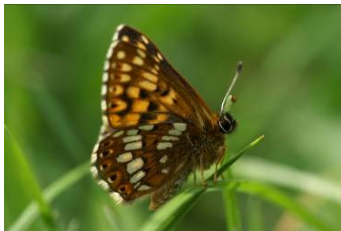




Ravensgate Hill

Results of Butterfly Monitoring

2009



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Results of 2009 butterfly survey on Ravensgate Hill

2009 has been a good year for butterflies on Ravensgate Hill, despite the mediocre weather this summer. There has been an increase in the number of butterflies recorded on the transect from 1597 in 2008 to 1899 in 2009 (an increase of 19%). In fact, it is the highest ever count since the transect started in 2005. The number of species recorded both on and off the transect has increased from 23 last year to 26 this year.

Results

The results are presented as tables and figures as follows:-

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This is the fifth year of the Ravensgate Hill transect. In addition to walking the transect every week, casual visits to the rest of the hill have been made to record the butterflies there. These records are not obtained using a strict systematic method as on a transect, and so cannot be used to see trends or compare numbers from one year to another. However, they are very useful to see which species are present on the rest of the hill and do give some idea of abundance. The rest of the hill has been divided into 'sections' for the purpose of recording. The map showing the transect and these sections is given in Figure 3. Sections L, M, N and P are areas rather than just sections of the footpaths. These areas were just visited on two or three occasions throughout the summer and so do not have as many records as the other sections.

The route of the transect is walked every week from the first week in April until the last week in September. Numbers of butterflies for each species recorded each week is given in Table 1. The peak numbers are recorded from the end of June until the end of July (weeks 13 to 17).

On the transect, section A runs along the top of the hill and is the best section with 810 butterflies being recorded there, Marbled Whites and Ringlets being the most numerous. There were also good numbers of Meadow Brown, Skippers and Small Heath (which has a high priority status in Butterfly Conservation's Biodiversity Action Plan). Section B is the Cotswold Way going down the slope and is the next best section with 535 butterflies recorded, again Marbled Whites and Ringlets being the most numerous. Section C runs along the foot of the hill going towards Dr. Watkinson's field. Here, there are fewer Marbled Whites, but this is a good place for Peacocks, Commas, Skippers, Green Hairstreak, Speckled Wood and the grassland species of Gatekeeper, Meadow Brown and Ringlet. Section D is a short section passing through the top of Dr. Watkinson's field to meet up with the footpath coming down the hill. It is mainly Ringlets and Meadow Browns which are recorded here. Numbers of each species of butterfly recorded in each section are given in Table 2.

Table 3 gives the total butterfly species count for each year since 2005 when the transect began. Most species have increased in number this year with Large Skipper, Large White, Small White, Green-veined White, Green Hairstreak, Common Blue, Small Tortoiseshell, Peacock, Small Heath and Ringlet having the most significant increases. Painted Lady increased from none recorded last year to 61 recorded this year. This is as a result of the mass influx of these butterflies from the continent in late May. A second brood

appeared in July and August, with 22 being seen on the transect on one transect walk in early August. Species which have fallen in number are Brimstone, Orange Tip, Holly Blue, Marbled White, Gatekeeper and Meadow Brown. With the exception of the Holly Blue, which was not recorded on the transect at all this year after a count of 8 last year, most of these decreases were quite small.

We have been trying to survey the whole of the hill, not just along the transect. Table 4 shows which species were recorded on the hill in each year since 2005. There were quite a few species which have declined nationally but are present on the hill. Many of the species which have declined nationally are designated as 'Biodiversity Action Plan ('BAP') species and efforts are being made nationally to stop their decline. There are six high priority species on the hill:- Dingy Skipper, Small Blue, Marsh Fritillary, Duke of Burgundy, Wall and Small Heath and two medium priority species:- Green Hairstreak and Dark Green Fritillary. It is important that we provide the right habitat to conserve these species.

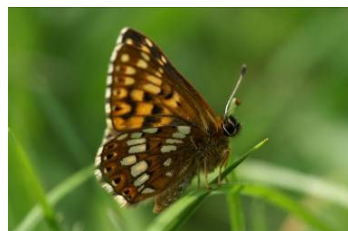
Details of butterflies recorded off the transect in 2009 are given in Tables 5 and 6. In Table 5, records are given for each visit throughout the season. In Table 6, records are given for each section or area of the hill. Figure 3 shows a map showing these sections on the hill. Most of the extra monitoring is carried out along the west end of the top of the slope (sections E, F and G) and along the foot of the slope (sections H, J and K). There have been two or three visits to other parts of the hill (sections L, M, N and P) to record butterflies there. These are really areas of the hill rather than just either side of the footpath and so are shown shaded on the map.

