



**Lepidoptera Conservation Bulletin  
Number 11  
April 2010 – March 2011**

**Butterfly Conservation Report No. S11-13**

**Compiled & Edited by  
B. Noake (Conservation Officer – Threatened Species),  
A. Rosenthal (Conservation Officer – Threatened Species),  
M. Parsons (Head of Moth Conservation) &  
Dr. N. Bourn (Director of Conservation)**

**March 2011**



Butterfly Conservation  
Company limited by guarantee, registered in England (2206468)  
Registered Office: Manor Yard, East Lulworth, Wareham, Dorset. BH20 5QP  
Charity registered in England and Wales (254937) and in Scotland (SCO39268)

[www.butterfly-conservation.org](http://www.butterfly-conservation.org)

## Contents

<b>1</b>	<b>INTRODUCTION</b> .....	<b>1</b>
<b>2</b>	<b>ACKNOWLEDGMENTS</b> .....	<b>2</b>
<b>3</b>	<b>CONSERVATION ACTION FOR UK BIODIVERSITY ACTION PLAN LEPIDOPTERA</b> .....	<b>2</b>
3.1	UPDATE ON UK BAP MOTHS – A SUMMARY FOR THE YEAR 2010 .....	3
	<i>Anania funebris</i> .....	3
	<i>Aplota palpella</i> .....	3
	Argent & Sable <i>Rheumaptera hastata</i> .....	3
	Barberry Carpet <i>Pareulype berberata</i> .....	4
	Barred Tooth-striped <i>Trichopteryx polycommata</i> .....	5
	Belted Beauty <i>Lycia zonaria britannica</i> .....	5
	Black-veined Moth <i>Siona lineata</i> .....	5
	Bright Wave <i>Idaea ochrata</i> .....	6
	Chalk Carpet <i>Scotopteryx bipunctaria</i> .....	6
	<i>Coleophora vibicella</i> .....	6
	<i>Coleophora wockeella</i> .....	7
	Dark Bordered Beauty <i>Epione vespertaria</i> .....	7
	Dark Crimson Underwing/Light Crimson Underwing <i>Catocala sponsa/C. promissa</i> .....	8
	Dingy Mocha <i>Cyclophora pendularia</i> .....	8
	Fiery Clearwing <i>Pyropteron chrysidiformis</i> .....	9
	Four-spotted <i>Tyta luctuosa</i> .....	9
	Forester <i>Adscita statices</i> .....	9
	Lunar Yellow Underwing <i>Noctua orbona</i> .....	10
	Marsh Mallow Moth <i>Hydraecia osseola hucherardi</i> .....	10
	Marsh Moth <i>Athetis pallustris</i> .....	10
	Narrow-bordered Bee Hawk-moth <i>Hemaris tityus</i> .....	11
	Netted Carpet <i>Eustroma reticulatum</i> .....	12
	New Forest Burnet <i>Zygaena viciae argyllensis</i> .....	12
	Northern Dart <i>Xestia alpicola</i> .....	12
	<i>Scythris siccella</i> .....	13
	Shoulder-striped Clover <i>Heliopsis maritima</i> .....	13
	Silky Wave <i>Idaea dilutaria</i> .....	13
	Slender Scotch Burnet <i>Zygaena loti scotica</i> .....	14
	Small Dark Yellow Underwing <i>Anarta melanopa</i> .....	15
	Straw Belle <i>Aspitates gilvaria</i> .....	15
	Striped Lychnis <i>Shargacucullia lychnitis</i> .....	15
	Sussex Emerald <i>Thalera fimbrialis</i> .....	15
3.2	UK BAP MOTH NEWSLETTER .....	16
3.3	UPDATE ON UK BAP BUTTERFLIES - A SUMMARY FOR THE YEAR 2010.....	16
	Brown Hairstreak <i>Thecla betulae</i> .....	16
	Duke of Burgundy <i>Hamearis lucina</i> .....	17
	Heath Fritillary <i>Melitaea athalia</i> .....	18
	High Brown Fritillary <i>Argynnis adippe</i> .....	19
	Large Blue <i>Maculinea arion</i> .....	19
	Marsh Fritillary <i>Euphydryas aurinia</i> .....	19
	Pearl-bordered Fritillary <i>Boloria euphrosyne</i> .....	20
	Wood White <i>Leptidea sinapis</i> .....	21
3.4	ADDITIONAL FACTSHEET .....	22
<b>4</b>	<b>BUTTERFLY CONSERVATION COUNTRY AND REGIONAL UPDATES</b> .....	<b>22</b>
4.1	BUTTERFLY CONSERVATION IN SCOTLAND .....	22
4.1.1	Species Action Framework for Scottish Lepidoptera .....	23
4.1.2	Central Belt Lowland Peat Project.....	23

4.2	BUTTERFLY CONSERVATION IN NORTHERN IRELAND .....	24
4.2.1	Conserving the Marsh Fritillary in Northern Ireland .....	25
4.3	BUTTERFLY CONSERVATION IN WALES .....	26
4.3.1	Marsh Fritillary in Wales .....	26
4.3.2	High Brown Brackenlands .....	26
4.3.3	Conserving Lepidoptera on Forestry Commission Land in Wales .....	27
4.4	BUTTERFLY CONSERVATION IN THE WEST MIDLANDS .....	28
4.4.1	Midlands Fritillaries Project .....	29
4.4.2	Princethorpe Woods Habitat Restoration Project .....	29
4.4.3	Conserving the Wood White Butterfly in the South Shropshire Woods Project .....	29
4.4.4	Bringing Back the Small Blue Project .....	30
4.5	BUTTERFLY CONSERVATION IN NORTHERN ENGLAND.....	30
4.5.1	Conserving the High Brown Fritillary on the Morecambe Bay Limestones Project .....	31
4.5.2	Conserving North York Moors Limestone Grassland for Dukes and Pearls Project.....	31
4.6	BUTTERFLY CONSERVATION IN SOUTH EAST ENGLAND.....	32
4.6.1	South East Woodlands Project.....	32
4.7	BUTTERFLY CONSERVATION IN EASTERN ENGLAND.....	33
4.7.1	Norfolk Brecks Heathland Restoration for Threatened Butterflies and Moths Project .....	34
4.7.2	Managing elms for the White-spotted Pinion in the Cambridgeshire Fens.....	34
4.8	BUTTERFLY CONSERVATION IN SOUTH WEST ENGLAND.....	35
4.8.1	Two Moors Threatened Butterfly Project .....	36
<b>5</b>	<b>LEPIDOPTERA RECORDING UPDATES.....</b>	<b>37</b>
5.1	MOTHS COUNT AND THE NATIONAL MOTH RECORDING SCHEME .....	37
5.2	BUTTERFLIES FOR THE NEW MILLENNIUM .....	38
5.3	BUTTERFLY MONITORING – PROGRESS IN 2010 .....	39
<b>6</b>	<b>NEWS AND NOTES.....</b>	<b>41</b>
6.1	BUTTERFLY CONSERVATION EUROPE: PROGRESS IN 2010.....	41
6.2	UPDATE ON BUTTERFLY CONSERVATION RESERVES IN 2010 .....	42
6.3	CONSERVING LEPIDOPTERA ON FORESTRY COMMISSION LAND .....	44
6.4	BUTTERFLY CONSERVATION PUBLICITY HIGHLIGHTS.....	45
6.5	NATIONAL MOTH NIGHT 2010 AND THE FUTURE OF NATIONAL MOTH NIGHT .....	47
6.6	COPPICING AND WOODLAND RIDE MANAGEMENT EFFECTS ON UK BAP MOTHS.....	47
6.7	BRINGING REEDBEDS TO LIFE (RSPB/NATURAL ENGLAND COUNTDOWN 2010 PROJECT) .....	49
6.8	PINE-TREE LAPPET UPDATE .....	49
6.9	DUNGENESS, KENT: A PUBLIC INQUIRY AND PROPOSED NEW DESIGNATIONS.....	50
<b>7</b>	<b>SELECTED BIBLIOGRAPHY .....</b>	<b>50</b>
	<b>APPENDIX A – LIST OF UK BIODIVERSITY ACTION PLAN PRIORITY LEPIDOPTERA SPECIES .....</b>	<b>60</b>

## 1 Introduction

The Lepidoptera Conservation Bulletin summarises the wide ranging efforts being undertaken to conserve the UK's moths and butterflies. The bulletin concentrates on the work of Butterfly Conservation staff from around the UK. It also includes brief coverage of Butterfly Conservation's significant recording and monitoring schemes, the Moths Count project (incorporating the National Moth Recording Scheme, see [www.mothscount.org](http://www.mothscount.org)), the Butterflies for the New Millennium project and the UK Butterfly Monitoring Scheme. We also report on partnership working with other organisations and go beyond our shores to include an update on Butterfly Conservation Europe.

From 2000 onwards we have produced one Lepidoptera Conservation Bulletin a year, publishing this around April in advance of the main field season, with the exception of 2008 when we produced our *Conservation Review: 2000-2008*. The circulation of this Bulletin includes, amongst others, County Moth Recorders, County Butterfly Recorders, Butterfly Conservation Branch Moth Officers, Branch Conservation Officers, representatives of partner organisations and the main offices of the governmental conservation agencies. In an effort to reduce costs, but also to aid circulation, we now distribute the Bulletin electronically (although hard copies are available on request) and it will also be available as a download on the Butterfly Conservation website ([www.butterfly-conservation.org/lepidopteraconservationbulletin](http://www.butterfly-conservation.org/lepidopteraconservationbulletin)). This all helps to ensure a much wider and raised profile for moth and butterfly conservation.

Whilst it was predominantly an indifferent year in the light traps, a highlight of the year from the moth point of view was the publication of the *Provisional Atlas of the UK's Larger Moths*, giving distribution maps for 868 species derived from c.11.3 million records. For many of the Geometridae this is the first time that maps had been produced, whilst it is about 30 years since those for the Noctuidae were last published. Closely following on from this came *British and Irish moths: an illustrated guide to selected difficult species*. Hopefully both of these publications will aid and encourage further recording. At the time of writing c.11.4million moth records have been uploaded on to the National Biodiversity Network (NBN), this being the largest dataset on the NBN by some distance. This is a magnificent achievement and our thanks go to all County Moth Recorders and other compilers, as well as all recorders, for all their hard work. Our thanks also go to the Heritage Lottery Fund (HLF) and the other funding bodies and organisations for making this possible. Although the HLF funding has now come to an end, the National Moth Recording Scheme, part of the Moths Count project, will continue, and we intend to build on these achievements. Please keep the records coming in and target any gaps. Analysis of the data collated from the scheme is also underway and we hope to provide feedback on this analysis in due course.

