



THE NATIONAL TRUST
HATFIELD FOREST

Butterfly survey report

2007

Hatfield Forest Butterfly Survey Report 2006.

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1.0 Foreword

1.1 Acknowledgements

This year has seen a great change to the conditions of the 2006 survey. We've had a glorious spring, with temperatures well into the 20s throughout April, followed by epic rain throughout the summer. This has had a definite effect on the sightings throughout the survey, and has somewhat hampered efforts to get out and record, however thanks must go to everyone for their tenacity and dedication over the season.

Again thanks are due to all of the recorders – from the Herts and Essex border centre of National Trust volunteers; Ray and Shirley Addley, Tony and Margaret Denton, Ted and Pauline Shirley and Joan and Ken Lacey. In addition to the existing two transects, we have been able to launch the third transect in earnest, due to the commitment of Peter Herring and Lesa Campbell-Brown who have walked every week of the survey and gathered some exceptional records and photographs.

Stuart Banks
January 2007

1.2 History of the Survey

Hatfield Forest is described as *'the last Forest'* as it is the only remaining example of a small-scale medieval hunting Forest in Europe and possibly the world. The Forest is recorded as far back as 1086 in the domesday book, and was established as a hunting Forest by King Henry I. It has been continuously worked for timber and grazing since then, passing from Crown ownership, through private hands and into the care of the National Trust in 1924. The mosaic of habitats formed by the coppice compartments and open plains provide an ecological haven for invertebrates, birds and mammals. The forest is now designated as both a Site of Special Scientific Interest (SSSI) and a National Nature Reserve (NNR).

Butterfly surveying is nationally recognised as a means of collecting data that relates not only to the state of butterfly numbers in the UK but also to the relative success of local management practices and further afield to the impacts of international policies affecting our climate, due to their swift reaction to climatic anomalies such as early springs and late winters. Their absolute dependence on particular plant species and habitats gives a good indication of whether or not management practices are having a positive or detrimental effect on the habitat and its inhabitants

Until this survey began in 2005, there has been a distinct lack of recording carried out on the Forest. The most recent records found before this were from 1950. For the first time, a third transect has been included in this survey report. We now have transects covering all three 1km quadrats on the Forest, and as such can cover the majority of habitat types represented here. The survey work is undertaken entirely by volunteers, and it is hoped that more people will become involved and enable us to cover more ground and relieve some of the pressure on our current recorders.

Hatfield Forest Butterfly Survey Report 2007

This year has seen some bizarre weather; an early and mild spring, followed by a tempestuous summer. This will undoubtedly have taken its toll on the butterfly numbers recorded; however we have recorded new species this year: Silver-washed Fritillary and Purple hairstreak. Both were seen during last year's safari day, but have been recorded here for the first time on a transect. Silver-washed fritillaries are making an appearance for the first time in the east of England.

2.0 Results

2.1 Data pool

During the pre-season briefing, the rota was decided and any problems from the last survey were identified and discussed. The weather has had an effect on our ability to collect weekly data, and as such there may appear to be several missing weeks' records. The early fine weather may also have had a detrimental effect, as emerging adults will be more susceptible to cold weather than would their eggs.

2.2 Transect totals

A total of 2,028 individuals were recorded across all three transects in 2007. Over the original two transects, 1,110 were recorded compared with 1,779 in 2006. Again more butterflies were seen along transect 5420 than 5320. More still were recorded on transect 5319. Also this year 25 species were recorded; new additions are silver-washed fritillary, white-letter hairstreak, marbled white and purple hairstreak – the latter two being exclusively recorded, along with wall, on transect 2319.

2.21 Transect 5320

Once again, the best weeks for recording along transect 5320 were in the middle of the season, weeks 14-19, being early July to early August. Week 14 was the highest peak, followed by a fluctuation of peaks and troughs until a sharp decline in week 20.

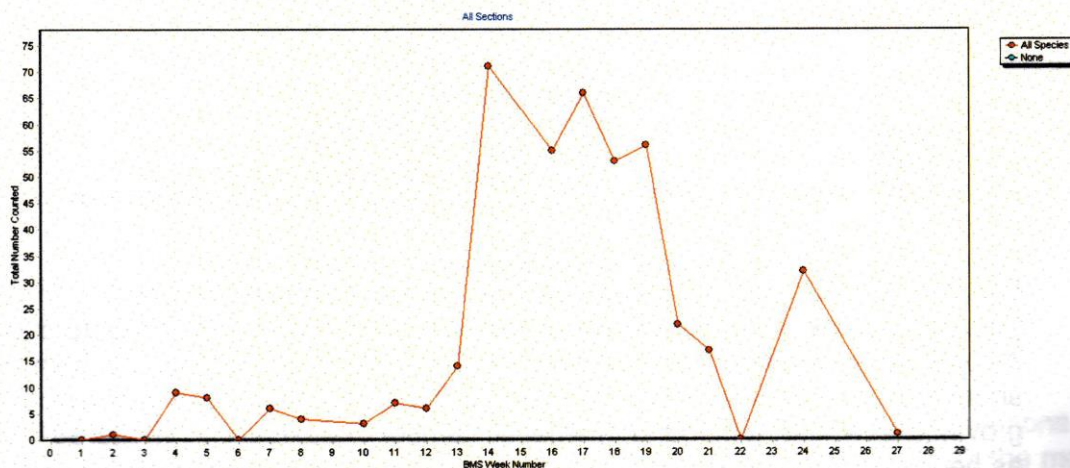


Figure 1 – Transect 5320 Weekly plot, all species

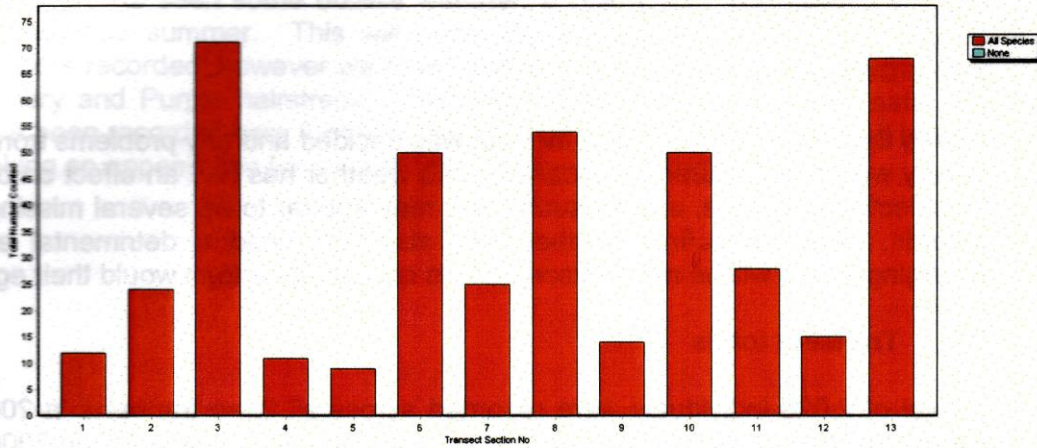
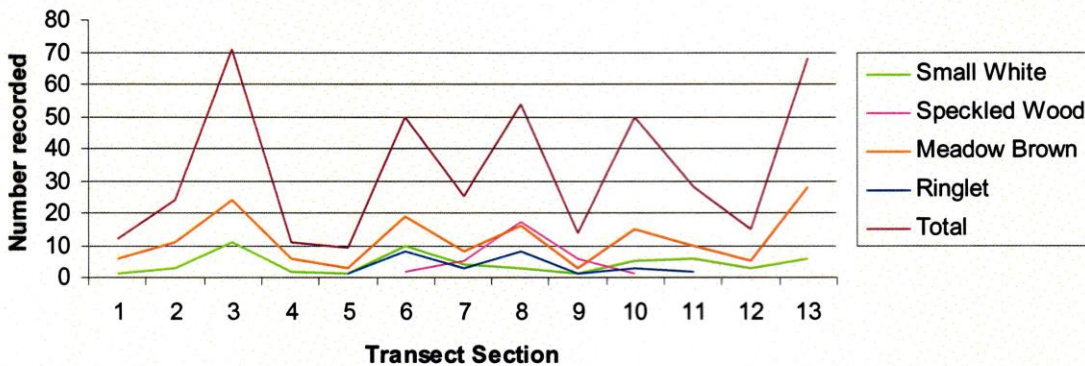