Moths recorded

In the past few years, we have been concentrating on recording butterflies. Up to 2009, we had very few moth records, so this year we tried to remedy this. We set up moth traps on two evenings in the summer and Table 7 gives a list of the moths caught. Also in the table are a few records of day-flying moths. In Table 8 are some moth records supplied by Guy Meredith. These are day-flying moths recorded since 2002 and include both macro and micro moths. Most micro moths do not have English common names so the Latin name is used. This is just the start of gaining moth records, so these lists are not representative of the moths we would guess are present on the hill. We hope to do more moth trapping in the future.

Duke of Burgundy

One high priority species present on the hill is the Duke of Burgundy. These butterflies are mainly recorded near the foot of the hill (Section K on the map), although a few have been recorded further west along the foot of the hill and also up the slope and along the top. These areas are not on the transect, so we have to rely on records from casual visits to get an idea of how they are faring. 2009 has been a good year for these butterflies with a total of 48 sightings. As there are only 10 sites left in Gloucestershire, where this once common butterfly still survives, it is important that we manage the hill in such a way as to conserve or even improve their habitat. This butterfly has quite specific requirements. As well as sheltered,



sunny spots for the adult butterflies to feed and mate, it requires Cowslips for the larvae to feed on. In addition, these Cowslips need to stay lush and green throughout the larval feeding stage (June – early August) and not become dry and wilted in the summer sun. This is achieved by providing shade from scrubby bushes and long grass. However, the grass needs to be short enough early on in the season for the Cowslips to be able to grow. As Cowslips are short lived, some bare ground or short, sparse grass is desirable to allow some seed to germinate. It is considered that light cattle grazing in the winter along with some scrub control provides the best management regime.

Marsh Fritillary

Another high priority BAP species present on the hill is the Marsh Fritillary. These butterflies were first recorded on the site in 2006. They were still there in 2007, but not seen at all in 2008. Surprisingly, one was spotted in 2009. These butterflies were seen near the foot of the slope very close to where the Duke of Burgundy were recorded.



Marsh Fritillaries require a warm site and do not generally thrive on north-facing slopes unless there is a hot summer (as in 2006). The larvae of the Marsh Fritillary feed on Devil's Bit Scabious of which there are plenty on the slope. There is only one other site in Gloucestershire where this butterfly is found, but the future of Marsh Fritillary on Ravensgate is uncertain.

Weather

The summer of 2009 was pretty average compared to summers in the last ten years. Figure 4 shows the weather records from 2000 until 2009. The values were obtained by taking an average of Ross-on-Wye and Oxford weather records. (Historical weather records are not available for Cheltenham.) 2009 is represented by the pink bars and the average represented by the yellow bars.

April and May were warmer, sunnier and drier than average. June tended to be wetter, but a bit warmer and July was cooler, wetter and duller. August and September were cool, but reasonably dry. It was disappointing that the poor weather occurred during July and August, the two peak butterfly months. The number of butterflies recorded on a transect is much higher on a warm, sunny day than on a duller, cooler day, even if on both days, the weather conditions are deemed acceptable for recording butterflies.

Comparison with other sites

Official results from butterfly transects in 2009 are not yet available, but unofficial reports suggest that there has been a recovery in numbers of many species. Indeed, many of the species which fly in the spring have fared particularly well this year.

Management of the hill

It is very exciting and encouraging that a management committee is being set up, led by Jenny Phelps of FWAG, to actively manage the hill, not just for butterflies but for the whole eco-system. Winter grazing is now taking place on the hill and this should improve the habitat both for the butterflies and the flora. All butterflies require a different habitat, so a mosaic of different habitats, with different turf heights throughout the site would be ideal. This mosaic effect is usually achieved by grazing. A shorter turf at the top of the hill is good for butterflies such as Common Blue and Small Heath, while Large and Small Skipper, Marbled White and Ringlet require some longer grass. Removing coarse grasses and dead vegetation will improve the flora which will in turn help the butterflies by providing a valuable nectar source. Certain butterflies also require specific flowering plants on which their larvae feed e.g. the Common Blue requires Bird's foot Trefoil. Hence improving the conditions for these specific plants is also beneficial for the butterflies.

The slope needs to be carefully managed to conserve the Duke of Burgundy which has specific habitat requirements i.e. the grass not too short and areas of scrub to give shade for the Cowslips, and shelter, roosting areas and perching posts for the butterflies. It is important that this part of the site is not overgrazed.

Let's hope we get really good weather in 2010 and see just how well the butterflies on Ravensgate Hill perform.