For butterflies 2010 brought welcome news for many beleaguered species. The cold winter and warm, settled early summer enabled UK Biodiversity Action Plan species such as **Dingy Skipper** *Erynnis tages*, **Silver-studded Blue** *Plebejus argus* and **Marsh Fritillary** *Euphydryas aurinia* to regain some of the ground lost over recent decades. However, other species fared less well and it was also a poor year for immigrant butterflies. New national distribution maps were produced from the latest five-year survey by the Butterflies for the New Millennium recording scheme and analysis of the 2.4 million butterfly records collated during the period is underway.

Amongst the many interesting publications of 2010 (see the Bibliography at the end of this Bulletin) it is perhaps worth highlighting here the updated edition of the classic butterfly book *The butterflies of Britain and Ireland* by Butterfly Conservation Vice President Jeremy Thomas, with illustrations by Richard Lewington. Additionally, 2010 saw the publication of the *European Red List of Butterflies* by Chris Van Swaay *et al*, highlighting that many of Europe's butterflies are under threat, as well as *A new Red List of British Butterflies* (Fox *et al*, 2010). The latter showed the parlous state of butterflies in Britain, with 37% of species categorised as either extinct or threatened at the national level – a higher proportion than for any other recently assessed groups, including birds, vascular plants and dragonflies. Another significant title, *Silent Summer*, edited by Norman McLean, covers what has happened to wildlife in Britain and Ireland over the last 50 years. Chapters include *Butterflies* by Jeremy Thomas and *Moths* by Richard Fox *et al*.

Finally, we are entering a new economic era, with government cutbacks impacting many areas. Unfortunately, despite ongoing declines for many species and signs of recovery for others, the environment has not escaped these cutbacks. At the time of writing we are uncertain about the funding position for several posts and we are expecting to lose a few valued colleagues. Additionally a few projects are coming to the end of their funding cycle. We would like to take this opportunity to thank these colleagues for all their hard work towards conserving the UK's moth and butterfly fauna and we wish them well for the future.

If you have any comments on this Bulletin we would of course be pleased to hear from you ([lepconsbulletin@butterfly-conservation.org](mailto:lepconsbulletin@butterfly-conservation.org)). **As this Bulletin is now primarily distributed electronically, please ensure we have been provided with an up-to date email address; paper copies will be sent on request only (email [lepconsbulletin@butterfly-conservation.org](mailto:lepconsbulletin@butterfly-conservation.org) or telephone 01929 400209).** For further information on the work of Butterfly Conservation please see our website [www.butterfly-conservation.org](http://www.butterfly-conservation.org).

Mark Parsons, *Head of Moth Conservation* ([mparsons@butterfly-conservation.org](mailto:mparsons@butterfly-conservation.org)), Richard Fox *Moths Count Project Manager/Surveys Manager* ([rfox@butterfly-conservation.org](mailto:rfox@butterfly-conservation.org)) and Dr. Nigel Bourn, *Director of Conservation* ([nbourn@butterfly-conservation.org](mailto:nbourn@butterfly-conservation.org)). Butterfly Conservation, Manor Yard, East Lulworth, Wareham, Dorset BH20 5QP.

## 2 Acknowledgments

Butterfly Conservation is grateful for the continued support of the Government Agencies and their nominated officers: Natural England (David Sheppard), Countryside Council for Wales (Adrian Fowles), Scottish Natural Heritage (Chris Sydes and Athayde Tonhasca) and Northern Ireland Environment Agency (Richard Weyl).

It would be impossible to thank all the individuals and organisations associated with the projects highlighted in this and previous Bulletins, but nevertheless, we would like to take this opportunity to express our gratitude to everyone who has made this work possible. Particular thanks are due to the County Moth Recorders, County Butterfly Recorders, Transect Co-ordinators, Butterfly Conservation Branch Moth and Conservation Officers, organisers of local moth groups, contractors and the many other individuals who have contributed time and expertise, for example by supporting the Moths Count project and assisting with individual conservation projects. Without your help only a fraction of the projects covered by these Bulletins would have been possible. Finally we would like to thank all the contributors to this Bulletin, both for their contributions and for their continued efforts to conserve Britain's moths and butterflies.

Mark Parsons, *Head of Moth Conservation* ([mparsons@butterfly-conservation.org](mailto:mparsons@butterfly-conservation.org)), Richard Fox *Moths Count Project Manager/Surveys Manager* ([rfox@butterfly-conservation.org](mailto:rfox@butterfly-conservation.org)) & Dr. Nigel Bourn, *Director of Conservation* ([nbourn@butterfly-conservation.org](mailto:nbourn@butterfly-conservation.org)).

## 3 Conservation action for UK Biodiversity Action Plan Lepidoptera

Highlights of work carried out on selected UK Biodiversity Action Plan (BAP) species are provided below. Species protected under Schedule 5 of the Wildlife & Countryside Act are also covered within this section.

Much of the work reported in this section was undertaken as part of *The Action for Butterflies & Moths Project*, however, a large number of UK BAP species are also targeted by our landscape scale project work (reported under the regional sections).

Butterfly Conservation's work is funded by a wide range of funding partners, including Natural England, Countryside Council for Wales, Scottish Natural Heritage, Northern Ireland Environment Agency, the Heritage Lottery Fund, Countdown 2010, SITA Trust, WREN, GrantScape, the Tubney Charitable Trust, Esmée Fairbairn Foundation, Forestry Commission England, Forestry Commission Wales and Forestry Commission Scotland and individual donors.

Appendix A gives a full list of Lepidoptera listed under the UKBAP (excluding 'Research only' species).

### 3.1 Update on UK BAP moths – a summary for the year 2010

Summaries by Mark Parsons *Head of Moth Conservation*, Tony Davis *Moth Conservation Officer*, Bernadette Noake *Conservation Officer - Threatened Species*, Amber Rosenthal *Conservation Officer - Threatened Species*, Dr. Tom Prescott *Species Conservation Officer, Scotland* and Dr. Dan Hoare *South East England Senior Regional Officer* with contributions from, Sharon Hearle *East of England Regional Officer*, Catherine Bertrand, *Senior Regional Officer, Northern Ireland*, Russel Hobson *Head of Conservation, Wales*, Paul Hatcher (Reading University), Stephen Palmer (South & West Lancashire County Micro-Moth Recorder), Mike Howe (Countryside Council for Wales) and Dr. Mark Young (University of Aberdeen).

Factsheets for many of the species covered below are available as downloads from the Butterfly Conservation website, [www.butterfly-conservation.org/mothspeciesfactsheets](http://www.butterfly-conservation.org/mothspeciesfactsheets).

#### ***Anania funebris***

Stephen Palmer, of the Lancashire Moth Group, reports that the moth was found during daytime searches at three previously known sites on the Silverdale limestone, with a maximum count of eight. As with last year, the numbers observed were probably down due to the weather rarely being suitable when visits could be made. Unfortunately, a request to get butterfly transect recorders involved in monitoring this species at one site have not, so-far, produced any takers.

#### ***Aplota palpella***

Following on from the first ever Sussex records, on 21<sup>st</sup> July 2006 and 24<sup>th</sup> July 2008, the first record in Hampshire for over 100 years was made on 23<sup>rd</sup> July 2010. It may be that this species is having a resurgence or it may just have been overlooked. It is known that at least two of these records were of individuals sitting on top of Robinson style MV traps, rather than being inside. It is also noticeable how close together the dates of capture are, perhaps indicating a very short flight period. Two of the sites were ancient oak woodland and the third was a conifer plantation with scattered oaks. None were open woodland or parkland as referred to in *The Moths & Butterflies of Great Britain and Ireland* (Vol. 4 Pt. 1).

#### **Argent & Sable *Rheumaptera hastata***

2010 was another good year for Argent & Sable in Scotland with 18 records received to date. Of these five were from new 10km squares whilst others were from new sites. This continues the recent increase in records and probably reflects the higher profile that this species has enjoyed over the last seven years in Scotland rather than an increase in population and range. Since 2000 it has been recorded in 84 10km squares of which 56 (67%) are "new" squares. We believe Argent & Sable is fairly widespread in the western half of Scotland and still remains under-recorded, with many new sites and 10km squares awaiting discovery. A number of sites have been entered into Scotland's agri-environment scheme, the Scottish Rural Development Programme, specifically for management to enhance the habitat for Argent & Sable.

In contrast, the situation in England and Wales is quite different, with records from approximately 30 sites since 2000 and 15 sites since 2006. Larval searches were carried out at five of the key sites in England in 2010. At one site in Somerset, the known distribution of the moth was expanded, following larval searches on parts of the site not previously surveyed. Larvae were also recorded at another site nearby, which Natural England, Somerset Wildlife Trust and Butterfly Conservation are aiming to link to the main population by thinning/felling woodland. Natural England have continued to carry out management work with volunteer groups to benefit Argent & Sable, including two joint Butterfly Conservation and Natural England volunteer work parties.

Following larval searches at a site in Cumbria, feeding was confirmed on Bog Myrtle *Myrica gale* and management advice was subsequently provided. Management was undertaken by volunteers this winter to open up areas of Bog Myrtle to improve the habitat for Argent & Sable at the site.

The moth responded well to habitat management at two sites in Wiltshire carried out as part of the *South East Woodlands Project* (see section 4.6.1). Both adults and larvae (on young birch in sunny but sheltered situations) were found in areas where scrub and mature trees had been cleared from ride edges in the preceding two winters.

Argent & Sable was recorded at one site in Wales in 2010; more information is provided in section 4.2.

In Northern Ireland monitoring took place at the Kileter Forest site, County Tyrone. Only approximately 30 larval spinnings were located and there was widespread evidence of parasitism after ~180 spinnings had been found the previous year. A proposed Area of Special Scientific Interest (ASSI) on a neighbouring bog will potentially list Argent & Sable as a feature, the first time the moth has been one of the reasons for designation in Northern Ireland.

Two new satellite sites were discovered in County Fermanagh around the Ballintempo meta-population, confirming as suspected that the species is not confined to this Forest Service site but also occurs in the wider countryside. Further survey work is to continue this year with the help of the new County Fermanagh biodiversity officer, and the species will be listed in the review of the Fermanagh Biodiversity Action Plan.

### **Barberry Carpet *Pareulype berberata***

*(Schedule 5 Wildlife & Countryside Act species)*

In addition to monitoring a proportion of the known sites for this moth by staff and volunteers, additional survey for the host plant, Common Barberry *Berberis vulgaris*, and the moth was provided this year by a professional entomologist (Andy Foster) as part of a sabbatical from his position with the National Trust. Andy was able to cover a considerable amount of ground in his searches for Barberry bushes, and discovered not only new sites for the plant but at least one new site for the moth. The other new sites for Barberry will need to be revisited at an appropriate time to check for presence of larvae, since some of the plant surveys were carried out outside of either larval generation and so bushes could not be checked for the moth.