Figure 2 – Transect 5320 Section plot, all species

Sections 3, 8 and 13 yielded the most recordings due again to a large number of brown butterflies spotted there – speckled wood, ringlet and meadow brown, as well as an abundance of small whites throughout the transect. The sections mentioned are abundant with vegetation and as such provide good feeding and egg-laying sites.

Fig 3. transect 5320 - main species comparison



Sections 1,4,5,9 and 12 represent the lowest numbers recorded. These are all grassland areas, which would be expected to yield the lowest numbers of butterflies. As well as an abundance of browns on these sections, there are a high number of small whites; a species which favours gardens and fields where brassica crops are grown. Elsewhere, it is found in smaller numbers especially in sheltered places such as hedgerows and wood edges. It also favours white flowering plants. a proliferation of hedge mustard and hawthorn – both with white flowers are present here.

2.22 Transect 5420

The highest numbers of records along this transect are in weeks 14-16, early July, with the peak coming in week 14 with just short of a quarter of all sightings for the entire season.

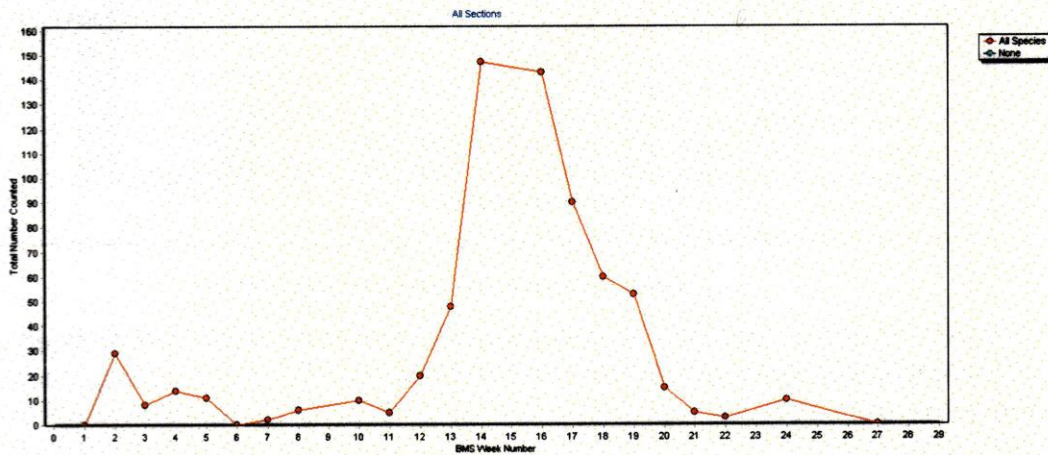


Figure 4 - Transect 5420 Weekly plot, all species

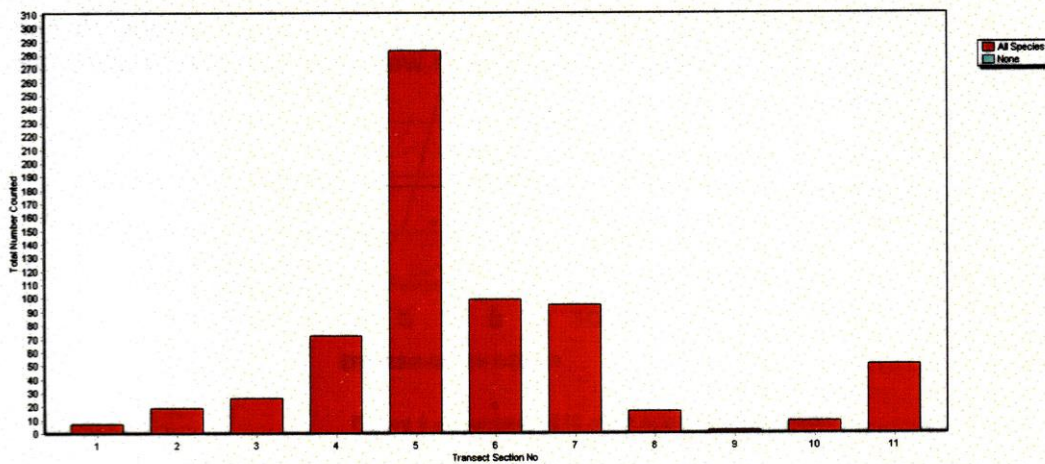


Figure 5 - Transect 5420 Section plot, all species

As was the case in the last 2 years, sections 4-7 are the most popular sections of the transect. Similarly the habitat here is sheltered woodland rides. Again the most frequent visitors to these areas are the browns; ringlet and meadow brown with high numbers of small and Essex skippers. There are also high numbers of small whites here, attributable to the section's hedgerows and woodland edges.

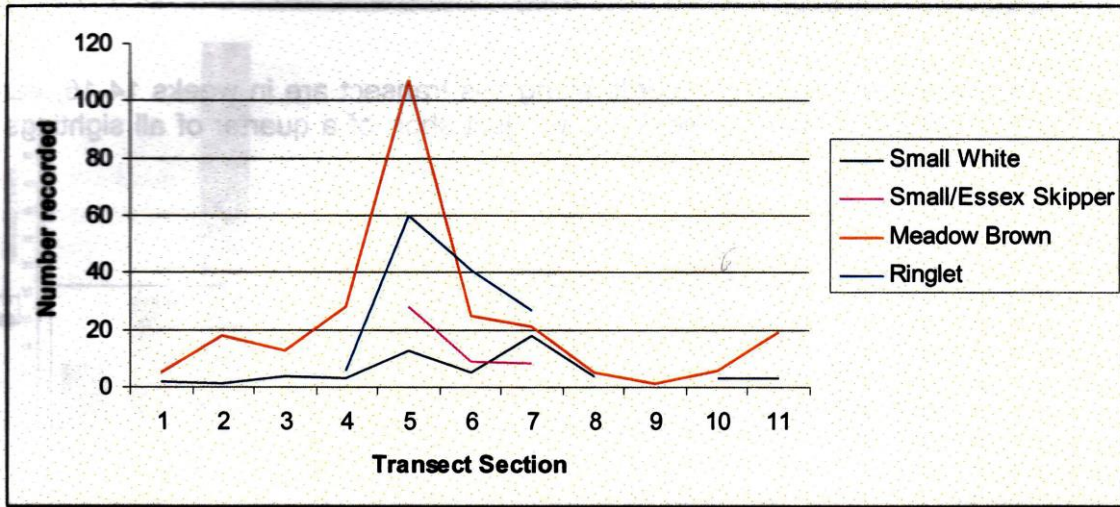


Figure 6 – Transect 5420 main species comparison

Again the main species in this transect are seen most frequently in areas of woodland; along woodland rides through sections 4-7.