(Butterfly photos in text and on cover by Andrew Daw, Glos Branch of Butterfly Conservation)

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	Total	Index
Mean Temp	17	17	16	16	14	17	18	18	21	14	22	18	26	21	18	19	21	19	19	20	20	19	20	18	19	18		
Mean Sun	95	100	100	100	100	100	65	100	100	100	95	10	100	100	10	100	97.3	12.5	82.5	10	87.5	97.5	22.5	100	100	92.5		
Small Skipper														6	2	12	23	15	4		1						63	63
Essex Skipper																											0	0
Small/Essex Skipper																											0	0
Large Skipper											12	4	13	15	19	6	10	1		1							81	81
Dingy Skipper																											0	0
Clouded Yellow																											0	0
Brimstone	1	1	2	1	1	1	3									1										10	10	
Large White							2	2	3			2	1	1	6	18	19	8	15	6	1	1				85	85	
Small White													2		2		7	28		11						50	50	
Green-veined White				2	1	1	8	2	1			1	1	12	5	15	2	4	6	3	1					64	64	
Orange-tip				1	1																					2	2	
Green Hairstreak					2	5																				7	7	
Purple Hairstreak																										0	0	
Small Copper																										0	0	
Small Blue																										0	0	
Brown Argus																										0	0	
Common Blue											1										5	3				9	9	
Chalkhill Blue																										0	0	
Holly Blue																										0	0	
Red Admiral														1	2		1	1	1			1	2	1		10	10	
Painted Lady								1	5	4	1	2	2				8	10	22	3	2	1				61	61	
Small Tortoiseshell																	2				3	4	1	3	1	14	14	
Peacock	3	1			3			1									1	7	41	11	3	3	2	2		78	78	
Comma														1	2		2	1	2	4		1	1	1	1	16	16	
Dark Green Fritillary																1										1	1	
Silver-washed Fritillary																										0	0	
Marsh Fritillary																										0	0	
Duke of Burgundy								1		2																3	3	
Speckled Wood				3	5	3	2	2	5	1	6	2				1	1	1	2	5		5	2	5	3	2	54	54
Wall																										1	1	
Marbled White													8	56	50	79	60	12	4							269	269	
Graying																										0	0	
Gatekeeper																2	25	22	36	7	3	8				103	103	
Meadow Brown									1			2	14	13	43	24	46	20	27	10	7	7				214	214	
Small Heath								1	3	10	3	4	2													27	27	
Ringlet											1	180	309	405	227	108	55	19	4	1						677	677	
Total	0	4	2	5	11	12	16	10	13	21	17	20	223	405	227	200	222	134	179	66	49	34	10	12	4	3	1899	1899

Table 1. Ravensgate - 2009 - Total butterflies recorded each week

Table 2. Ravensgate - 2009 - Total butterflies recorded in each section

Section	A	B	C	D	Total
Small Skipper	32	15	16		63
Essex Skipper					0
Small/Essex Skipper					0
Large Skipper	34	13	32	2	81
Dingy Skipper					0
Grizzled Skipper					0
Clouded Yellow					0
Brimstone	2	1	7		10
Large White	24	36	21	4	85
Small White	14	21	9	6	50
Green-veined White	18	17	25	4	64
Orange-tip	1		1		2
Green Hairstreak			7		7
Purple Hairstreak					0
Small Copper					0
Small Blue					0
Brown Argus					0
Common Blue	6	1		2	9
Chalkhill Blue					0
Holly Blue					0
White Admiral					0
Red Admiral	2	2	5	1	10
Painted Lady	43	14	4		61
Small Tortoiseshell	4	9	1		14
Peacock	16	28	32	2	78
Comma		4	11	1	16
Dark Green Fritillary	1				1
Silver-washed Fritillary					0
Marsh Fritillary					0
Duke of Burgundy		3			3
Speckled Wood	6	8	37	3	54
Wall				1	1
Marbled White	151	97	21		269
Grayling					0
Gatekeeper	25	29	41	8	103
Meadow Brown	110	33	25	46	214
Small Heath	23	2	2		27
Ringlet	298	202	147	30	677
Total	810	535	444	110	1899

Table 3. Ravensgate - Total butterfly species count for each year

	2005	2006	2007	2008	2009	Average (05 - 08)
Number of species	24	29	22	20	23	24
Small Skipper	114	77	25	52	63	67
Essex Skipper	8	1	0	1	0	3
Small/Essex Skipper	0	8	4	0	0	3
Large Skipper	32	53	44	49	81	45
Dingy Skipper	0	0	0	0	0	0
Grizzled Skipper	0	0	0	0	0	0
Clouded Yellow	0	1	0	0	0	0
Brimstone	17	16	16	20	10	17
Large White	22	22	10	16	85	18
Small White	22	17	9	20	50	17
Green-veined White	12	37	18	12	64	20
Orange-tip	3	1	0	3	2	2
Green Hairstreak	4	3	2	0	7	2
Purple Hairstreak	1	0	0	0	0	0
White-letter Hairstreak	0	0	0	0	0	0
Small Copper	0	1	0	0	0	0
Brown Argus	2	0	0	0	0	1
Common Blue	13	32	2	1	9	12
Holly Blue	3	5	1	8	0	4
Small Blue	2	3	0	0	0	1
White Admiral	0	0	0	0	0	0
Red Admiral	13	23	5	8	10	12
Painted Lady	0	5	0	0	61	1
Small Tortoiseshell	14	2	0	1	14	4
Peacock	42	127	48	44	78	65
Comma	19	31	6	10	16	17
Dark Green Fritillary	0	0	2	0	1	1
Silver-washed Fritillary	0	2	1	0	0	1
Marsh Fritillary	0	3	1	0	0	1
Duke of Burgundy	0	2	0	0	3	1
Speckled Wood	49	58	39	51	54	49
Wall	0	1	0	0	1	0
Marbled White	266	401	351	280	269	325
Grayling	0	0	0	0	0	0
Gatekeeper	174	191	141	179	103	171
Meadow Brown	385	420	184	252	214	310
Small Heath	27	50	14	14	27	26
Ringlet	195	295	251	576	677	329
Totals	1439	1888	1174	1597	1899	1525