Efforts to bring on native plants, with which to increase the amount of Barberry in and around existing sites for the moth, have resulted in batches of various age and sizes of Barberry, some of which will be ready to plant out in the coming autumn. This is thanks to the involvement of the Forestry Commission England propagator at Westonbirt Arboretum (Penny Jones), the County Micro-moth recorders for Wiltshire (Godfrey and Michael Smith) and volunteers in Oxfordshire (Mr and Mrs Carter) who initially collected the seed. Two landowners are already in possession of stock ready to plant out on their holdings. In addition, in the Cotswold Water Park, Biodiversity Officer Gareth Harris has also enlisted the help of a commercial grower, with a large number of plants being produced and some 500 already planted out within the boundaries of the Water Park.

At one Forestry Commission England site, where planting of Barberry has already taken place in both 2003 and 2006, larvae were recorded for the first time from one of the newly established bushes. This is the second site at which planted Barberry bushes, of a metre or less in height, have been shown to be used by the moth and provides encouragement that planting work carried out under the current project, and the preceding Species Recovery Programme, is having a positive impact in a relatively short time frame. One possible concern, however, at the FC site was the high number of Barberry Sawfly *Arge berberidis* also recorded on the planted bushes, which had led to the almost complete defoliation of several smaller plants.

All work for this species is carried out under licence from Natural England, and hedges containing Barberry should only be disturbed to look for larvae by those covered by a current licence.

### **Barred Tooth-striped *Trichopteryx polycommata***

The study in the Brecks, undertaken by Gerry Haggett on behalf of Butterfly Conservation, continued in 2010, also taking into account the parasitoid *Earinus transversus*, a parasitic wasp apparently endemic to the Brecks. Of the eight sites surveyed, larvae of the moth were found at five, with the species seemingly still restricted to the western part of the Brecks, despite what appear to be suitable conditions elsewhere. Most of these colonies are associated with coniferous plantations planted in the 1920s; the annual programme of clearfell produces potential habitat. At one site, that is not a conifer plantation, larvae were beaten from bushes in surprisingly wet conditions in a marsh. A total of 58 larvae were found during the survey. The parasitoid proved to be in a high density this year, with 48% of the total number of larvae found being attacked by this wasp.

In Lancashire the moth was located at seven previously known sites within and adjacent to the Silverdale limestone area during April and early May. Most counts were of singletons but no dedicated trapping events or larval searches were carried out for this species in 2010.

### **Belted Beauty *Lycia zonaria britannica***

Searches for the Belted Beauty at the Lancashire site commenced in mid-March. The first was found on 20<sup>th</sup> March by Peter and Veronica Gilchrist at the southern end of the site followed by four on the 21<sup>st</sup> at the northern end. Numbers were slow to build up and it wasn't until the 10<sup>th</sup> April that double figures were recorded with 40 at the southern end and 154 on the 13<sup>th</sup> April at the northern end. The annual search day was arranged for the 18<sup>th</sup> April with the usual good turnout of volunteers from nearby and as far away as London. The three 1km squares that contain the moth were all examined and it is estimated that about 70% of the suitable habitat was checked. Numbers in the main area were the highest ever seen with perhaps a more concentrated emergence due to the cold weather into early April. The total found on the 18<sup>th</sup> April came to 1691 adults (1055 male, 636 female). Effort on the Belted Beauty at the Lancashire site is co-ordinated by Stephen Palmer.

In Wales, at Morfa Conwy, the moth is surviving in very low numbers in unfavourable habitat. Ten females were recorded in 2010. Recent scrapes will hopefully improve the habitat in the future. Unfortunately no adults were recorded from the 100 larvae introduced to Newborough Warren National Nature Reserve (NNR) on Anglesey in 2009. However, in 2010, 1000 larvae (from three females) were introduced which should increase the chances of survival in 2011.

### **Black-veined Moth *Siona lineata***

*(Schedule 5 of the Wildlife & Countryside Act)*

At the end of the 2010 survey season, it is probable that discrete populations of this moth occur at seven localities, treating the Wye NNR, Kent, populations as two separate colonies. Low numbers were seen at an additional site in both 2008 and 2009, although none were found in 2010, casting some doubt on whether this colony is currently extant. A further site where the moth was recorded in 2008 was again surveyed, although none were found, whilst another site with sightings in 2009 was reported to have become scrubbed over with no adults being found.

50 adults were recorded on the five transects, down from 66 in 2009 and 109 in 2008. Climatic factors probably contributed to these declines, although problems with grazing levels at two sites undoubtedly had an impact. Eleven were recorded on the four sites with timed counts, also down on 2009, with no adults recorded for the first time since 2002 at one of the NNR compartments where it normally occurs.

A difficult balancing act is needed to maintain the transitional, mid-succession, calcareous grassland supporting the fairly tall sward required by this species and this can be rapidly lost through overgrazing or over-managing sites. Recommendations have been made to address the grazing issues on some sites, with grazing pressure reduced at another site following similar recommendations made in 2009. Four of the currently extant sites are managed under a Higher Level Stewardship (HLS) agreement, with the Wye NNR sites managed as part of the National Nature Reserve. An additional extant site is managed under a Countryside Stewardship Agreement (CSS).



The survey and monitoring during 2010 was undertaken by Sean Clancy through Butterfly Conservation, with the assistance of Butterfly Conservation staff and others.

### **Bright Wave *Idaea ochrata***

Sean Clancy again undertook survey and monitoring of this species on behalf of Butterfly Conservation. The moth is found on several sites along an 18km stretch of coastline in East Kent between Ramsgate and Kingsdown. Transects were undertaken at four sites, with timed counts carried out at four additional sites. A total of 265 Bright Wave were seen during this survey, compared to 249 in 2009. This follows a recovery in recorded numbers from 145 in 2008, but broadly in line with those found in 2006 and 2007. In addition to this survey, over 270 adults were reported by others during the course of the flight period.

Perhaps the most significant discovery in 2010 was the confirmation of a strong colony at Stodmarsh NNR, about 10km inland and on an area of old coal deposits (formerly an area of marshland). There have been a few reports of single adults at Stodmarsh recently, indicating the colony has been in the area for a number of years, and the potential that brownfield sites, such as this, hold for this species. However, part of another brownfield site with potentially suitable habitat near to one of the coastal sites was surveyed without locating the species.

Sarah Roberts (a post-graduate student from Oxford Brookes University) carried out autecological studies in Kent and at a former site in Suffolk. Searches for larvae were undertaken on several dates in May, with 19 larvae being located (for c.18 person hours effort) low down in the sward. No larval feeding was noted, although the majority were found associated with Hairy Tare *Vicia hirsuta*, which they readily accepted in captivity. However, it is likely that this is one of a suite of plants that could be utilised by the larvae as this plant could not be located at some sites where there are breeding colonies of the moth.

At one of the golf course sites it was agreed to curtail some of the management practices that had been impacting on the population of the moth. This included reducing the mown verge width, which was implemented immediately, and collecting all the arisings from any mowing on the golf-course to prevent nutrient build-up and to put these in designated composting areas. It is hoped that the latter will be implemented in 2011.

### **Chalk Carpet *Scotopteryx bipunctaria***

Following on from analysis of national survey results which indicated an increased decline on calcareous grassland sites that lack large-scale bare ground, a student from the University of Sussex has carried out detailed studies at occupied and former sites in southern England. Results are still being analysed but there appear to be significant differences between the physical attributes of occupied and unoccupied sites but no significant differences between the presence or abundance of foodplants. Further studies, examining larval ecology, are likely to be needed before guidance on the restoration of former sites can be given.

### ***Coleophora vibicella***

Dr Phil Sterling and Butterfly Conservation staff again liaised closely with the Ministry of Defence (MoD), through LandMarc, over this moth's sole Dorset site to ensure appropriate management and protection for this species. Grazing is not possible because the site is an active firing range, so the species' survival will depend on a rotational mowing regime, possibly with some scarification and turf stripping. The four transects that were established in 2008 were again monitored in 2010 with 23 cases found, down on the 27 in 2009 and 41 in 2008. Interestingly, vegetation heights along the transects, taken through drop disc measurements, were consistently lower compared to the previous two years, this thought to be due to the drier conditions in 2010. However, parts of the transect did appear to be becoming grassier and more rank with gorse and blackthorn invading parts of two transects. Areas were identified for mowing, scrub clearance and scarification, and this advice was forwarded to the relevant land managers.

The negative effects of heavy summer grazing were clearly demonstrated at the Sussex site. Part of the site was subject to illegal horse grazing throughout the larval period and the number of larvae declined from 209 in 2009 to 3 in 2010. However, larval numbers in the part of the site not subject to illegal grazing rose dramatically to an all-time record of 1867.

Problems with grazing remain at one of the Hampshire sites. Despite representations to the landowners, nothing was done to prevent heavy cattle grazing taking place again in the summer of 2010. The future of this colony is now in doubt.

An additional site, a MoD site near Gosport in Hampshire, was located by Richard Dickson and others. Fifteen cases were located during a brief search. Local MoD staff were present and made aware of the importance of the moth, with the immediate consequence that the foodplant will be protected from mowing.

### ***Coleophora wockeella***

At its only known site in Surrey, searches in early March revealed numerous larval cases on Betony *Stachys officinalis*, almost all feeding on new young leaves at the tip of established plants. Several were found in sheltered hollows facing the sun, and at least some larvae had apparently successfully overwintered in areas that had been brushcut during the winter. These patches had received a single sweep with a brushcutter at a height of about 10cm, trimming higher grass and bramble stems without damaging the foodplant. The area receives a patchy cut on less than half the occupied habitat each year between November and February, with some light raking to remove cut material. This may help prevent the sward becoming too rank without damaging overwintering larvae, which are thought to spend the winter low down at the base of the foodplant amongst moss and grass thatch. The continued cooperation of Forestry Commission England in careful management of this site and the surrounding rides has made a major contribution to the survival of the species here.

### **Dark Bordered Beauty *Epione vespertaria***

There have been a few accidental burns on Strensall Common, Yorkshire, the sole English site in 2010, one impacting on a 'hot spot' for the moth. However, major paths act as informal firebreaks (this being kept under review at Conservation meetings involving Natural England) so these burns have fortunately been restricted. It was reported that the foodplant on Strensall did not produce leaves in the main burnt area (a 'hot spot' for the moth), although there were also other areas unaffected by fire, where the foodplant seemed not to be producing leaves. It was speculated that severe frost might also have affected the plants in more exposed areas.

A transect for the moth is walked at the site by Terry Crawford and David Baker. The counts were much reduced compared to the previous three years, with only one seen on the Yorkshire Wildlife Trust part of the transect. As expected the count was considerably down in the burnt section but in-line with declines in other areas, although a number of adults were seen in an adjacent unburnt area.