2.23 Transect 5319

The highest numbers of records along this transect are in weeks 15 and 16, early July, with the peak coming in week 15 with well over a quarter of all sightings for the entire season.

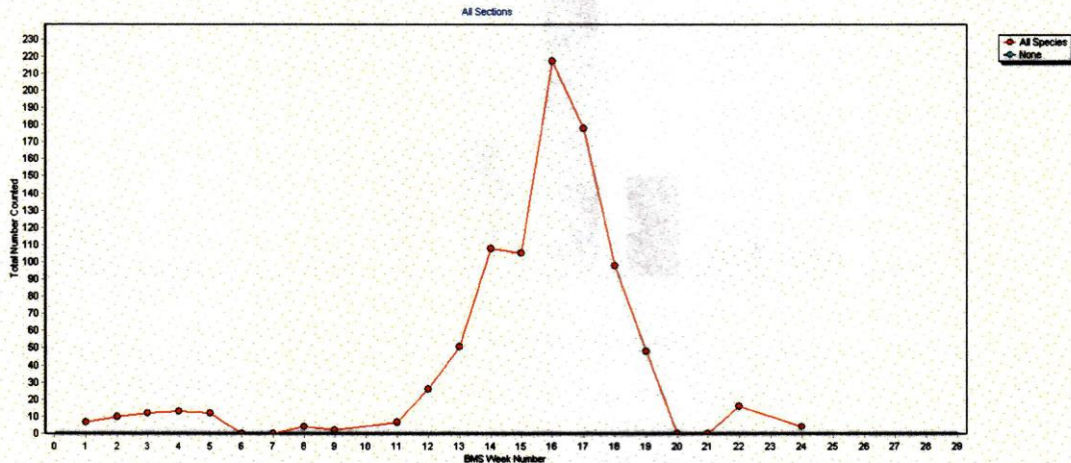


Figure 7 – Transect 5319 Weekly plot, all species

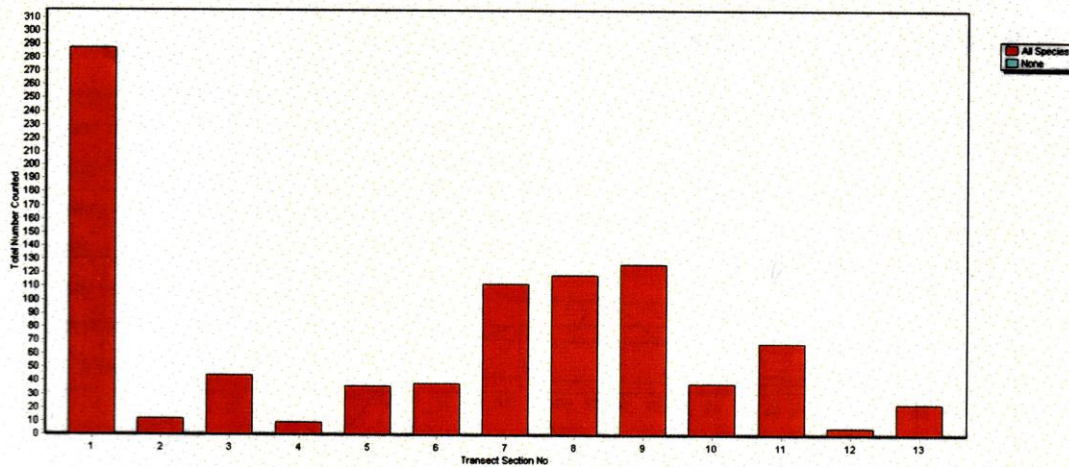


Figure 8 – Transect 5319 Section plot, all species

Along transect 5319 section 1 is by far the busiest, with sections 7, 8 and 9 all recording high numbers. Section 1 is along a 'motorway' ride with ditches either side hosting an abundance of wildflowers and brambles. Sections 7 and 8 are through lodge coppice, a minimum intervention woodland with narrow rides, and section 9 another wide ride with ditches either side.

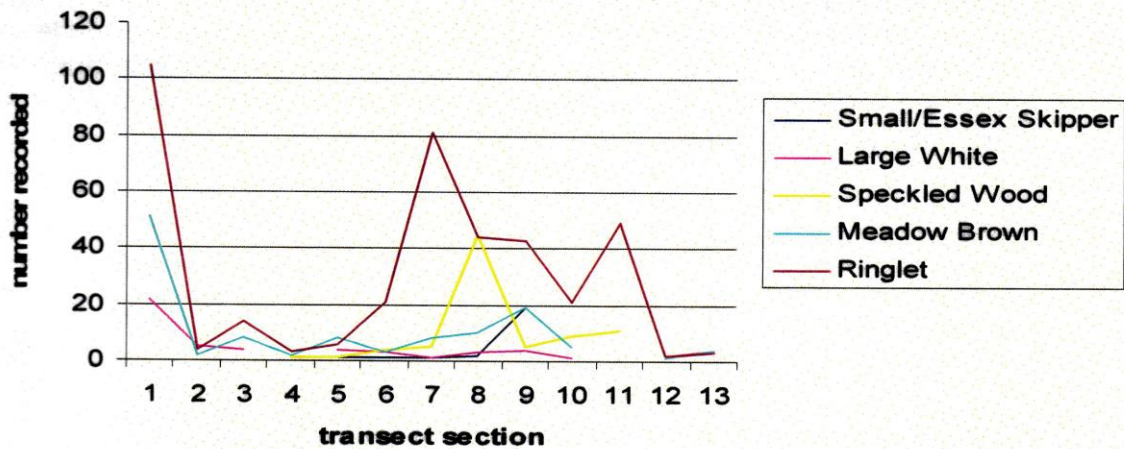


Figure 9 – Transect 5319 main species comparison

Here the main sightings are on section 1 for all species, and section 7 for ringlet. Section 8 hosts the highest number of speckled wood, and section 9 shows many meadow brown and skippers.