**Table 4. Ravensgate - Presence of butterfly species on hill
(both on and off transect)**

	2005	2006	2007	2008	2009	Priority status
Number of species	21	26	28	23	26	
Small Skipper	Y	Y	Y	Y	Y	
Essex Skipper	Y	Y	Y	Y	?	
Large Skipper	Y	Y	Y	Y	Y	
Dingy Skipper	?	?	Y	Y	Y	<i>High</i>
Grizzled Skipper						
Clouded Yellow		Y(T)				
Brimstone	Y	Y	Y	Y	Y	
Large White	Y	Y	Y	Y	Y	
Small White	Y	Y	Y	Y	Y	
Green-veined White	Y	Y	Y	Y	Y	
Orange-tip	Y	Y	Y	Y	Y	
Green Hairstreak	Y	Y	Y	Y	Y(T)	<i>Medium</i>
Purple Hairstreak						
White-letter Hairstreak						
Small Copper		Y(T)				
Brown Argus	Y(T)					
Common Blue	Y	Y	Y	Y	Y	
Holly Blue	?	?	Y	Y		
Small Blue	?	?	Y	?	Ova	<i>High</i>
White Admiral						
Red Admiral	Y	Y	Y	Y	Y	
Painted Lady	?	Y	Y		Y	
Small Tortoiseshell	Y	?	Y	Y(T)	Y	
Peacock	Y	Y	Y	Y	Y	
Comma	Y	Y	Y	Y	Y	
Dark Green Fritillary			Y		Y (T)	<i>Medium</i>
Silver-washed Fritillary		Y(T)	Y(T)			
Marsh Fritillary	?	Y	Y		Y	<i>High</i>
Duke of Burgundy	?	Y	Y	Y	Y	<i>High</i>
Speckled Wood	Y	Y	Y	Y	Y	
Wall		Y			Y(T)	<i>High</i>
Marbled White	Y	Y	Y	Y	Y	
Grayling						
Gatekeeper	Y	Y	Y	Y	Y	
Meadow Brown	Y	Y	Y	Y	Y	
Small Heath	Y	Y	Y	Y	Y	<i>High</i>
Ringlet	Y	Y	Y	Y	Y	

Y: species recorded on hill

Y(T): species recorded only on transect

?: species likely to have been present on hill, but no records available

Ova: no butterfly recorded, but eggs found on food plant

Table 5. Ravensgate - 2009 - Butterflies recorded off-transect (at each visit)

Day	15	21	24	24	30	1	1	4	14	10	15	8	9	19	22	Total
Month	5	5	5	5	5	6	6	6	6	7	7	8	8	8	8	
Length of visit (min)	15	15	20	10	10	20	40	20	20	40	20	20	40	20	20	
Recorder	JC	JC	JC	SJ	JH	JC	TA	JH	JC	TA	JH	JC	TA	JC	JH	
Small Skipper										7	2		10	1		20
Essex Skipper																0
Small/Essex Skipper																0
Large Skipper									4	3	3					10
Dingy Skipper	2	3	1			2	4	2								14
Grizzled Skipper																0
Clouded Yellow																0
Brimstone						2								5	1	8
Large White	2		1							2	1		10	8	6	30
Small White										1	2		1		16	20
Green-veined White			2			1					2		5	3	10	23
Orange-tip			1													1
Green Hairstreak																0
Purple Hairstreak																0
Small Copper																0
Small Blue							1					2 Ova				1
Brown Argus																0
Common Blue						1	2	2					14	1	6	26
Chalkhill Blue																0
Holly Blue																0
White Admiral																0
Red Admiral															1	1
Painted Lady						2	5	3	2				31		6	49
Small Tortoiseshell							1		1					6	7	15
Peacock													10		7	17
Comma										1				2	2	5
Dark Green Fritillary																0
Silver-washed Fritillary																0
Marsh Fritillary						1	1									2
Duke of Burgundy	1	7	10	1	1	8	13	7								48
Speckled Wood			2					3	4							9
Wall																0
Marbled White										57	37		7			101
Grayling																0
Gatekeeper											3		37	10	2	52
Meadow Brown										19	15		10	4	13	61
Small Heath			1			8	9	15	8				1		4	46
Ringlet										84	19					103
Total	5	10	18	1	1	25	36	32	19	174	84	0	136	40	81	662

Note these are recordings on separate visits, so individual butterflies could be recorded on more than one visit ie. there were two observations of a Marsh Fritillary, but it was probably the same butterfly seen.