In Scotland in Deeside Dark Bordered Beauty was found in reasonable numbers and remains well established but in small, often discontinuous groups, in a very localised area. At the Speyside site the moth was found to be present in eight out of nine clearings surveyed. Many of these were created in 2003 and 2007 to promote the establishment of suckering Aspen *Populus tremula*, the larval foodplant in Scotland, so it is very encouraging that the moth has occupied newly created habitat. Survey effort was undertaken in Deeside by Nick Picozzi and in Speyside by Robin Wynde and Pete Moore of RSPB, and included vegetation monitoring of occupied habitat.

At the end of the flight period unexpected good news came from the Cairngorms. Approval had been given to translocate Dark Bordered Beauty larvae to the RSPB's Insh Marshes reserve in 2011, where despite potentially suitable habitat, several years of light trapping had not recorded the moth. However, while undertaking the detailed vegetation monitoring to identify the best release sites, Robin located a population of the moth on the reserve on the last night of his project, recording 15 individuals. Another individual was found at a nearby location on the reserve the following week. This now leaves an issue with what to do with the captive population!

Roy Leverton reminded us of the comment in South's *Moths of the British Isles* that the moth is 'widely distributed in Sutherlandshire' this attributed to Salvage. A little bit of detective work later led to the finding that there are 10 specimens from late 19<sup>th</sup> century in the Natural History Museum labelled Sutherland attributed to Salvage (M. Honey pers. comm.). Unfortunately, Salvage was very secretive about where the material came from, and the notebooks were apparently all burnt (C. Pratt pers. comm.). However, Aspen is still fairly widespread in Sutherland, particularly so in the south, so it is possible the moth could still occur there.

The project is supported by the Highland Aspen Group who have established an Aspen nursery to propagate local trees. This will allow further areas of suitable habitat to be created adjacent to the current colonies.

The work in Scotland was organised jointly by RSPB and Butterfly Conservation Scotland and part-financed by RSPB, the Cairngorms National Park Authority and Scottish Natural Heritage through the Cairngorms Local Action Group. We would also like to thank all the land-owners and their staff for their full support and co-operation and to all the volunteers who helped with the project.

### **Dark Crimson Underwing/Light Crimson Underwing *Catocala sponsa/C. promissa***

The Wildlife Conservation Research Unit (Department of Zoology, University of Oxford) and Butterfly Conservation teamed up on a Defra-funded project *Understanding the role of woodland management in the conservation of UK BAP moths* (see section 6.6 for more information) in 2010, fitting in well alongside Butterfly Conservation's *South East Woodlands Project* (see section 4.6.1). Thomas Merckx, Martin Townsend and others ran a total of 36 fixed trap sites within several woodlands on the Hampshire-Wiltshire border. One of the highlights of this trapping effort was the discovery of both Dark and Light Crimson Underwing. A single Dark Crimson Underwing was trapped in a south Wiltshire wood on 12<sup>th</sup> August, which appears to be a new site for the moth. Light Crimson Underwing was present in two woodlands with four individuals being trapped at different sites within Mottisfont, Hampshire, and a further two at the same south Wiltshire site as the Dark Crimson Underwing, which again appears to be a new site for the species.

### **Dingy Mocha *Cyclophora pendularia***

Larval survey work for Dingy Mocha in Dorset and south-west Hampshire (primarily the New Forest) was carried out in 2010 at new sites not covered by the 2008 or 2009 survey and at some sites where further survey work was required. A report covering the 2008 to 2010 survey has been produced and provides detailed information and management advice for site managers. Larvae were recorded during the survey at 21 sites, from nine 10km squares. In comparison, larvae were recorded at 16 sites, from ten 10km squares during a similar survey in 2004. However, this gives a slightly misleading picture as more sites were surveyed during this recent survey. Larvae were recorded at six new sites during this survey and larvae were not found at nine sites where they were recorded during the 2004 survey (although three of these sites were not surveyed during this survey). The new sites do not necessarily indicate a recent colonisation, as the information available suggests that these sites have not been surveyed for Dingy Mocha in the recent past. The majority of larvae were recorded in the Dorset Vice-county (19 sites), with two sites in the South Hampshire Vice-county (one site in the New Forest and one site near the Dorset border).

The majority of larvae were recorded from willows *Salix* spp. between 1 and 2.9 metres tall and from isolated or semi-exposed willows, open on at least two sides, in line with previous studies, indicating that the species prefers warm, sunny conditions for larval development.

There was little ideal Dingy Mocha habitat available at some sites surveyed, including some of those where larvae have been recorded in the past. This could be a result of high grazing pressure; the impact of grazing on the availability of suitable Dingy Mocha habitat requires further research. Ensuring an annual continuity of young willow growing in the open is important for the survival of this moth and highlighting the importance to site managers continues to be a priority.

Larval searches were also carried out by Rob Wolton (Devon Moth Group) at a site in north Devon in 2010. No larvae were found despite a few hours spent searching suitable habitat. However, other potential habitat was not searched so it is likely that Dingy Mocha is still present at the site. Following concerns of scrub invasion on the site, a meeting between Rob Wolton, Natural England and the landowners resulted in targeted scrub clearance to improve the potential habitat for the moth.

### **Fiery Clearwing *Pyropteron chrysidiformis***

(Schedule 5 of the Wildlife & Countryside Act)

Monitoring of the number of eggs at all known sites showed a decline at almost all sub-sites which were occupied in 2009 but an additional two sub-sites were occupied in 2010, presumably as a result of improved weather during the flight period in 2009. Most exciting was the discovery of a completely new population on the chalk, over 5km inland from the coast, where all previous south Kent colonies have been located. This colony is currently very small but if it survives (or further inland colonies are formed) the future survival of Fiery Clearwing in Britain will be greatly enhanced.

Large scale scrub clearance was carried out by the owner of one site, providing a significant increase in potentially suitable habitat for the moth. Elsewhere, coastal defence and beach restocking works were carried out by the Environment Agency, following consultation with Butterfly Conservation to ensure that works would not cause direct damage to Fiery Clearwing colonies. Such works will hopefully prolong the existence of these colonies but the ongoing threat from coastal erosion remains and it is vital that colonies in safer localities are enhanced.

### **Four-spotted *Tyta luctuosa***

Following the discovery of two adults near Hythe, Kent, in 2006, two more were seen in early July 2010. This led to a further search of potential sites in the area and resulted in the discovery of a colony of the moth on a steep south-facing ridge, with a minimum of 16 adults being found on the 6<sup>th</sup> July. Most of this site is Ministry of Defence land, widely sheep-grazed by the tenant farmer, although the area occupied by the moth appears to be largely inaccessible to the sheep. It is possible that this colony has been established for many years, as there are records from nearby Sandgate in the early 1960s and Dymchurch in the late 1990s. This discovery illustrates that there is still potential to discover new colonies of this moth and readers are encouraged to follow-up old sightings elsewhere.

Four-spotted was confirmed in the Great Chesterford area of Essex where it has been recorded for many years. The moth was absent at two former Cambridgeshire sites where the habitat has in one case been decimated by rabbits and developed into long coarse grass at the second site.

Paul Waring continued to record Four-spotted moth along the long running transect in Peterborough with both first and a partial second generation recorded.

Work carried out for this species is also described in the East of England section (section 4.7).

### **Forester *Adscita statices***

Four new sites for Forester were found in Scotland in 2010, all in Argyll between Oban and Kilmartin approximately 30km to the south. One record included hundreds nectaring, mainly on Wild Thyme *Thymus polytrichus* in an area of species-rich grassland near Kilmartin. It was also recorded from Scottish Wildlife Trust's Ballachuan reserve on Seil Island, the first record since 1995.

Disappointingly the discovery last year of a 1992 record, supported by a photograph, of an adult recorded north of Glenelg in Wester Ross, some 80km north of the next nearest record, was not confirmed on a specific site visit. No obvious suitable habitat was found and the site was considered too high and exposed, casting some doubt as to the record's location.

The Forester appeared at several known and three new locations across the Norfolk and Suffolk Brecks. The moth was frequently attracted to the nectar appearing on the bare ground plots created as part of the *Norfolk Brecks* project (see section 4.7).

The species was located by members of the Lancashire Moth Group in small numbers at three relatively adjacent coastal locations in south Lancashire Vice-county in mid and late July. Three areas in west Lancashire Vice-county were also surveyed, including the location of a possible sighting in 2008, but no moths were found.

### **Lunar Yellow Underwing *Noctua orbona***

Gerry Haggett, on behalf of Butterfly Conservation, continued with larval survey and monitoring of this species in the Brecks during the winter of 2009/2010, concentrating on the larger Breckland SSSI's. Lunar Yellow Underwing is considered to be a good indicator of Breck heathland which is suitable for a wide range of scarce and threatened species. Unfortunately rabbit numbers increased, reaching 'plague' proportions in 2009, giving rise to overgrazed conditions on some Breck heaths, and in places seemingly exacerbated by sheep grazing. Of the 23 sites surveyed, eight were considered to be favourable, providing suitable conditions for breeding. At one site, Weeting, home to one of the largest rabbit warrens in the Brecks, there was a collapse in rabbit numbers in 2009 which led to a rapid response in the ground vegetation, with good numbers of Lunar Yellow Underwing being found locally.

The *Norfolk Brecks Heathland Restoration for Threatened Butterflies and Moths Project* (see section 4.7) has created further large areas of bare ground which should benefit this species, with success already being reported from plots created under the earlier *Grey Carpet Project*.

### **Marsh Mallow Moth *Hydraecia osseola hucherardi***

Sean Clancy, on behalf of Butterfly Conservation, continued to survey and monitor populations of this species on Romney Marsh on the Kent/Sussex border. Currently there are five colonies on the Marsh, and in 2010 an extension to one of these was found, comprising about 2km of fieldside ditches supporting the foodplant. Interestingly, two adults were also found at the back of Dymchurch, representing the fourth and fifth individuals at this site. These may be wanderers from an as yet undiscovered population as this site is about 14km away from the nearest colony of the moth.

Of some concern is the continued, although somewhat slowed, decline in the population at one of the sites, due to a reduction and fragmentation of the foodplant through the expansion of Common Reed *Phragmites australis*, following a period of heavy grazing in 2003.

Habitat creation schemes for the moth on Romney Marsh progressed considerably in 2010, with Barry Yates at Rye Harbour Nature Reserve overseeing the planting of 700 plants on the site, bolstering a planting of 120 plants in 2008. About 300 plants were also planted on a Wetland Trust reserve near Icklesham, Sussex, again co-ordinated by Barry Yates, whilst 200 plants were planted on a site at the RSPB's reserve at Dungeness, Kent. Meetings were also held with Railtrack over establishing a fourth stand near Appledore, Kent, however, on inspection the proposed site was too wooded and the plans will be re-visited in 2011 following some preparatory work. This habitat creation has been found to work elsewhere, with one of the five known colonies the result of earlier plantings.