2.24 Transect comparison

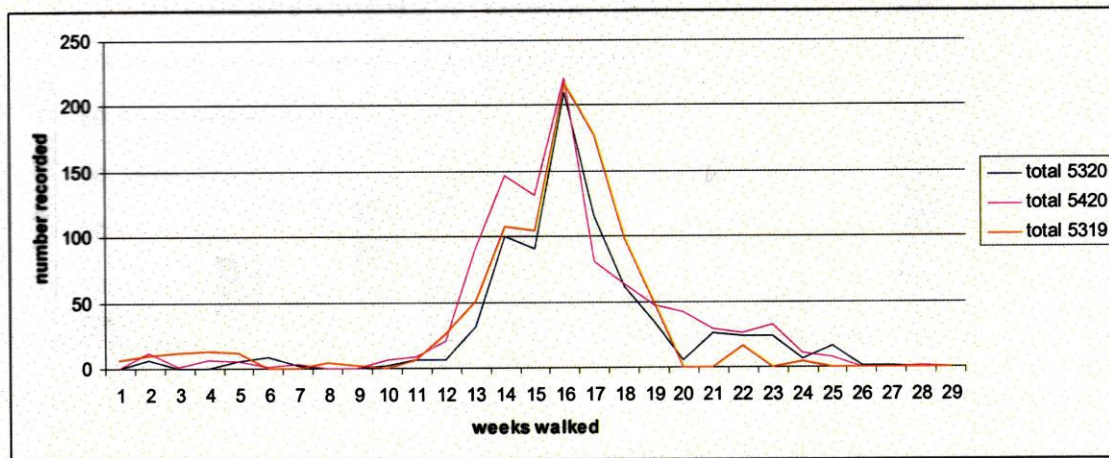


Figure 10 – Comparison of transects 5420 5320 and 5319

As with last year, the graph shows the shape that would be expected for butterfly recording, with a peak around week 16 – late July. There’s an interesting peak at the start of the season, attributed to high numbers of peacocks in week 2. Emergences of small white and speckled wood boost numbers in weeks 4 and 5, followed by a dip in all species until week 11. Speckled wood and meadow brown show in high numbers in week 12, and week 14 sees the beginning of high numbers of meadow brown and ringlet. The peak comes in week 16, made up of high numbers of small white, large white, meadow browns, ringlets and small/Essex skippers. These numbers tail off gradually, with a peak in week 24, due again to speckled wood.

2.25 Comparison with last year

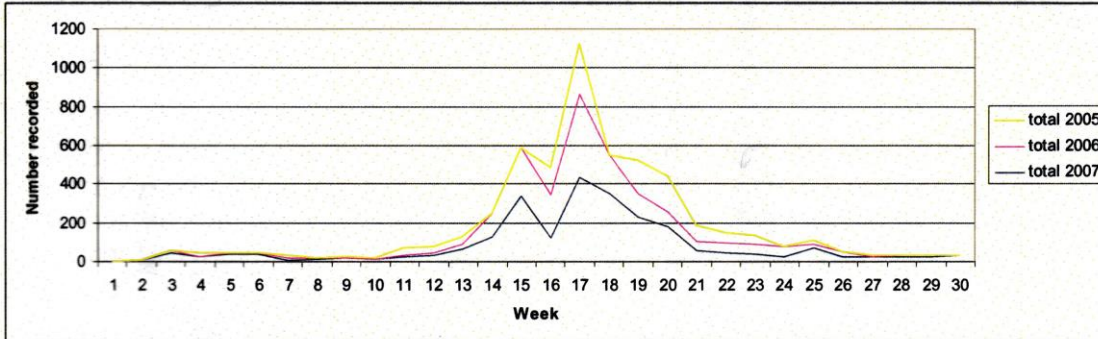


Figure 11 - Comparison of records 2005-2006

As in both of the last years' surveys there is a visible peak in week 17. Encouragingly, the trend corresponds exactly with the previous years' results, with a dip in week 16 following a slight increase in the previous week. This indicates that the lower numbers of recordings over the two original transects this year are not due to management, and are more likely to be a reflection of the weather with lower numbers appearing at the peak times, but with the trends still being represented across the season.

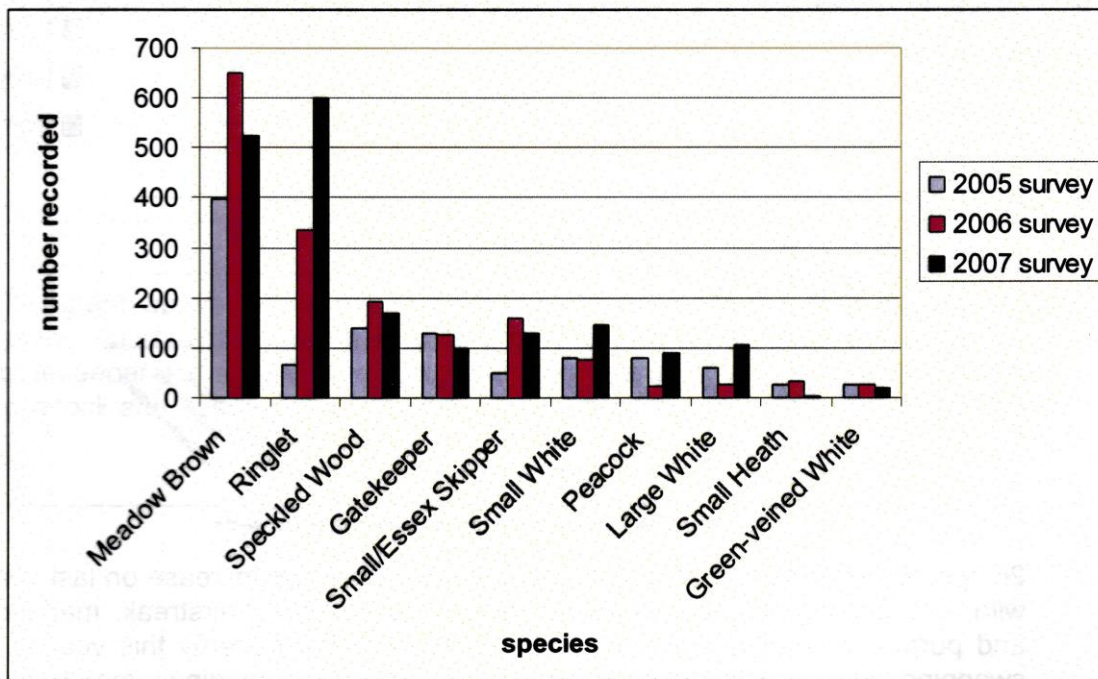


Figure 12 - comparison by species 2005, 2006 & 2007 (Most recorded species)