Table 6. Ravensgate - 2009 - Butterflies recorded off-transect (in each 'section')

A map showing these 'sections' on the hill is in Figure 3.

Section	B	E	F	G	H	J	K	L	M	N	P	Total
Small Skipper		6	8				1				5	20
Essex Skipper												0
Small/Essex Skipper												0
Large Skipper		2	1				4				3	10
Dingy Skipper			3	2	5	1	3					14
Grizzled Skipper												0
Clouded Yellow												0
Brimstone		1			2	1	3		1			8
Large White		5	8	1	4	3	4			4	1	30
Small White		6	5	2			6				1	20
Green-veined White		6	2		3	1	6	1		2	2	23
Orange-tip							1					1
Green Hairstreak												0
Purple Hairstreak												0
Small Copper												0
Small Blue			2 Ova	1								1
Brown Argus												0
Common Blue		3	12	4			1	2	4			26
Chalkhill Blue												0
Holly Blue												0
White Admiral												0
Red Admiral				1								1
Painted Lady		5	13	2		2	4	12	5	1	5	49
Small Tortoiseshell		2			2	2	8				1	15
Peacock		2	4	1			6		1	1	2	17
Comma						1	3			1		5
Dark Green Fritillary												0
Silver-washed Fritillary												0
Marsh Fritillary							2					2
Duke of Burgundy	2	1	3		6		35			1		48
Speckled Wood				3	6							9
Wall												0
Marbled White		26	32	11						27	5	101
Grayling												0
Gatekeeper		12	8	2	3	3	4	5		7	8	52
Meadow Brown		15	17	9	1	2	4		1	7	5	61
Small Heath		20	10	3	2		1		8	1	1	46
Ringlet		37	15	6						21	24	103
Total	2	143	133	48	34	16	95	20	20	73	58	662

N.B. These are number of observations of butterflies.
An individual butterfly may be recorded on more than one occasion.

These are casual recordings, rather than systematic recordings as on a transect.
Numbers of butterflies recorded in each section depends heavily on recorder activity
i.e. how often the sections are monitored
Sections E, F & G were walked more often than Sections L, M, N & P

Table 7. Ravensgate - 2009 - Moths recorded

28th June 2009

moth trapping
end of section C

2	Pretty Chalk Carpet
11	Beautiful Golden Y
3	Riband Wave
6	Brimstone
7	Clouded Silver
5	Peppered moth
15	Drinker
34	Lobster moth
14	Light Arches
1	Barred Yellow
6	Peach Blossom
2	White Ermine
1	Purple Clay
22	Heart and Dart
4	Large Yellow Underwing
2	Small Yellow Wave
2	Cetaceous Hebrew Character
1	Small White Wave
1	Lesser Swallow Prominent
1	Buff Tip
1	Snout
6	Buff Arches
1	Angle Shade
5	Dot Moth
4	Buff Ermine
2	Blackneck
1	Scarlet Tiger
11	Burnished Brass
1	Plain Gloden Y
3	Flame
1	Coronet
1	Pale Prominent
1	Common Carpet
14	Light Emerald
3	Small Magpie
1	Oak hook-tip
1	Clouded Border
2	Blood-vein
1	Maiden's Blush
1	Elephant Hawkmoth
2	Fern
1	Pale Tussock
1	Treble Lines
1	Smokey Wainscott
1	Small Yellow Wave
1	Green Carpet
1	Green Arches
1	Dark Arches
2	Mottled Beauty

28th June (Continued)

1	Willow Beauty
1	Common Lutestring
1	Green Pug
1	Poplar Hawkmoth
1	Muslin Footman
2	Timothy Tortrix
2	Agapeta hamana
1	Udea Olivalis
1	Celypha lacunana
1	Bramble shoot moth
1	Ruby Tiger (larva)

9th August 2009

moth trapping

Start of Section A next to wood

21	Large Yellow Underwing
1	Lesser Yellow Underwing
1	Ruby Tiger
1	Purple Thorn
1	Coxcomb Prominent
6	Common Footman
2	Light Arches
7	Dusky Sallow
1	Large Nutmeg
1	Straw Dot
2	Common Wainscot
1	Riband Wave
2	Grass Emerald
1	Lesser Swallow Prominent
1	Red Twin Spot Carpet
1	July Highflyer
1	Willow Beauty

Casual daytime records

24-May

1 Cistus Forester moth (Section F)

14-Jun

2 Wood Tiger (Section K)
1 Mother Shipton (Section K)

19-Jun

2 Burnet Companion (Section A)
1 Mother Shipton (Section A)

31-Jul

2 Dusky Sallow (Section B)

Table 8. Some day-flying moths recorded on Ravensgate Hill since 2002
 (Records supplied by Guy Meredith)