There is scope for agri-environment schemes to benefit this species in the medium to long-term as these could encourage non-intervention headlands around field boundaries, which, in the right circumstances, allow the spread of the foodplant.

### **Marsh Moth *Athetis pallustris***

Dr Paul Waring, on behalf of Butterfly Conservation, again co-ordinated work on this species in 2010. This moth is currently confined to just two sites, Saltfleetby-Theddlethorpe Dunes NNR and Gibraltar Point NNR, Lincolnshire. A total of 17 Marsh Moth were recorded on the 3<sup>rd</sup> June 2010 in two MV traps from one part of the Saltfleetby reserve, comparing well with the better results in recent years, although the species now seems lost from a former area. A trap placed at another site on the reserve, a field reclaimed from arable crops being managed to create suitable habitat for the Marsh

Moth, also resulted in a zero count, following a release of 20 larvae there the previous year.

On 16<sup>th</sup> September, a Moths Count recording event was held to look for the larval stage using the litter-pile technique, this was attended by 12 people. At one of the sites on Saltfleetby 55 larvae were found, down from 76 in 2009, although still the second highest count since monitoring started on this part of the reserve in 2005. However, there was even better news to come in that two larvae were found in three litter-piles placed in the reclaimed field, strongly indicating that the moth had survived here since its introduction.

At Gibraltar Point, the moth continues to hang on, with a single adult being recorded on 28<sup>th</sup> May (to an actinic trap), the third since 2000. Twenty-one litter piles were placed on the reserve, although no Marsh Moth larvae were found.

A survey of a potential site, Risby Warren, Lincolnshire, on 4<sup>th</sup> June (in favourable conditions) failed to record the adult.

### **Narrow-bordered Bee Hawk-moth *Hemaris tityus***

A significant discovery was made at Clive Farrell's Dorset nursery with larvae and eggs located. The significance of this discovery is that this is a man-made habitat, with large scrapes being dug seven or eight years ago and plug-planted and seeded with Devil's-bit Scabious *Succisa pratensis*. It will, therefore, be interesting to determine if this is a temporary or more long-term establishment and a further survey is planned in 2011.

Unfortunately larval searches at the only known site for Narrow-bordered Bee Hawk-moth in the Brecks were negative for a second year running. The habitat remains intact and survey effort will continue in 2011 at this site and former sites in Norfolk.

It was another excellent year in Scotland with 72 records received to date; this is double the number received last year. Of these, 13 were from new 10Km squares, one the first record since 1938, another the first since 1950, whilst many others were from new sites. It also included 14 seen nectaring mostly on birds-foot trefoil *Lotus* sp. along one small section of forest track on the Black Isle. Since 2000 Narrow-bordered Bee Hawk-moth has been recorded in 70 10Km squares in Scotland of which 53 (76%) are "new" squares. This large increase in recorded squares certainly reflects an increase in recording effort north of the border but it is also thought to be due to an increase in the moths population and distribution.

Several **Marsh Fritillary** *Euphydryas aurinia* sites, mainly in Argyll and the neighbouring islands are now being specifically managed under Scotland's agri-environment scheme Rural Priorities under the SRDP (Scottish Rural Development Programme). Many of these are also sites for Narrow-bordered Bee Hawk-moth which will benefit from the recommended management; principally light grazing.

In Northern Ireland, a successful workshop was held for Agency, Non Governmental Organisation (NGO) and local council field workers in June to help identification of this species. Despite intensive Marsh Fritillary larval searches on sites in August and September, no Narrow-bordered Bee Hawk-moth larvae were identified. However, management of new sites found for Marsh Fritillary will benefit this species in Fermanagh.

Unfortunately it was another frustrating year in Wales. Larval searches by the Wales Team on the Gower were successful but two other sites with reliable adult records were unsuccessful for a second year. A repeat of adult surveys will be undertaken in 2011 to try to more closely identify likely breeding areas on these extensive sites. A site where one larva was found in 2009 was damaged by pre-development clearance. Butterfly Conservation has given evidence to an enforcement hearing and hopes the area can be restored.

### **Netted Carpet *Eustroma reticulatum***

2010 saw the third full survey this century of Netted Carpet and its foodplant, Touch-me-not Balsam *Impatiens noli-tangere*, at all known sites in the Lake District. Approximately 87 sites were surveyed in the Lake District by 17 surveyors. Touch-me-not Balsam *Impatiens noli-tangere* was found on 82 sites, 52 of which supported Netted Carpet larvae. 23% fewer plants were recorded in comparison to the last full survey in 2005, due to significant reductions in numbers at one site at Coniston. However, there was a three-fold increase in plant numbers at Windermere East compared to 2005, and important increases in a number of areas with smaller foodplant populations. It was estimated that the larval population in known Lake District sites is approximately 5300. This is the highest ever, and approximately 3.3 times the number estimated in 2005. All areas except Dunnerdale and Windermere West increased their larval totals in 2010 compared to 2005. For the first time this century, larvae were recorded from both East and West Derwentwater, following the introductions in 2008 and 2009. Larvae were not translocated to Derwentwater in 2010; 2011 should demonstrate the viability of the populations, without annual introductions.

Following the discovery of the moth in Lancashire in September 2009, surveys of the Hyning Wood site, and other locations where the foodplant occurs, took place during 2010. The moth was found to straddle two 10km squares and significant numbers of larvae (and a few adults at light traps) were found in the Hyning Wood area, particularly on a roadside verge on the edge of the wood where recent ground disturbance had benefited the foodplant. A large colony of the foodplant south of Lancaster was visited on two occasions to look for larvae, but none were found.

The survey in the Lake District was co-ordinated by Dr. Paul Hatcher (Reading University) and John Hooson (National Trust) and in Lancashire by Graham Jones (South and West Lancashire County Macro-Moth Recorder) and Stephen Palmer (South and West Lancashire County Micro-Moth Recorder). This project is led by John Hooson (National Trust) and Dr. Paul Hatcher (Reading University), with support from, amongst others, Butterfly Conservation and Natural England. For more information about Netted Carpet and to help with survey work, please contact John Hooson ([john.hooson@nationaltrust.org.uk](mailto:john.hooson@nationaltrust.org.uk)) or Mark Parsons ([mparsons@butterfly-conservation.org](mailto:mparsons@butterfly-conservation.org)).

### **New Forest Burnet *Zygaena viciae argyllensis*** (Schedule 5 of the Wildlife & Countryside Act)

Conservation of this species is overseen by the Burnet Study Group (BSG).

Annual monitoring of the colony continued in 2010 with adult numbers on the main site estimated at 2575 - 3090 which is approximately double last year's estimate, itself significantly higher than in 2008.

Both main larval foodplants, Meadow Vetchling *Lathyrus pratensis* and Common Bird's-foot Trefoil *Lotus corniculatus*, were well-distributed on the main site, but interestingly only trefoil is present on the grassy slopes above the main colony where the population seems to be doing particularly well. Sward height was slightly lower than in 2009, at 15.4cm mean height, but comparable with heights in 2007 and 2008. Despite this there is some concern over grazing and that a better agreement with the estate is needed to ensure sufficient grazing is undertaken to prevent the vegetation from becoming too rank.

### **Northern Dart *Xestia alpicola***

We are not aware of any records of this species in England for just over 30 years. In 1975 it was seen near the summit of Cheviot, Northumberland, and there are reports, albeit the most recent date is unclear, from Moor House NNR, Cumbria. It was also reported at High Force, Cumbria, during the 1970s, with an earlier record from Skiddaw in the same county. Its re-discovery in England would be most welcome.

In Scotland a remarkable 42 were caught at light at a well known and accessible site and was the only record in 2010. Its status elsewhere in the country remains unclear.

### ***Scythris siccella***

With the consent of Natural England and Crown Estates, and the assistance of Dr Phil Sterling (Dorset County Council), small areas were stripped of turf in the autumn of 2008, and again in 2009, at the only known site of this moth in this country (measuring approx. 100m by 1m) in an attempt to create suitable habitat conditions for this extremely scarce species. A visit in early June 2010 located eight adults and 14 larval tubes. Many of the adults were found on these more open scrapes and encouragingly, four larval tubes were also found in these scrapes indicating that suitable conditions can be created through this management. Following this success, further scrapes were dug in the autumn of 2010.

### **Shoulder-striped Clover *Heliothis maritima***

To follow on from last year's discovery of Shoulder-striped Clover at a National Trust heathland site in Dorset (the first records for the county since 2000), Butterfly Conservation staff and others, including volunteers from the National Trust, conducted further surveys of this and one additional site to try to determine distribution and habitat use patterns in Dorset. At Holt Heath, where there had been an adult sighting and subsequent recording of two larvae in 2009, larvae were found over a wider area of the site by sweeping after dark. An attempt was made to pin point the origin of any swept larvae and a return visit made the following day to assess habitat variables in the immediate vicinity of the capture position. Collecting data on this species is proving to be labour intensive, with only nine larvae found from a search effort of approximately 15 man-hours of sweeping on the first site. For the second year running searches at Godlingston Heath were negative but, given the effort required to pick up larvae at the site with recent records and the considerable size of the Godlingston site, it is still possible that the moth persists here but was undetected. Several additional sites in Dorset were checked by volunteers but thought to have no suitable habitat.

In the New Forest adults of the moth were observed at one known site. However, these adults were not found in the area where larvae had been recorded the preceding year, by the same recorders, despite effort to search that part of the site. The new area appeared to have been burnt more recently than the previous year's patch, and was dominated by short, abundant Cross-leaved Heath *Erica tetralix* with an overall height of less than 30cm. The vegetation was observed to be taller in the area of last year's larval sightings than it had been when last surveyed, with a greater density of other heather species coming in.

This year's findings do provide further evidence that Cross-leaved Heath is likely to be the main larval foodplant in the wild and that wet heath, in which Cross-leaved Heath forms a relatively short but dense cover, is used. However, questions remain over whether other heathland types (particularly those containing higher proportions of Bell Heather *Erica cinerea* which is eaten in captivity) might also be used.

### **Silky Wave *Idaea dilutaria***

Staff from Butterfly Conservation and Bristol Zoo Gardens again carried out monitoring for this species in its sole English location, the Avon Gorge, on the Bristol and Somerset border. Although several of the sites within the Gorge have been monitored for some years, the numbers of Silky Wave recorded fluctuates widely. The monitoring methodology has been further developed this year in an attempt to correlate numbers more accurately with management activity and site condition. A monitoring 'pack' has been created to allow involvement of new recorders, to prevent loss of continuity with staff changes for example, and on-site training was provided for Bristol Zoo staff. The Zoo has now agreed to lead on the co-ordination of monitoring as part of their native species work, and will provide the necessary feed-back to the partnership of land managers and other interested parties involved in efforts to secure the future of Silky Wave here.