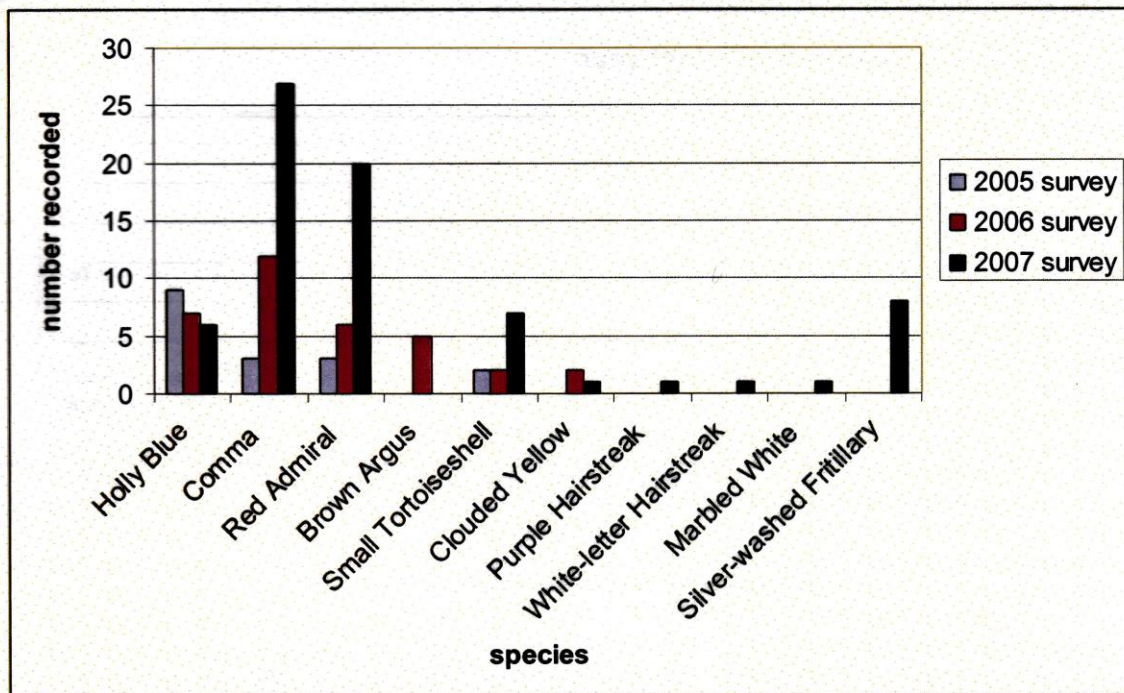


Figure 13 – comparison by species 2005, 2006 & 2007
(Least recorded species)

2.3 Species

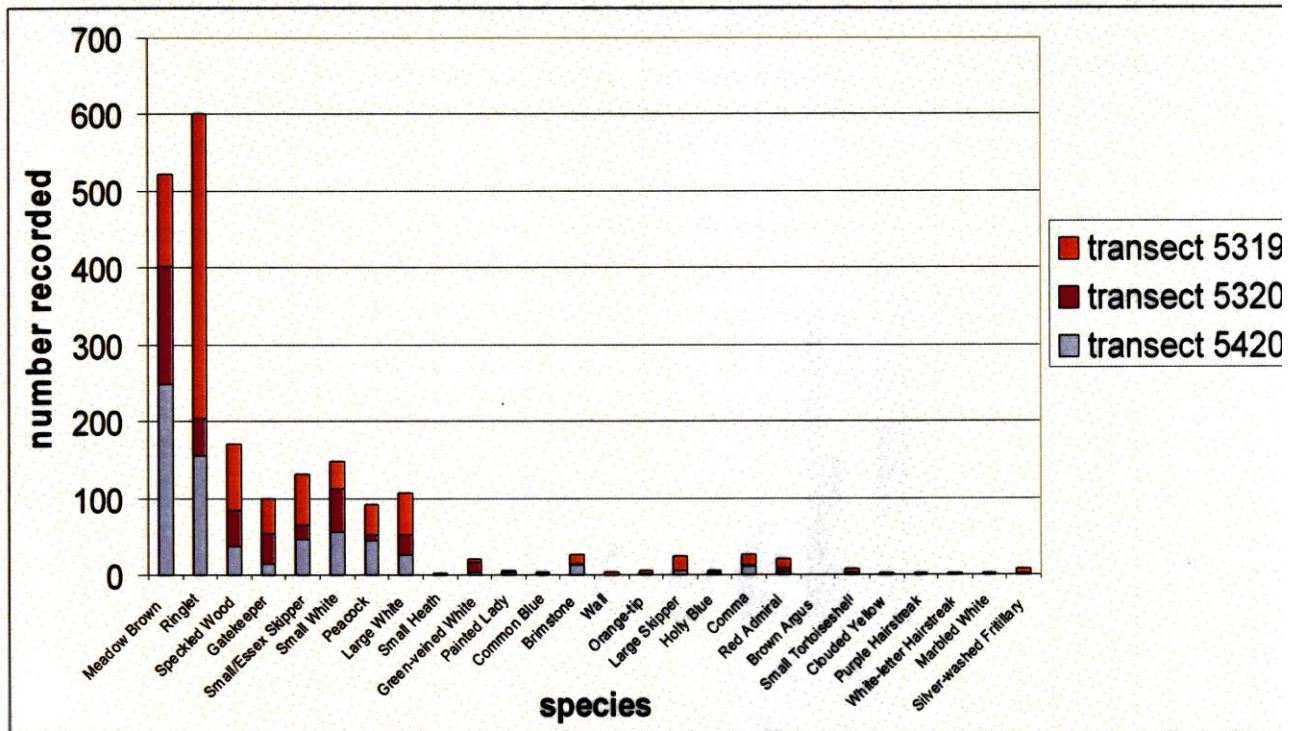


Figure 14 – total species counts across both transects

26 species in all were recorded on the Forest in 2007, an increase on last year's 22, with first sightings for silver-washed fritillary, white-letter hairstreak, marbled white and purple hairstreak. The most frequently recorded butterfly this year is ringlet, swapping places with last year's most frequent recording, meadow brown. Numbers of small white, peacock and large white are all up on last year together with comma, red admiral, and small tortoiseshell. There has been a decline in

speckled wood, gatekeeper, small/Essex skippers and holly blues, and no sightings of brown argus, whose appearance in previous years was something of a mystery as it favours chalk and limestone grassland, occasionally visiting sites with disturbed soils. Hatfield Forest has never been under the plough, and so is one of only a handful of completely undisturbed sites in the UK.

This year saw the first recording of silver washed fritillary on a transect, mainly on section 9 of transect 5319. The habitat here is a wide ride with ditches either side. This section was subject to ride cutting during the survey season during the last week that the butterflies were seen (week 18 – 31st July). It is hoped that the population will return next year in greater numbers due to the opening of the rides and exposure of the ride floor to sunlight.

