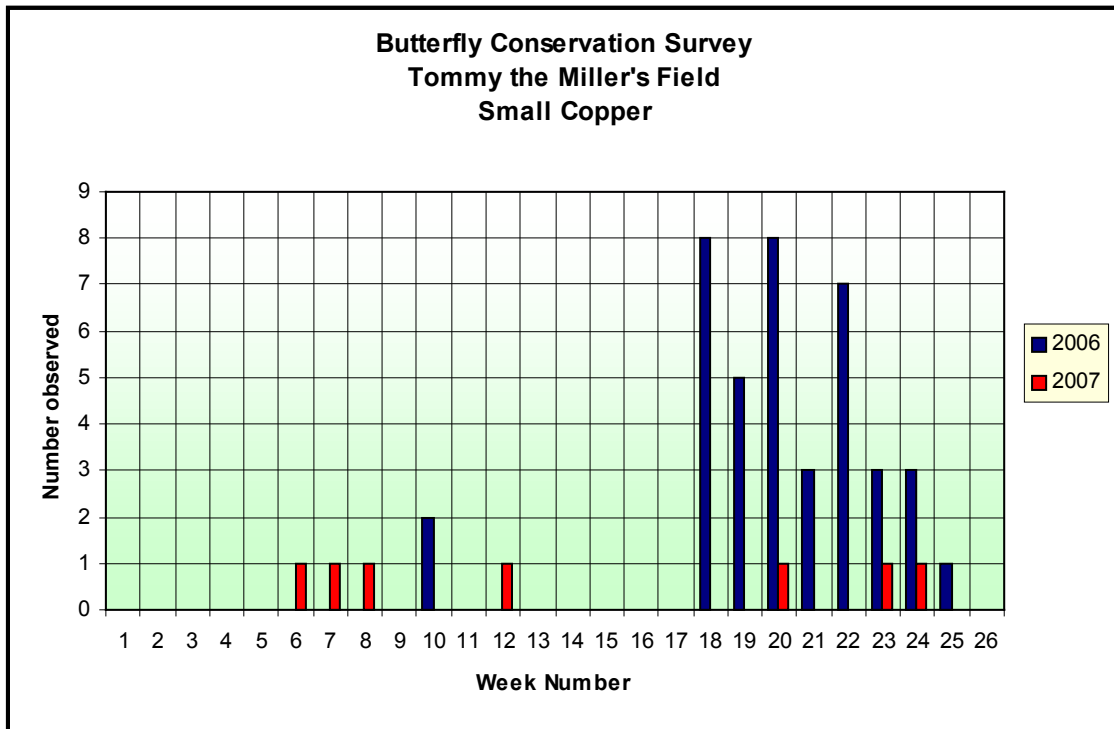
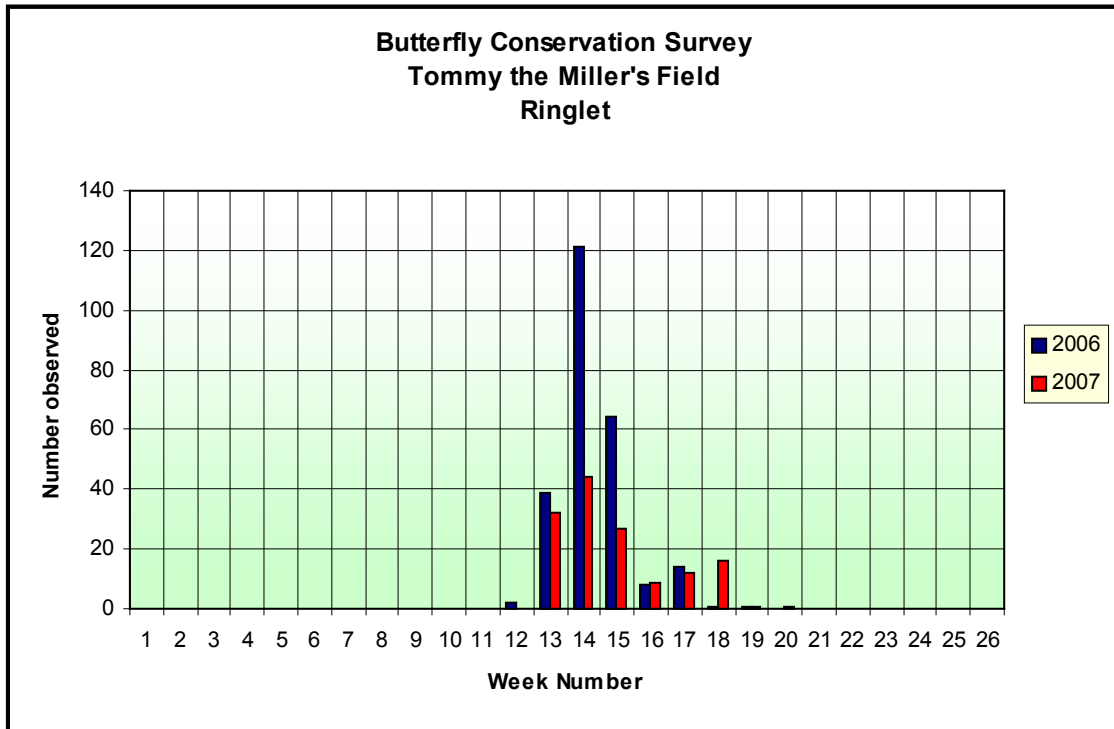
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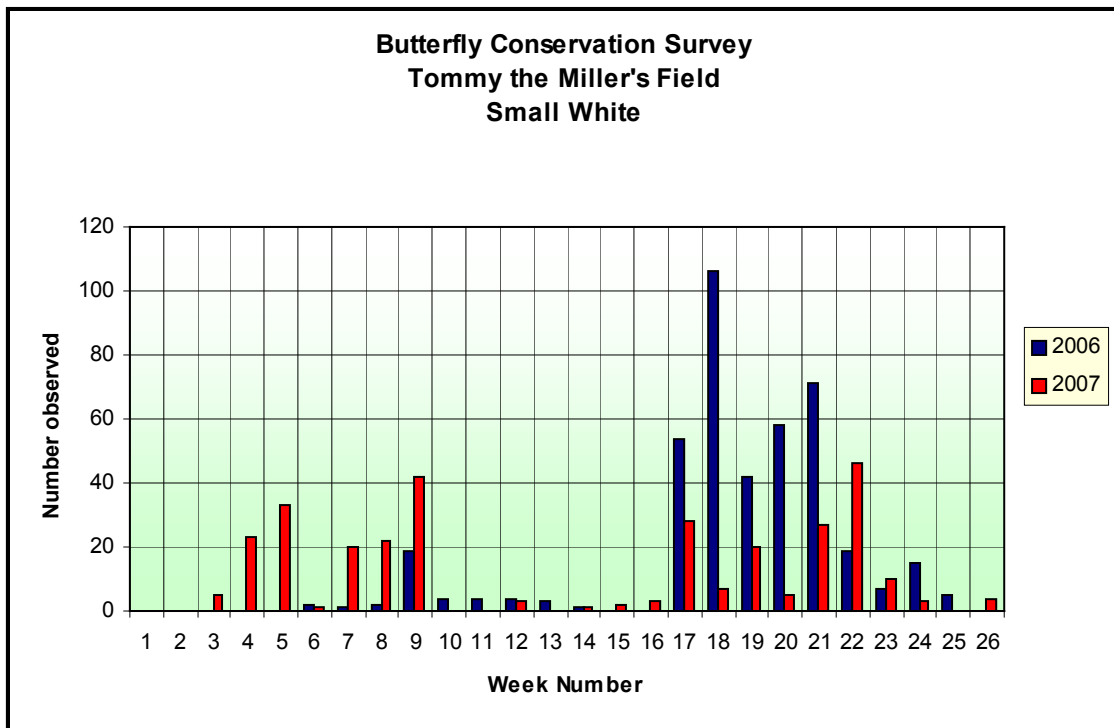
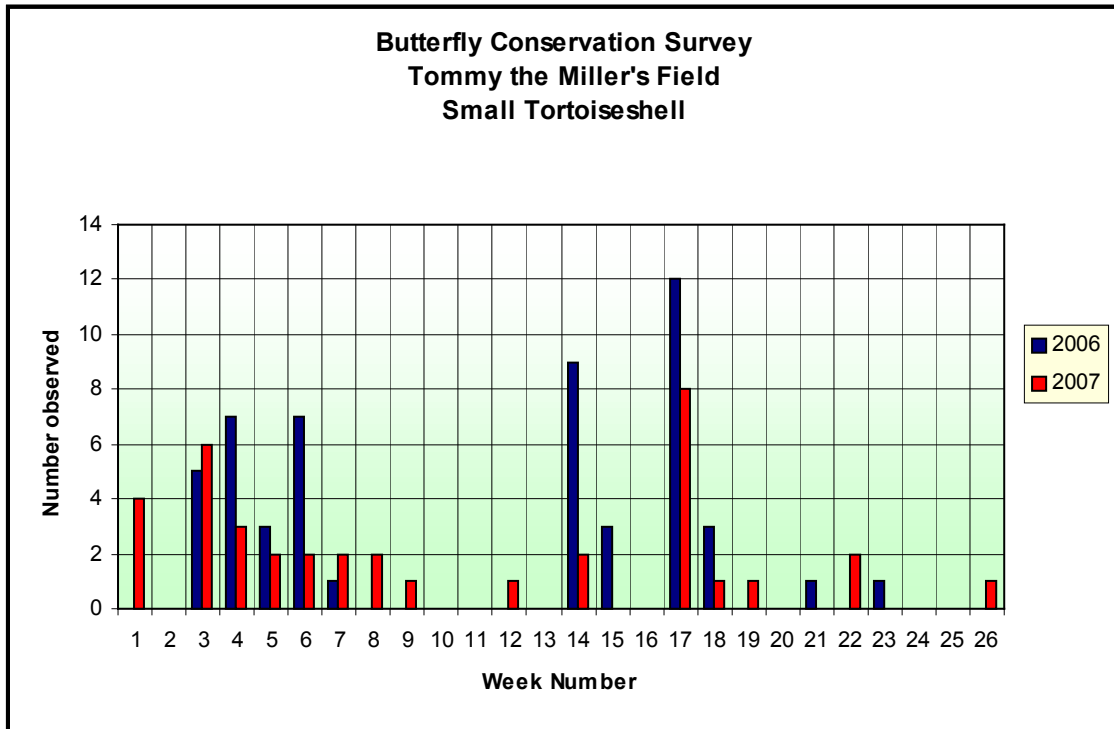
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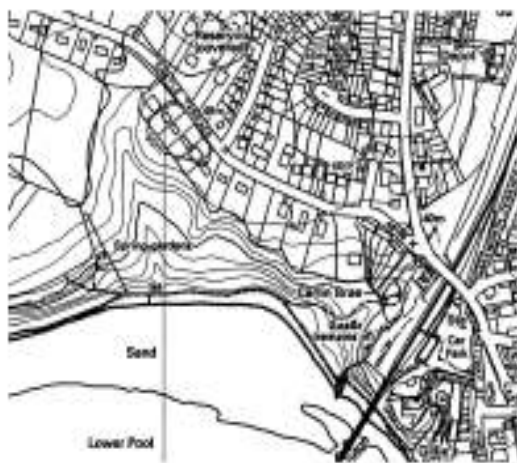
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Appendix 1

Details of Survey Area as supplied to Butterfly Conservation

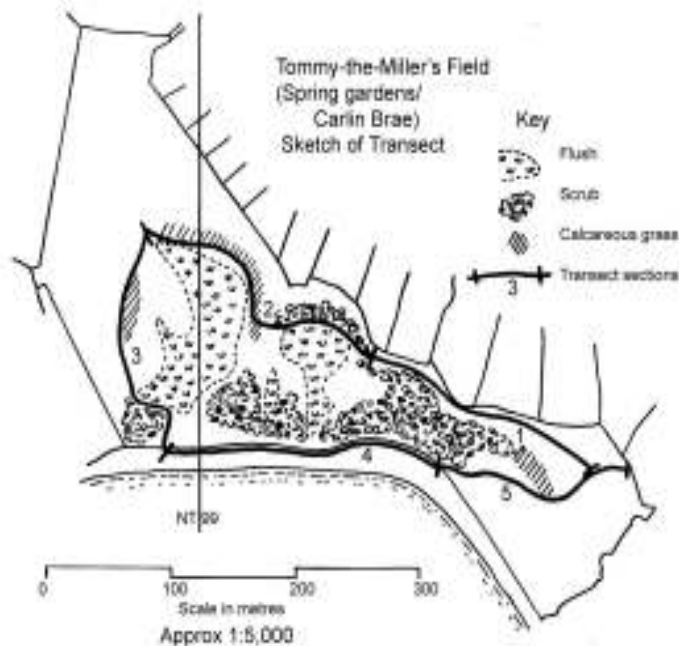
Site Name	Carlin Brae / Spring Gardens (names on OS map) (Tommy-the-Miller's Field usual local name)			County	Northumberland
OS Grid ref. (6 fig.)	NT 991 535	OS map no. (1:50 000)	75	Year transect established	2006
Transect length (m)	1,025m			Transect width	5M
Overall habitat description	Dry semi-improved grassland with wet flushes on steep south-facing slope				
Sites conservation status	None				
Owner details	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
1	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
2	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.
3	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
4	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 weed-killed (I always complain to council!).
5	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

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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>