The presence of the moth was confirmed at each priority site visited within the Gorge and, although there are currently no clear trends, the moth is thought to be secure on the sites where scrub encroachment is controlled through regular management. Goat grazing of two of the sites is due to commence this year, with the complicated process of fencing part of the steeply sided gorge now



complete. This is expected to increase and maintain the area of available habitat for the moth and will provide a valuable comparison to the ungrazed and unmanaged sites. The importance of retaining a proportion of scrub as part of a habitat mosaic was indicated this year by the restriction of Silky Wave adults to areas of scrub by the time of the monitoring visit on the 9<sup>th</sup> July, due to significant droughting of the remaining vegetation after a period of prolonged hot, dry weather.

In Wales, counts on the Gower indicate that numbers are stable overall. The individual monitoring plots do show variation in numbers due to succession (largely an increased growth of gorse) and also management. Populations seem to have begun to recover on one plot where the gorse was burnt in 2008, but counts in subsequent years are needed to confirm this trend. A count was not made on the Great Orme for a second year because of a lack of suitable weather, despite a local contractor being on standby had conditions been favourable.

### **Slender Scotch Burnet *Zygaena loti scotica***

Butterfly Conservation Scotland's work on Slender Scotch Burnet moth continued in 2010 for the third year under the Species Action Framework (SAF) project, part-funded by Scottish Natural Heritage and Forestry Commission Scotland (see section 4.1.1). The focus of the SAF project is on site management to bring sites into favourable condition through supporting and encouraging applications under the Scottish Rural Development Programme (SRDP) rather than on monitoring. Nevertheless local volunteers recruited under previous projects were encouraged to monitor the satellite sites, whilst the National Trust for Scotland (NTS) continued to monitor the core colonies at the Burg.

Relatively high numbers were found at the Burg during co-ordinated counts undertaken by NTS with a peak count of 161 at the Ladder and 116 on the path to Dunan. Small numbers were also found in open herb-rich patches amongst the bracken *Pteridium* sp. up to 300m altitude, confirming the presence of a large number of small sub-colonies, wherever the vegetation was suitable. Two students from Aberdeen University, supervised by Dr Mark Young, also studied the colonies close to the Burg, including sites where bracken had previously been cleared as well as a string of minor colonies to the east. A local resident also reported a new site on the coast south west of Scobull. It is clearly important that all of these smaller sites are considered in the context of the meta-population structure of the whole colony. A successful and collaborative SRDP application between the NTS and the neighbouring Kilninichen estate will hopefully bring these satellite colonies into more favourable condition through implementing a programme of bracken control and more sympathetic grazing management.

At Kilninichen, cotoneaster control using contractors with follow-up stump-treatment continued but no adults were seen. Further control is planned for 2011 including attempts to remove some of the plants growing out of the cliffs to eliminate the seed source directly above cleared areas. The management work at Kilninichen has been undertaken with the permission and enthusiastic support of the landowner.

A systematic count of Ulva was not repeated this year; all counts were casual observations undertaken by the owner of the island, Jamie Howard. In recent years the moth has been found to be more widespread on the island with the discovery of a number of new sites and sub-sites. However, issues still remain over the long-term viability of these colonies due to under-grazing and bracken encroachment, particularly now that the sheep have been removed from the island. Deer grazing is probably helping to maintain some of the sites in suitable condition. The owner is very supportive and co-operative and is hoping to enter this land into SRDP. A woodland scheme on the island has been restricted to the northern half and thus does not compromise the conservation of the island's burnet or **Marsh Fritillary *Euphydryas aurinia*** populations.

Excitingly, a new site was discovered in 2010 with 32 moths counted in five small sub-colonies, this 5km to the west of the nearest known population. This site will now be managed under the SRDP following a successful application. In addition another potential new site not too far away has gained entry into the scheme, with potentially suitable habitat also successfully entered into the scheme at two further sites that lie adjacent to currently occupied colonies.

### **Small Dark Yellow Underwing *Anarta melanopa***

As far as we are aware, between 2000 and 2009 Small Dark Yellow Underwing had only been recorded nine times (two in each of 2001 and 2002 and single records in 2003, 2004, 2006, 2008 and 2009). By contrast there were 122 records of the **Netted Mountain Moth *Macaria carbonaria***, which shares the same habitat (*Arctostaphylos* heath), flight period and distribution, over the same time period. This was mainly due to targeted recording. Consequently, concerns were mounting about the current status of Small Dark Yellow Underwing. It is very pleasing, therefore, to report a good year for this elusive species with 10 records of which four are from new 10km squares including the first record from Vice-county 106, East Ross, and the first record from Perthshire since 1981.

### **Straw Belle *Aspitates gilvaria***

Nine North Downs sites in Kent were surveyed in early August for Straw Belle by Butterfly Conservation staff, with the moth only being located at three of these sites. One site which is normally a good locality for the moth had been overgrazed, with cattle still present during the survey. In 2009 this site had vegetation heights of c.10cm in the areas favoured by the moth, but in 2010 the vegetation was down to only 2-3cms. A dry summer had clearly also contributed to these conditions. Only one Straw Belle could be located. Natural England were informed and assurances were given to reduce the stocking levels as part of the sites HLS agreement.

At two other Kent sites Butterfly Conservation staff joined National Trust staff and volunteers to undertake searches for the moth, which are now conducted annually here. Straw Belle was successfully located at both sites.

Straw Belle was seen on both Surrey sites in August, with lower than normal numbers at the larger site and a shorter sward probably a result of the summer drought. At the smaller site only two adults were recorded this year and the population remains very vulnerable.

### **Striped Lychnis *Shargacucullia lychnitis***

A team of some 17 volunteers, led by Peter Hall, the Branch *Species Champion* for Striped Lychnis in Buckinghamshire, carried out a comprehensive re-survey of the county. Although a number of sites have been monitored in the intervening period this survey comes five years after the last extensive search organised by Peter. Some 73,678 Dark Mullein *Verbascum nigrum* plants were located and searched for larvae, with around three and a half thousand larvae being found. The search effort for both surveys was very similar, however, in 2005 a greater number of larvae (just over five thousand) were found despite the number of plants being lower at 37,456.

Peter's findings are similar to those reported in last year's bulletin from surveys of the wider distribution of the moth (Hampshire, Sussex, Wiltshire) which suggest that the impact of the tidying up of road verges in and around villages, and more intensive road verge management along major roads, are having a negative impact on population levels and possibly overall distribution. Regular cutting of road verges, or cutting during the growth and flowering period of Dark Mullein, can remove much of the foodplant at crucial times. Furthermore, the overall increase in the number of plants without a corresponding increase in the number of larvae indicates that factors other than the amount of foodplant available may have a stronger influence on the abundance of the moth. One possible explanation is that the number of larvae in any given summer is influenced more by foodplant availability in the preceding year, and so there will be a time delay between an increase in plant resource and any corresponding increase in larval numbers. It will therefore be interesting to see the response of larval numbers in 2011 on annually monitored sites in Buckinghamshire.

### **Sussex Emerald *Thalera fimbrialis***

*(Schedule 5 of the Wildlife & Countryside Act)*

With funding from British Energy and Magnox, Sean Clancy, on behalf of Butterfly Conservation, again undertook survey and monitoring of this species at Dungeness, Kent. Larval surveys were carried out over five days in late May to early June with 70 larvae being recorded from 36 survey

sites. The majority of the survey sites have been monitored using a standardised methodology (a timed count) set up in 2000, to allow a year on year comparison. The total number of larvae recorded is down on 2008 and 2009, but very similar to the total in 2007. Rabbit grazing has reduced the amount of available foodplant in some of the monitored subsites and consequently this is thought to be contributing to the decline in numbers recorded. Also, although the winter was long and cold, the cold, damp and late spring may have impacted on larval survival.

119 adults were recorded from light-traps in the Dungeness area in 2010, compared to 113 in 2009, 166 in 2008, 109 in 2007 and 339 in 2006. Unfortunately one of the key trapping sites was discontinued in June 2010, so this should be taken into account when comparing the 2010 total with previous years.

Trial plots have been in place since the autumn of 2008 to determine if potentially suitable habitat for the moth can be created. All the rabbit-proof fenced plots have been colonised by Wild Carrot *Daucus carota*, the main larval foodplant. Wild Carrot was most frequent in the seeded plots, with incidence of the plant being greatest in the disturbed and seeded plot. No Wild Carrot occurred in the unfenced plot.

A significant discovery came in locating a second, albeit small, colony of the moth some distance away near Deal, Kent. Several larvae were located in an area of vegetated shingle, and management advice has since been provided to the site managers. This discovery was covered by various publications following a press release from Butterfly Conservation. A site in East Sussex with a recent record of an adult, was also surveyed, although no Sussex Emerald larvae were located.

Two Sussex Emerald were reported from Rye Harbour Local Nature Reserve, East Sussex, in 2010, although the most likely origin of these is Dungeness. However, it is planned that a search for larvae will be undertaken in 2011.

### **3.2 UK BAP moth newsletter**

An email newsletter covering UK Biodiversity Action Plan Priority moths is sent out during the field season providing information about when species are being seen across the country so that recorders can also target those species in their area. To submit sightings of UK BAP moths for the newsletter, or if you would like to be added to the mailing list, please contact Tony Davis [tdavis@butterfly-conservation.org](mailto:tdavis@butterfly-conservation.org). (All records should also be submitted to the relevant County Recorder as usual.)

### **3.3 Update on UK BAP butterflies - a summary for the year 2010**

Highlights of work carried out on selected UK Biodiversity Action Plan (BAP) butterflies is provided below. Further work on UK BAP butterflies is also reported in sections 4 (regional updates) and 6 (news and notes). Factsheets for the majority of the following species can be downloaded from [www.butterfly-conservation.org/butterfliesspeciesfactsheets](http://www.butterfly-conservation.org/butterfliesspeciesfactsheets).

Summaries by Bernadette Noake *Conservation Officer – threatened species*, Amber Rosenthal *Conservation Officer – threatened species*, Dr. Caroline Bulman *Senior Species Ecologist*, Russel Hobson *Head of Conservation, Wales* and Dr. Jenny Joy West *Midlands Senior Regional Officer*, with contributions from Dr. Sam Ellis, *Head of Regions*, Dr. Dan Hoare *South East England Senior Regional Officer*, Catherine Bertrand, *Senior Regional Officer, Northern Ireland*, Jenny Plackett *Two Moors Threatened Butterfly Project Officer*, Dave Simcox (Large Blue Project contractor) and Mike Williams (South Shropshire Woods contractor).