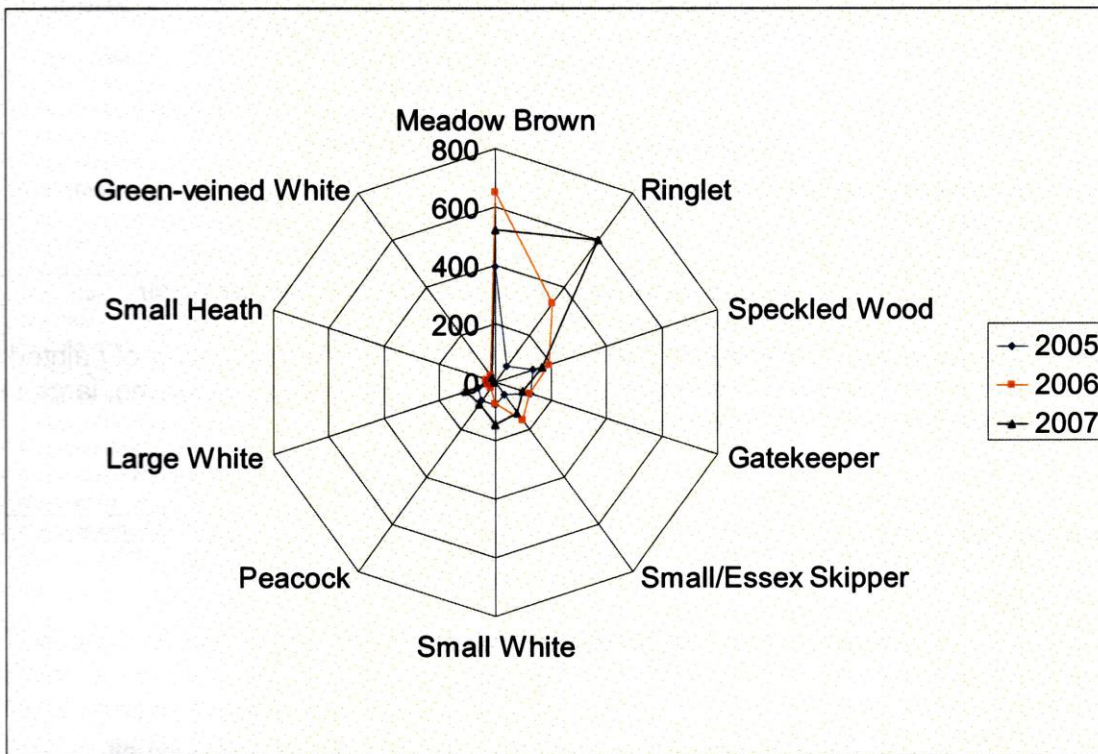


Figure 15 - Comparison of most sighted butterflies 2005, 2006 & 2007

The graph above shows the most sighted butterflies on the survey over the last three years. Numbers of meadow browns are in decline, as are speckled wood, gatekeeper and small/Essex skipper but to a lesser extent. Ringlet, large white, peacock and small white are all present in higher numbers than in previous years.

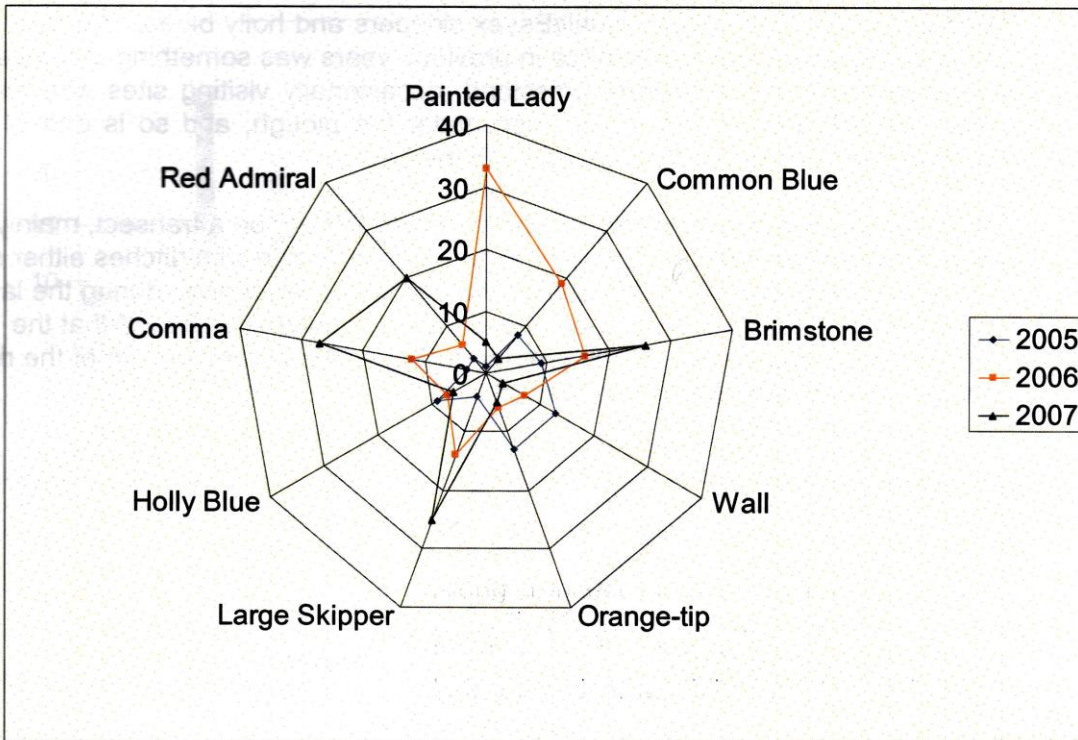


Figure 16 - Comparison of lesser sighted butterflies 2005, 2006 & 2007

The numbers for the less sighted species show decline in numbers of painted lady, common blue, wall, Orange tip and holly blue. Numbers of brimstone, large skipper, comma and red admiral are all up on last year.

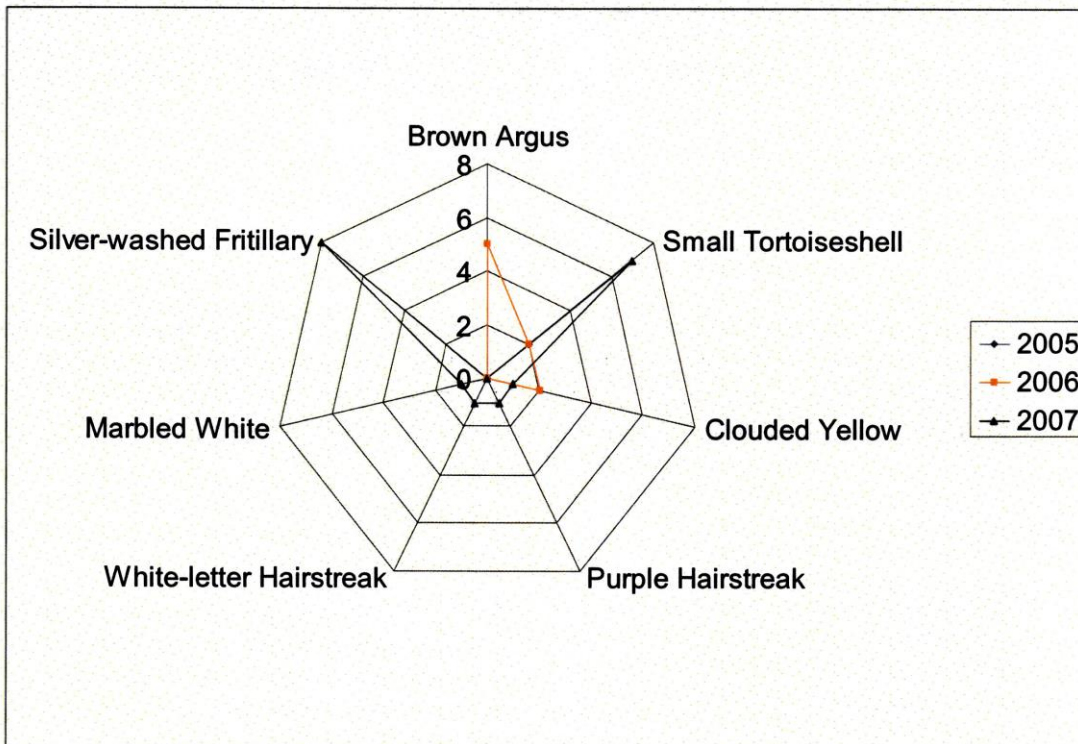


Figure 17 - Comparison of least sighted butterflies 2005, 2006 & 2007

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Of the least commonly sighted species, Clouded yellow and brown argus are both less common this year than last. Numbers of small tortoiseshell, purple hairstreak, white letter hairstreak, marbled white and silver washed fritillary are all up on last year's sightings.