19 Oct 2002	Stigmella tityrella (leaf mine on Beech)
25 May 2003	Micropterix calthella Glyphipterix simplicella Grapholita jungiella Common Heath
4 July 2004	Wood Tiger
29 May 2005	Plutella xylostella
9 Jun 2007	Micropterix aruncella
16 Oct 2008	Stigmella catharticella (leaf mine on Buckthorn)
8 July 2009	Anthophila fabriciana Prays fraxinella Paraswammerdamia lutarea Coleophora mayrella Acompsia cinerella Scythris picaepennis Pseudargyrotoza conwagana Udea olivalis Stenoptilia pterodactyla Common Carpet Green Carpet

Figure 1. Ravensgate - Number of butterflies recorded each week in 2008 and 2009 and average for 2005-2008

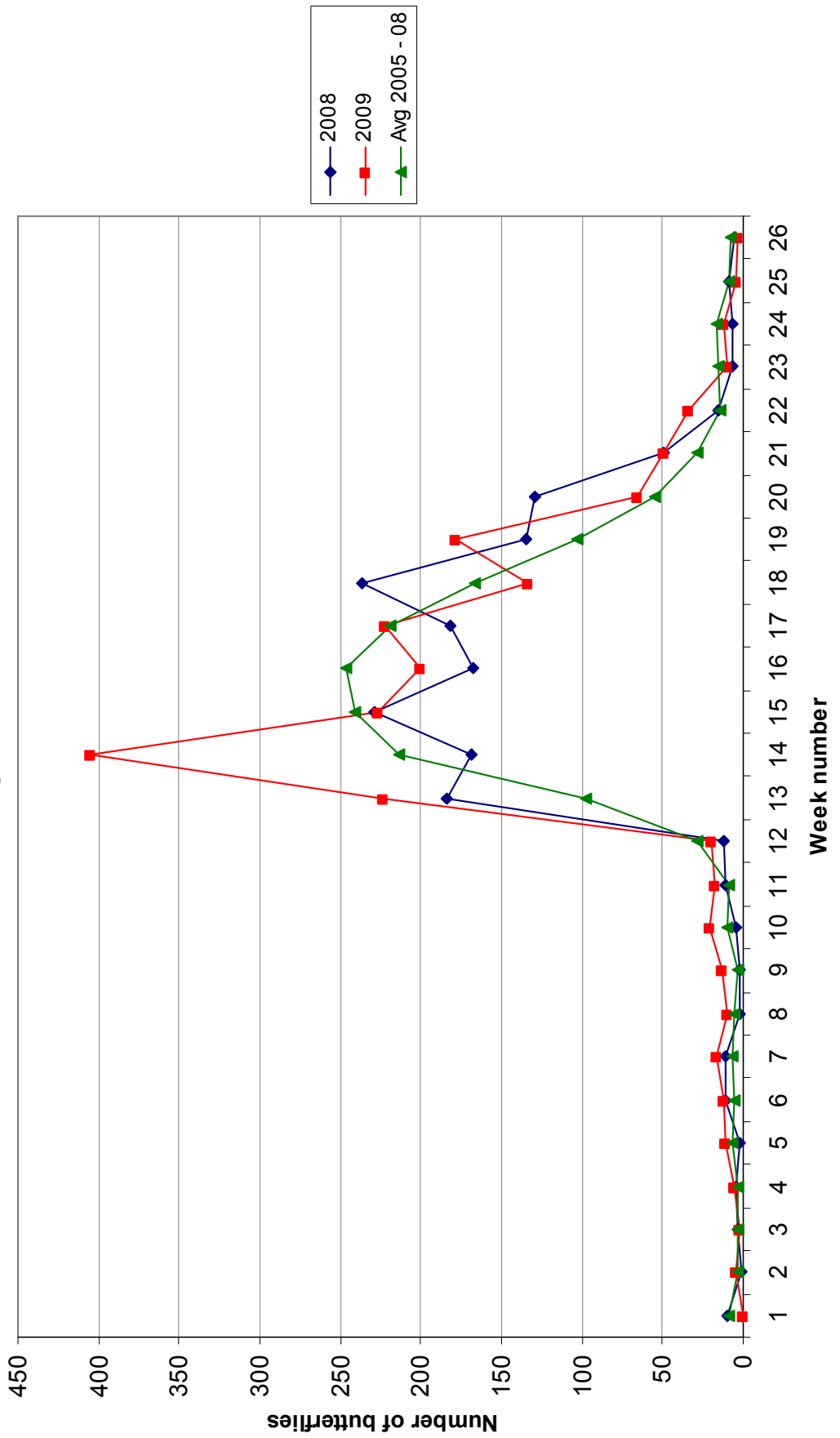
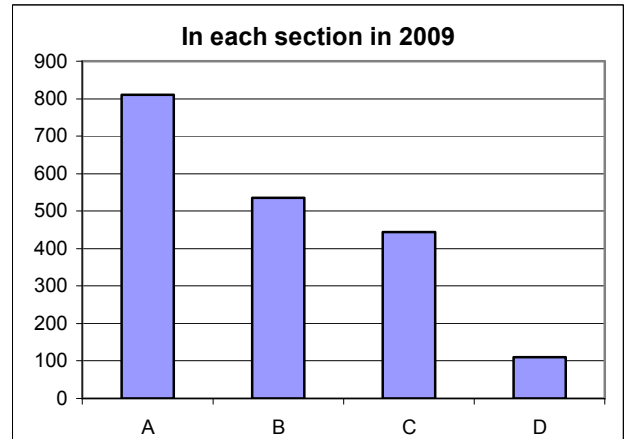
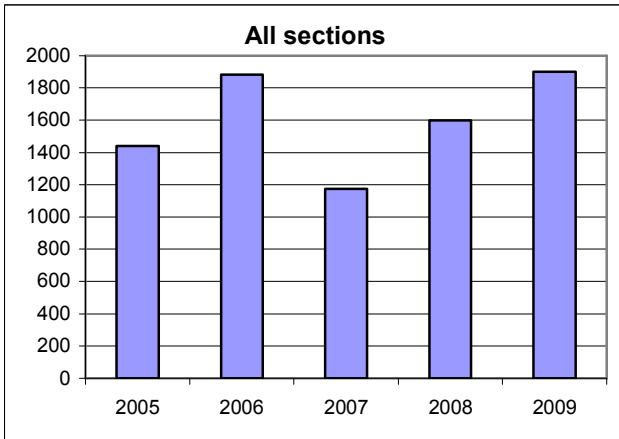
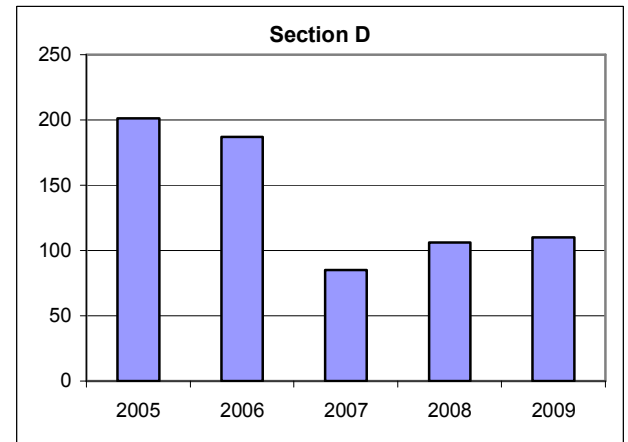
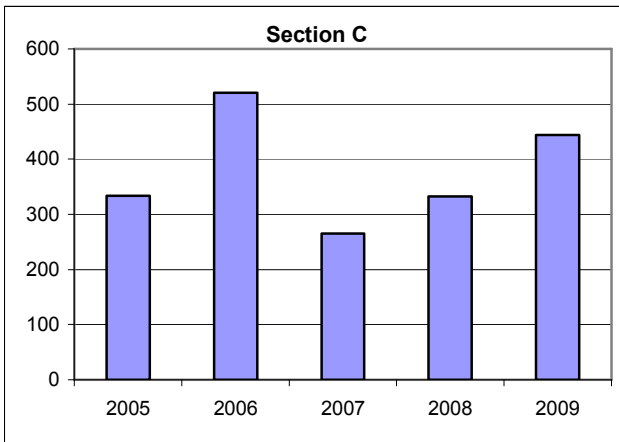
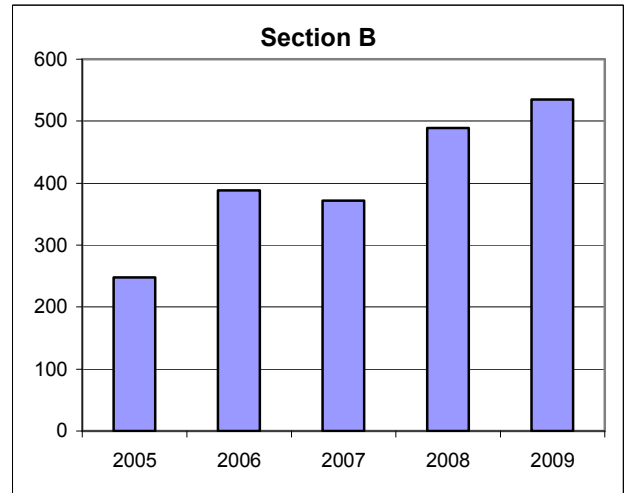
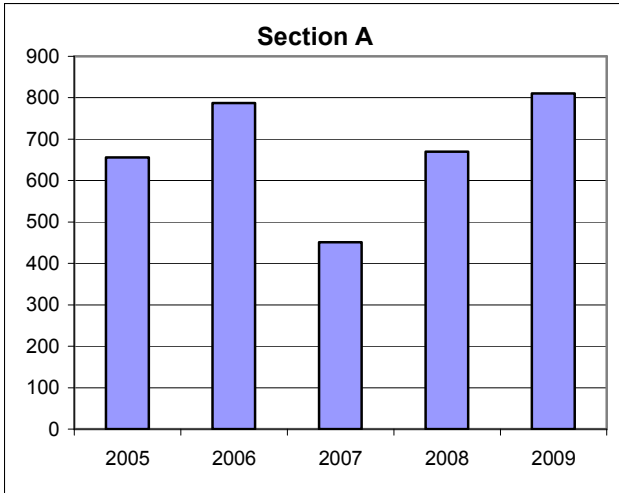
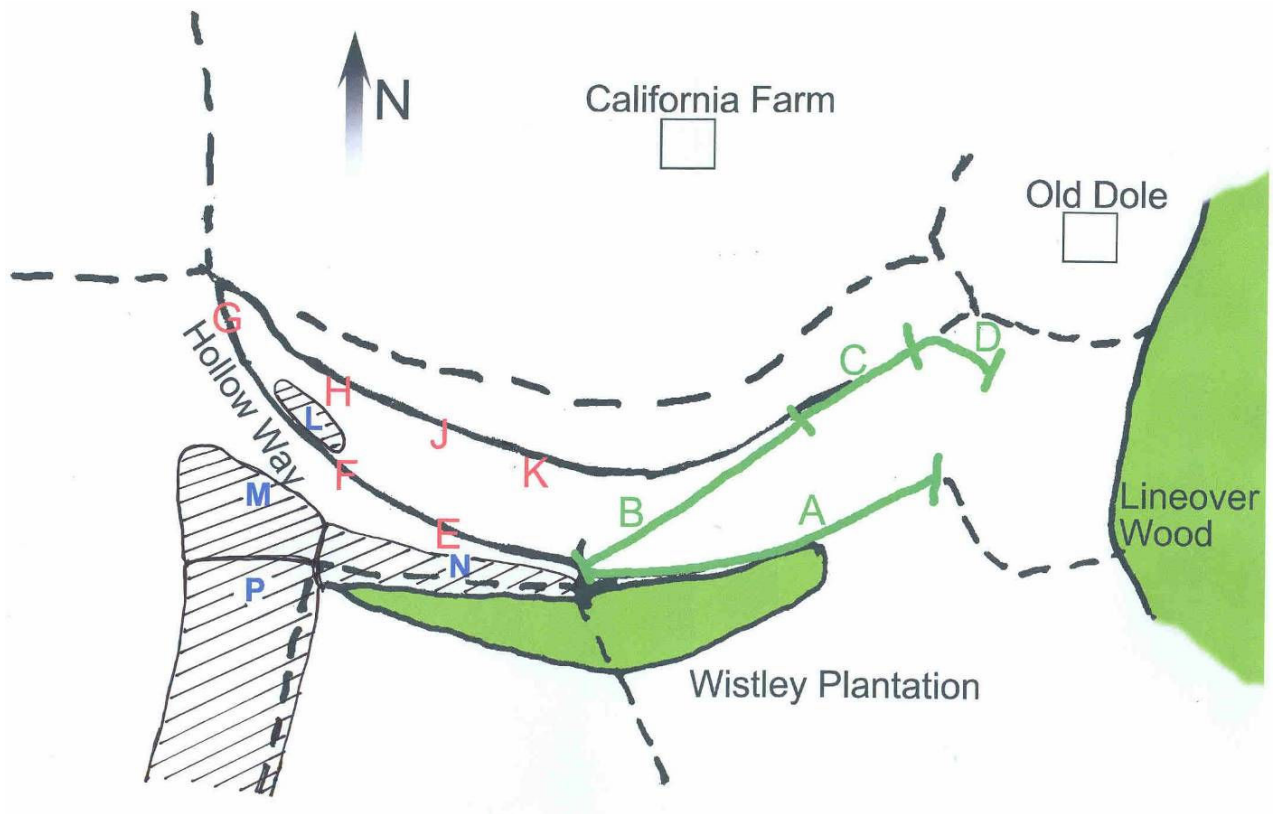


Figure 2. Ravensgate - Number of butterflies in each section 2005 - 2009



N.B. Note that the scales for each chart are not the same!

Figure 3. Map of transect and sections off-transect



Note

Transect route and sections A, B, C, D (in green)

Off-transect 'sections' E, F, G, H, J, K (in red)

Other areas of hill surveyed L, M, N, P (in blue on shaded areas)

Figure 8. Weather records from 2000 to 2009
(Average of observations from Ross-on-Wye and Oxford)