### **Brown Hairstreak *Thecla betulae***

Work has continued on determining the strength of local populations in South West Wales. Annual egg counts were undertaken on 20 sites. The overall trend has dropped in the last three years, in part due to three poor summers but there is a clear upward trend on the sub-set of sites in sympathetic management. On sites with regular flailing, there is a bigger downward trend, with almost complete

loss of local populations on at least three sites in the last two years.

Volunteer travel costs are provided by Carmarthenshire Local Biodiversity Partnership who have also provided money for small-scale management works to supplement the volunteer work parties. A display board has also been designed for a publicly accessible site and landowners sympathetically managing their land for Brown Hairstreak are given our "Butterfly Friendly Hedgerows" discs to attach to fence posts around their farms. There are now a dozen landholdings in completely sympathetic management, entirely by unwritten voluntary agreement.

Butterfly Conservation's South Wales Branch also received funding from Awards for All for a community project in the Teifi valley. As well as raising awareness, this created a team of local egg counters leading to the discovery of 16 new sites.

Counts at the Wildlife Trust's West Williamston Reserve in Pembrokeshire have also increased, particularly in areas where management work was introduced a few years ago.

### **Duke of Burgundy *Hamearis lucina***

During 2010 work has continued across Butterfly Conservation's regional network as part of the *North York Moors Dukes and Pearls Project*, *The Morecambe Bay Limestones Project*, *The South East Woodlands Project* (see section 4) and the work of our regional officers, volunteers and head office teams. Several of our branches have continued to be particularly active in both monitoring and practical management efforts for this species, not only on those Butterfly Conservation and other nature reserves that support the species, but also on private land. There has also been considerable work in the development of further landscape-scale projects to specifically target this highly threatened species in some of its key strongholds. A follow up for the *Fit for a Duke* project in the North York Moors (see above) started towards the end of 2010. Two further projects, the *Dukes on the Edge: Conserving the Duke of Burgundy on the South Downs* and the *Restoring the Cotswold's Threatened Butterflies Project* have been developed, with the former due to start in 2011 and the latter as soon as funding can be secured. The Cotswolds project has been designed to target both the Duke of Burgundy and the **Large Blue** *Maculinea arion*, and to demonstrate effective methods for managing the perceived problems of providing for target species with very different requirements within the same sites and landscapes.

Against a background of alarming declines for this species over the last few decades, 2010 saw continued improvements in numbers on key sites across the country. As with several of our other rarer butterflies the increase in numbers recorded in 2010 is a reflection of both better spring weather, and improvements in the extent and quality of habitat following targeted management work. For example, in the North York Moors the landscape-scale approach has seen a three fold increase at sites within the project area; a 17 fold increase in numbers has now been recorded at one West Sussex site (since 2007) following several years of concerted efforts (see South East section, 4.6); and, within our reserves network, record counts were obtained at Prestbury Hill in Gloucestershire (as described in the Update on Reserves section, 6.2).

The Duke of Burgundy can occur in small pockets of woodland and grassland edge habitats which are likely to be prevalent on private land where there has often been little access for recording. It can also be hard to detect even if present, and as a result our knowledge of its distribution may not be complete in all areas and even known colonies may not have been well monitored. Although this means that losses from sites of which we have no knowledge are likely to have occurred, it is also possible that further sites may still exist. This was shown to be the case during 2010 with new sites coming to light in both Kent (as described in the South East Woodland Project section) and in Gloucestershire. This highlights the importance of work to raise awareness of the species and encourage people to report any sightings. During the year 193 people attended public events which highlighted the Duke of Burgundy as a key species, and an additional 125 attending some form of training event relating to this butterfly and its required habitat management. In Gloucestershire, for example, two training days were run in conjunction with the National Trust and Natural England as part of efforts to develop the Cotswolds landscape project. Forty volunteers and conservation professionals attended one of the two days, with all participants being treated to the magnificent site of dozens of Duke of Burgundy at the Trust's Rodborough Common. Following on from these training

events two additional colonies were discovered, one on a former site from which there had been no recent records, and the second on private land close to two sites which are thought to have long been extinct.

Despite ongoing concerns, and an acute need for continued efforts at the landscape level, the future is looking a little brighter for this diminutive but endearing butterfly.

### **Heath Fritillary *Melitaea athalia***

Overall 2010 has been another very positive year for the Heath Fritillary across its range. For many of the sites numbers have continued to build following the previous year's successful season, which itself had seen the highest counts in recent history for several sites. As a result of this continuing build in numbers on extant sites, and the availability of additional suitable areas of habitat thanks to ongoing management, colonisation of new sites was recorded in 2010 in Exmoor (2 sites), Essex (1 site) and the Blean, Kent (1 site). The species had a delayed emergence in the east of the country following a period of cold northerly winds in early June, but initial fears of a poor season were allayed by subsequent high counts on key sites in both Kent and Essex. On Exmoor the counts at several sites were markedly higher in 2010 than 2009, for example at Halse Combe the estimated population size was nearly double that for 2009, and at Haddon Hill the estimated size category increased from medium to large with a corresponding increase in numbers on the transect with a maximum of 35 individuals compared to just 10 the year before. Many of the original Biodiversity Action Plan targets for this species are now being met thanks to the various partnerships involved in work for this species (Butterfly Conservation Branches, The National Trust, RSPB, Kent Wildlife Trust, Essex Wildlife Trust, Forestry Commission England, The Duchy of Cornwall, Southend Borough Council, Rochford District Council, Natural England, Tamar AONB, The Blean Initiative, The Essex Biodiversity Project, Exmoor National Park, Tilhill Forestry, a number of volunteers and various private landowners).

Despite this general success, there have been declines at a subset of sites following either a lack of management, or a lack of suitable habitat despite management. For example, the small size of some sites has meant that it is difficult to achieve sufficient management, or that areas have been managed intensively in a way that, over time, produces less suitable habitat. This may apply even for some sites which continue to support strong populations at present, but where future management choices may be restricted such as the East Blean Woods in Kent. There remain immediate concerns over the fate of the Heath Fritillary in the lower Tamar Valley (Cornwall/ Devon border) where these small-site factors come into play, and where the population has again been reduced to just one site. However, it is encouraging that numbers at the remaining site, Greenscoombe Wood, were much improved this year following reinvigorated management efforts by the Duchy of Cornwall under a new Higher Level Stewardship (HLS) agreement. Meanwhile the sites slightly further north into Devon also fared well in 2010, with high numbers at Butterfly Conservation's Lydford reserve (as described in the Update on Butterfly Conservation Reserves section, 6.2).

In the longer term, current levels of management need to be maintained across the species' range, and securing sustainable management continues to be a challenge. There is some hope that the continued interest in wood-fuel and other forest products will provide at least part of the solution, with several sites in Essex already being managed as successful commercial enterprises and some upturn in the market prices for products from the Blean sites. However, even at the commercially viable sites in Essex the loss of key staff from the two council owned sites, coupled with pressures on the public sector to cut expenditure, means that the future of these sites is now in doubt.

As a result of the combination of these factors there remains a need to work at a landscape scale, seeking opportunities to expand the network of sites in the four areas where possible and ensuring sufficient management across networks to allow for periods where individual sites may support fewer numbers. Great achievements have been made across the species' range in terms of halting the decline of the species but the continued input of the partner organisations and individual land owners is also vital.

It is now fairly certain that an introduction to a single site in Middlesex has not been successful after there were no sightings of Heath Fritillary in 2010. Butterfly Conservation has not been directly involved in the introduction but has advised on habitat condition and management requirements for the species.

## High Brown Fritillary *Argynnis adippe*

The High Brown Fritillary is a major focus for Butterfly Conservation with large projects in each core area for this species being Dartmoor, Exmoor and Morecambe Bay.

Detailed accounts of Butterfly Conservation's work in these landscapes are provided in section 4.5.1 (*Conserving the High Brown Fritillary on the Morecambe Bay Limestones project*) and section 4.8.1 (the *Two Moors Threatened Butterfly Project*), and for Wales, in section 4.3.2 (the *High Brown Brackenlands project*).

Unfortunately, despite extensive survey work and previous habitat management in recent years, High Brown Fritillary has not been recorded during 2009 and 2010 on the Malvern Hills with only **Dark Green Fritillary** *Argynnis aglaja* being positively identified.

## Large Blue *Maculinea arion*

2010 was a good year for Large Blue on most sites. For example, at Collard Hill, managed by the National Trust, the highest number of eggs were recorded since the butterfly was re-introduced in 2000. This was due to excellent management carried out by the National Trust and good weather conditions. Over the past year, the Large Blue project has continued to provide management advice and carry out monitoring (ant surveys/Large Blue adult counts/Large Blue egg counts).

On the Polden Hills, Somerset, Large Blue is breeding on 27 sites. Many of these are natural colonisations to newly suitable habitat at sites managed under the project. In the Cotswolds two experimental introductions were carried out in 2010 (under a license from Natural England) after close working with site managers and graziers to ensure the sites were in ideal condition. The majority of this work is carried out by a consultant, Dave Simcox, under contract to Butterfly Conservation with funding from Natural England. Much research work is also carried out by Dave under contract to the Centre for Ecology and Hydrology, Wallingford.

The Poldens Large Blue Action Group, a partnership of many organisations (currently led by Butterfly Conservation), has continued to co-ordinate and develop volunteer effort. Successful practical conservation management tasks have been carried out this winter at three sites to clear scrub in order to improve the habitat available for Large Blue. A Large Blue identification and survey training day was also held in June to enable volunteers to carry out Large Blue adult timed-count surveys.

Butterfly Conservation has been successful in a funding application to SITA Trust for a project to benefit Large Blue on the Polden Hills. This three year project, beginning in April 2011 aims to increase the area of suitable habitat by 64.5ha through a programme of landscape scale habitat restoration on a network of 15 sites. This will both strengthen existing populations and increase the likelihood of colonisation of currently unoccupied sites.

In the Cotswolds, Butterfly Conservation is currently seeking funding for an innovative project focused on Large Blue and **Duke of Burgundy** *Hamearis lucina*. This project would aim to restore limestone grassland habitats on sites across the Cotswolds so that they can support functioning Large Blue and Duke of Burgundy metapopulations, addressing a major challenge for conservation grazing in the UK: managing for two species at opposite ends of the grassland successional spectrum in the same landscape. In some cases this will be achieved by ensuring different parts of the same site or valley system are managed for each of the target species, but the real challenge will be to enable them, and by implication other threatened species, to co-exist on the same site. Innovative and experimental grazing regimes will be tested and successful schemes could be used more widely in other UK landscapes where structurally diverse grassland swards are the key conservation objective.