species	Flight period
<i>Meadow Brown</i>	<i>late spring - late summer</i>
Ringlet	early summer
<i>Speckled Wood</i>	<i>early spring - early autumn</i>
<i>Gatekeeper</i>	<i>mid summer</i>
<i>Small/Essex Skipper</i>	<i>summer</i>
Small White	* early spring - early autumn 1-4 broods
Peacock	* mid spring - early autumn & early-mid spring
Large White	* mid spring - late summer 2-3 broods
Small Heath	mid spring - early autumn
Green-veined White	* early spring - early autumn 1-3 broods
<i>Painted Lady</i>	<i>mid spring - late autumn</i>
<i>Common Blue</i>	* <i>mid spring - late summer 2-3 broods</i>
Brimstone	* early spring - late summer - new adults hatching early summer
<i>Wall</i>	* <i>early spring - late summer 2-3 broods</i>
<i>Orange-tip</i>	<i>mid - late spring</i>
Large Skipper	summer
<i>Holly Blue</i>	<i>late spring - late summer</i>
Comma	* mid summer - early autumn & early - late spring
Red Admiral	* late spring - early autumn & early to mid spring
<i>Brown Argus</i>	<i>late spring - late summer</i>
Small Tortoiseshell	* spring & early summer - autumn
<i>Clouded Yellow</i>	* <i>mid spring - early autumn - several broods</i>
Purple Hairstreak	mid summer
White-letter Hairstreak	early summer
Marbled White	early summer
Silver-washed Fritillary	early - mid summer

Less recorded than 2006 **more recorded than 2006** * denotes multiple flight periods
Figure 18 – flight periods of recorded butterflies together with abundance status

The table above shows the flight periods of all butterflies recorded on the Forest. From it we can see that the majority of butterflies in decline are those that have flight periods beginning in spring, and as such are likely to have suffered with the poor weather experienced after the spring of 2006. With the exception of common blue, wall and clouded yellow, these species all have only one brood. Of the more frequently recorded species, all have either more than one brood, or have flight periods beginning later in the year, and as such are likely not to have hatched until more settled weather.

3.0 Critique

3.1 Transects

The season began once again with a briefing, and confusions over the transect routes were discussed and ironed out. New surveyors were walked around the route they would be taking, and shown the survey methods. With the contributions of Lesa Campbell Brown and Peter Herring, who between them surveyed each week, we were able to include the third transect on this year's survey.

There was concern over work that was carried out on the survey route during the season. The cutting back of the ride edges on transect 5319 was long overdue, and there was an opportunity to undertake the work with a large volunteer group, and this opportunity was taken after consideration of the likely consequences. It is important that the survey continues along this transect in order to determine the effects of ride cutting during the season (a practice which has, in the past on smaller sections proved beneficial for wildlife).

3.2 Volunteer rota

The rota for this year's survey was drawn up in advance of the season, providing clarity once again for those walking the route. Acknowledgement must be given to Peter and Lesa who recorded between them all of the data for transect 5319. It is clear from feedback that there is a need for more volunteers to collect the data for this and the other two transects, and it is hoped that more recruits will be gathered from the newly launched Forest Nature group.

3.3 Form and Equipment

The recording form is clear and concise and poses no problems to the recorders. A thermometer and anemometer have been included in the equipment for volunteers to make accurate recordings and these have been well recorded on most of the forms. For future surveys it has been recommended that a sweep net be included in the equipment for ease of identification, which will hopefully be acquired prior to next year's survey.

3.4 Impacts on forest management

The work that was carried out on Lodge ride will be useful in terms of establishing the benefit or effects of cutting back the ride edges. On smaller sections successful results have been observed, and it is expected that our population of silver washed fritillaries will return next year in greater numbers as a result of cutting back rides where they have been sighted and allowing more light to reach the floor and encourage growth of ground violets. Other rides along the transects have all been surveyed and where necessary, work has been undertaken to optimise the habitat potential.

3.5 Training

Any training needs for the coming year will be identified at the pre season meeting. As mentioned above, we are hoping to recruit a number of new surveyors this season, for whom training will be provided.

4.0 Conclusion

The increase in numbers on this year's survey is clearly down to the inclusion of a third transect. When compared to last year's records, the two original transects yielded fewer recordings, due as discussed to the poor conditions and sporadic weather throughout the year. Again it is encouraging finding a higher number of species recorded this year, and exciting to have re-recorded silver washed fritillaries in the East of England for the first time in many years.

It is once again apparent that more volunteers are needed in order to maintain all transects within the Forest. The inclusion of the third transect has found interesting results, with two new species being recorded exclusively on this new transect. We are beginning to get a complete picture of the butterflies on the forest, with non-transect observations from visitors to the Forest contributing to the discoveries on the transects.

Appendix i

Butterflies recorded by date

Transect 5340

Week	0	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	27	28	29	Tot
Date	04-Apr	09-Apr	15-Apr	22-Apr	30-Apr	09-May	18-May	23-May	03-Jun	10-Jun	19-Jun	28-Jun	07-Jul	15-Jul	25-Jul	01-Aug	05-Aug	16-Aug	25-Aug	28-Aug	09-Sep										
Peacock			24	2	1		1									4	5	7													
Comma			1								1		5		1	2	1	1													
Brimstone			4	3	2							1						3													
Orange-tip					2																										
Small White					4	5		1			4	2	8		16	2	7	4		1				2							
Large White					1	2		2					9		2	1		8		1											
Green-veined White															4																
Small/Essex Skipper							1					1	16		18	10															
Large Skipper																		5													
Large Copper																															
Small Copper																															
Holly Blue										1																					
Common Blue																															
Brown Argus																															
Red Admiral								1		1							1		1												
Painted Lady													2								1										
Small Tortoiseshell			1									1	1																		
Speckled Wood				4	4			1		2	5				5	6		1				2		8							
Gatekeeper										1						8		5		1											
Meadow Brown			2					1		5		15	15	82	33	19	39	22	12	2	1										
Ringlet												28	24		59	36	2	5	2												
Small Heath																															
Clouded Yellow																		1													
Purple Hairstreak																															
White-letter Hairstreak																			1												
Green Hairstreak																															
Wall																															
Marbled White																															
Silver-washed Fritillary															1																
Total	0	0	29	8	14	11	0	2	6	0	10	5	20	48	147	0	143	90	60	53	15	5	3	0	10	0	0	0	0	0	0

Transect 5320																															
Week	0	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	27	28	29	
Date		04-Apr	09-Apr	16-Apr	22-Apr	30-Apr	09-May	16-May	23-May		03-Jun	10-Jun	19-Jun	28-Jun	07-Jul	15-Jul	22-Jul	30-Jul	06-Aug	14-Aug	21-Aug	28-Aug			05-Sep			05-Oct			
Peacock					2	2		1								1		2													
Comma					1																	1									
Brimstone					1																1										
Orange-tip																															
Small White			1		4	2			1			1	2	1	7			4	16	12		2									
Large White									2					2	1		6	10	1	5											
Green-veined White								2			1																				
Small/Essex Skipper														4	11		1	3													
Large Skipper																															
Large Copper																															
Small Copper																															
Holly Blue								3																							
Common Blue											2																				
Brown Argus																															
Red Admiral									1		2				2							1									
Painted Lady						1						1																			
Small Tortoiseshell																					1										
Speckled Wood				1	3							4	2						5			5				27					
Gatekeeper																	3	10		17		8									
Meadow Brown												1	3	38		40	13	27	17	13						1			1		
Ringlet														4	12		2	24	1	4	1										
Small Heath																	2														
Clouded Yellow																															
Purple Hairstreak																															
White-letter Hairstreak																															
Green Hairstreak																															
Wall																															
Marbled White																															
Silver-washed Fritillary																															
Total	0	0	1	0	9	8	0	6	4	0	3	7	6	14	71	0	55	66	53	56	22	17	0	0	32	0	0	1	0		

Transect 5340

Week	0	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	27	28	29	T	
Date	04-Apr	09-Apr	15-Apr	22-Apr	30-Apr	09-May	18-May	23-May	03-Jun	10-Jun	19-Jun	28-Jun	07-Jul	15-Jul	25-Jul	01-Aug	08-Aug	16-Aug	25-Aug	28-Aug	09-Sep	05-Oct										
Peacock			24	2	1		1									4	5	7														
Comma			1									1		5		1	2	1	1													
Brimstone			4	3	2								1						3													
Orange-tip					2																											
Small White					4	5			1			4	2	8		16	2	7	4		1				2							
Large White					1	2			2						9		2	1		8		1										
Green-veined White																4																
Small/Essex Skipper								1						1	16																	
Large Skipper																				5												
Large Copper																																
Small Copper																																
Holly Blue										1																						
Common Blue																																
Brown Argus																																
Red Admiral								1		1							1		1													
Painted Lady														2							1											
Small Tortoiseshell			1										1	1																		
Speckled Wood				4	4			1		2	5					5	6		1				2		8							
Gatekeeper										1							8		5		1											
Meadow Brown			2					1		5	15	15	82		33	19	39	22	12	2	1											
Ringlet													28	24		59	36	2	5	2												
Small Heath																																
Clouded Yellow																		1														
Purple Hairstreak																																
White-letter Hairstreak																			1													
Green Hairstreak																																
Wall																																
Marbled White																																
Silver-washed Fritillary																																
Total	0	0	29	8	14	11	0	2	6	0	10	5	20	48	147	0	143	90	60	53	15	5	3	0	10	0	0	0	0	0	0	

Appendix ii
Transect description by section

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Description by section – transect 5320

Section Number	Grid Reference	Section Length (m)	Habitat Text Description Overall
1	TL533209	40	Short cropped neutral/acidic grassland on old gravel workings
2	TL534208	60	Short cropped neutral/acidic grassland becoming marshy by banks of Shermore Brook.
3	TL535207	250	On neutral, seasonally wet grassland following north side of scrub line bordering Shermore Brook
4	TL536206	125	Neutral grassland, open wood pasture.
5	TL535206	125	Neutral grassland, open wood pasture.
6	TL534204	500	Wide ride with neglected coppice to the south and newly worked coppice to the north opening to seasonally wet open grassland on the top of a prehistoric settlement.
7	TL533205	250	Overgrown ride between recently worked coppice stand to the east and maturing coppice to the west.
8	TL536206	500	Woodland ride between stand of neglected coppice to north and worked coppice to the south.
9	TL536206	40	Wide open ride/plain following the west side of scrub line
10	TL537206	100	Recently cut scrub area, now mainly rank grasses and brambles with maiden pollards, ending at Shermore Brook.
11	TL546207	75	Open/dappled broad leaf woodland by banks of Shermore Brook.
12	TL536207	100	Wet grassland by Shermore Brook heading into low scrubby thickets
13	TL538208	650	Overgrown ride between two stands of worked coppice

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Description by section – Transect 5420

Section Number	Grid Reference	Section Length (m)	Habitat Text Description Overall
1	TL546209	100	Open wood pasture populated with ancient pollarded oak, ash, hornbeam and maple.
2	TL545207	200	Open wood pasture populated by ancient pollarded oak, ash, hornbeam and maple.
3	TL545207	150	Open wood pasture with many mature ant hills.
4	TL544208	200	Deeply rutted (from several years ago) woodland ride bordered by 20 year old hazel/hornbeam coppice to SW and neglected hornbeam coppice to NE.
5	TL542208	260	Wide open ride with two drainage ditches filled with vegetation, graded coppice in cycle to the S and neglected mature hornbeam coppice to the N. Some large standards in ride.
6	TL541207	250	Fairly narrow ride bordered on both sides by coppice cut in the early 1990's.
7	TL541205	200	Wide grassy ride but heavily bordered by mature hazel coppice.
8	TL540204	150	Scrub bordering the edge of the coppice to NE with open wood pasture to S and W.
9	TL540203	30	Through beech stand (planted 1960's)
10	TL541202	30	Rough pasture developing on top of cleared scrub. Whole area above old gravel workings so soil slightly more acidic than elsewhere in the forest.
11	TL542202	60	Rough pasture developing on top of cleared scrub. Whole area on top of old gravel workings so soil slightly more acidic than that found in the rest of the forest.

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Description by section - transect 5319

Section Number	Grid Reference	Section Length (m)	Habitat Text Description Overall
1	TL546209	100	Open wood pasture populated with ancient pollarded oak, ash, hornbeam and maple.
2	TL545207	200	Open wood pasture populated by ancient pollarded oak, ash, hornbeam and maple.
3	TL545207	150	Open wood pasture with many mature ant hills.
4	TL544208	200	Deeply rutted (from several years ago) woodland ride bordered by 20 year old hazel/hornbeam coppice to SW and neglected hornbeam coppice to NE.
5	TL542208	260	Wide open ride with two drainage ditches filled with vegetation, graded coppice in cycle to the S and neglected mature hornbeam coppice to the N. Some large standards in ride.
6	TL541207	250	Fairly narrow ride bordered on both sides by coppice cut in the early 1990's.
7	TL541205	200	Wide grassy ride but heavily bordered by mature hazel coppice.
8	TL540204	150	Scrub bordering the edge of the coppice to NE with open wood pasture to S and W.
9	TL540203	30	Through beech stand (planted 1960's)
10	TL541202	30	Rough pasture developing on top of cleared scrub. Whole area above old gravel workings so soil slightly more acidic than elsewhere in the forest.
11	TL542202	60	Rough pasture developing on top of cleared scrub. Whole area on top of old gravel workings so soil slightly more acidic than that found in the rest of the forest.