## Marsh Fritillary *Euphydryas aurinia*

Work in England has been undertaken this year for the Marsh Fritillary through a number of our landscape scale projects including the *Two Moors Threatened Butterfly Project* (see section 4.8.1)

and at the re-introduction sites in Cumbria (see section 4.5)

Butterfly Conservation's long-term monitoring of sites in Dorset continues and now represents a long-term set of monitoring data, with information on some sites going back to 1985. The key sites on both chalk and wet grasslands in Dorset are monitored through larval web surveys, with healthy populations recorded at a number of sites. Within the Blackmoor Vale metapopulation two sites were re-colonised during 2010 with larval webs discovered at these sites. One site being the Butterfly Conservation reserve at Alners Gorse which volunteers have been managing the site through scrub and conifer clearance to open and restore the areas of wet grassland. This is adjacent to Rooksmoor which is a stronghold for the species and the most likely source population for the colonisation. Lydlinch Common, also within the Blackmoor Vale has now been successfully fenced following Secretary of State approval and cattle were re-introduced to the site in May 2010. It is approximately 50 years since the majority of the common was grazed in such a way with cattle and represents an important development in achieving sustainable management for this site. The site is being very carefully monitored by Butterfly Conservation, the site owner and Natural England to ensure the level of grazing is effective and appropriate for the Marsh Fritillary and the other habitat and species interests.

The Marsh Fritillary on Dartmoor and Exmoor has been a major focus for the *Two Moors Threatened Butterfly project* (see section 4.8.1). Monitoring has shown a dramatic increase in abundance, with re-colonisation at two sites on Dartmoor and new breeding sites recorded at two locations on Dartmoor and one on Exmoor. The targeted work to improve the habitat condition on the Dartmoor priority areas over the last six years of the project, by introducing grazing and managing scrub, combined with good weather conditions, has resulted in an increase in abundance on the majority of sites. Larval web surveys in 2010 were also encouraging with 76% of monitored sites showing increases compared to the 2009 results.

Work in Scotland, Northern Ireland and Wales is reported in sections 4.1, 4.2.1 and 4.3.1 respectively.

### **Pearl-bordered Fritillary *Boloria euphrosyne***

At Cwm Soden on the Ceredigion coast, Wales, Pearl-bordered Fritillary numbers reached their highest level for three years. This is a tentative indication that the first five years of the management agreement is working. National Trust and Countryside Council for Wales are renewing the agreement and extra grant funding has been applied for, to restore an adjacent area outside the SSSI. Numbers also showed a substantial increase at Butterfly Conservation's Eyarth Rocks Reserve in Denbighshire, with adults seen well away from the reserve. The seven Montgomeryshire sites showed mixed fortunes with numbers down or stable at core sites but increases at more peripheral sites and a re-colonisation of Fron Hydan. The re-introduction programme at Llanymynech Rocks continued with release of 187 larvae and three adults were recorded during the flight period.

In England, Butterfly Conservation has continued to work to conserve Pearl-bordered Fritillary by providing management advice, undertaking surveys, habitat assessments, carrying out practical habitat management, either by practical conservation work parties or through funding which Butterfly Conservation has applied for.

In the Wyre Forest, positive results are continuing as a result of work carried out through the *Back to Orange Project*, a SITA funded joint Butterfly Conservation and Forestry Commission England (FCE) project which ended in autumn 2010. Numbers of Pearl-bordered Fritillary were greatly improved on the Longdon Pipeline in 2010 with all the scallops created as a result of project work supporting good habitat and being occupied (increase from 13 in 2009 to 57 in 2010). Pearl-bordered Fritillary has also already colonised two new areas of Longdon Wood created by project management work and there is now the anticipation that further project work areas (those done towards the end of the project) will be colonised by this butterfly in 2011. In addition, eight plots in Longdon Wood where conifers were removed under PAWS (Plantations on Ancient Woodland Sites) restoration work, have already hugely improved in both their plant species and Lepidoptera diversity in just two years. Pearl-bordered Fritillary were recorded on four out of the eight opened plots with one plot clearly already supporting a colony of this butterfly.

Over a number of years, Butterfly Conservation staff and local recorders have been working with FCE near Exeter in Devon on three Pearl-bordered Fritillary sites. In 2010, in addition to survey work and management advice, a successful funding application was submitted by Butterfly Conservation to SITA Trust to carry out further management at these sites. This three year project, beginning in April 2011, aims to carry out a targeted programme of practical conservation, including scrub and bracken management, clear-felling, coppicing, thinning, ride scalloping, stump removal, ground disturbance and planting violets *Viola* sp. (the larval foodplant).

Further work to conserve Pearl-bordered Fritillary in England is described under the relevant regions (South West, North of England, South East and West Midlands) in section 4.

Work on Pearl-bordered Fritillary in Scotland in 2010 concentrated on delivering site advice under the Species Action Framework Project as described in section 4.1.1.

### **Wood White *Leptidea sinapis***

The National *Wood White Project* has continued to gain momentum with more visits to many of the key sites undertaken in 2010 and an action programme agreed. A national recovery plan for the Wood White is now complete with the objectives being to update the species' autecology and habitat requirements in order to provide an evidence-based conservation strategy. A paper detailing the evidence base for this plan appeared in the *Journal of Insect Conservation* in December 2010. An updated Wood White sites dossier was completed in August 2010 and published with financial support from several Butterfly Conservation branches. Two papers and two posters were presented at Butterfly Conservation's International Symposium as a result of ongoing work.

Site visits were also focused to help deliver a) the joint *Lepidoptera on Forestry Commission Land in England Conservation Strategy 2007-2017*, b) the *Midlands Fritillaries Project* and c) the *South East Woodlands Project*.

In the Midlands, the SITA Trust funded *Herefordshire Wood White Project* being implemented by the Forestry Commission England (FCE) is now virtually complete. Habitat assessment work carried out in 2010 showed a large increase in the amount of potential breeding habitat available on all eight sites with further survey work showing that this improved habitat is already having a positive effect on both Wood White numbers and distribution. A paper detailing the results from the earlier project work (mark-recapture study and analysis of egg-laying habitat) will appear in the *Journal of Insect Conservation* in 2011. A second Wood White project in the Midlands, also funded by SITA Trust (as part of the match funding for the Midlands Fritillaries Project), started in Shropshire in April 2010. This new project focuses on six FCE plantations in south Shropshire and is aimed at improving the prospects for Wood White at a landscape level. Work in the Wyre Forest, under the earlier SITA Trust funded *Back to Orange Project*, has also proved to be highly successful for Wood White with a large increase in numbers reported in 2010 at the first site the project worked on in 2007, and signs that the species is starting to disperse elsewhere in the forest.

In the South East there has been success at sites in Surrey where ongoing habitat creation is reaping rewards for Wood White, but there remain concerns for the species in parts of its range with the loss of one site in Oxfordshire, as described in the South East England Regional update (section 4.6).

### **Real's Wood White**

In Northern Ireland, Real's Wood White have continued to thrive at Craigavon Lakes, County Armagh. This site was declared a Local Nature Reserve by Craigavon Council in October 2010, mainly due to the abundance of the butterfly there, the largest known colony in Northern Ireland. Real's Wood White has also been confirmed from two new sites, at Slievenacloy, an Ulster Wildlife Trust nature reserve in the Belfast Hills, and from White Park Bay, a National Trust owned site on the North Coast.



### 3.4 Additional Factsheet

Priority species factsheets have been produced to raise awareness and give advice for land managers, giving details of ecology, habitat management requirements and survey methodologies for selected UK Biodiversity Action Plan, and other priority, moths and butterflies. In 2010, a new factsheet was written for Lepidoptera and other insects associated with Sweet Chestnut *Castanea sativa*.

The factsheets can be downloaded from [www.butterfly-conservation.org/priorityspeciesfactsheets](http://www.butterfly-conservation.org/priorityspeciesfactsheets). Paper copies can be obtained by contacting Butterfly Conservation (01929 400209, [info@butterfly-conservation.org](mailto:info@butterfly-conservation.org)). Depending on the quantity required we may need to charge for postage.

## 4 Butterfly Conservation Country and Regional Updates

### 4.1 Butterfly Conservation in Scotland

A large proportion of our conservation effort in Scotland still goes towards encouraging and supporting recording. In the past we have run many introductory training days to enthuse and equip new volunteers with the confidence to get recording - in their gardens, doing transects or moth-trapping. Now the main source of new recorders seems to be our new members, and also people who come across our widely-distributed identification leaflets and postcards.

We now have over 1000 members, and our autumn Member's Days and spring Recorders' Gatherings are increasingly popular, with over 100 attendees at each. Our Members' Days are a celebration of achievements over the past year and a social occasion, especially for new members to meet long-term members. We also look at how our recording activities are used in conservation.

The Recorders Gathering is open to anyone interested in butterfly and moth recording, and here we look at the previous years' highlights, relevant research that uses our data, and discuss species that need extra effort.

We now have good coverage of Scotland with our regional identification leaflets, which encourage the public to start recording. They are free, and distributed in visitor centres, museums etc. (and via our website), and most feature the butterflies and a few of the day-flying moths in the region.

Our postcard surveys remain useful and popular, coupled now with on-line recording. We have covered **Orange-tip** *Anthocaris cardamines* (twice), **Peacock** *Aglais io*, **Small Tortoiseshell** *Aglais urticae*, and in 2011 the postcard survey will cover **Comma** *Polygonia c-album*.

Targeted recording of our key species in Scotland helps us deliver practical conservation projects on the ground, primarily through Tom Prescott's project *Species Action Framework for Scottish Lepidoptera*, which works with farmers and other land managers to use Scotland's agri-environment scheme 'Rural priorities' to deliver large-scale beneficial management for some of our most threatened species.

Other projects are being developed, notably our *Central Belt Lowland Peat Project* (see below), together with our nature reserves at Loch Arkaig, Spean Bridge, and Mabie Forest, Dumfries.

All of this work is hugely dependent on our members and volunteers, who not only carry out the basic recording work that underpins it, but also contribute their time and money to help keep Butterfly Scotland growing.

Contributed by Paul Kirkland, *Director, Scotland*, [pkirkland@butterfly-conservation.org](mailto:pkirkland@butterfly-conservation.org).

#### 4.1.1 Species Action Framework for Scottish Lepidoptera

This project aims to enhance the habitat for four of Scotland's rarest and most threatened species of butterfly and moth; the **Marsh Fritillary** *Eurphydryas aurinia*, **Chequered Skipper** *Caterocephalus palaemon* and **Pearl-bordered Fritillary** *Boloria euphrosyne* butterflies and the **Slender Scotch Burnet** moth *Zygaena loti*. This is being achieved by providing specialist advice to farmers, landowners and their agents under the Scottish Government's SRDP (Scottish Rural Development Programme) to enable them to manage their land for these key species.

This specialist advice is invaluable as it provides the crucial link between the landowner/manager, their agent and the case officer assessing the application, and moreover, it counts in favour of the application in this competitive process. In most cases the advice is unique to the site which helps ensure that the management prescribed, mostly extensive light grazing, is deliverable.

Since April 2010 we have been involved with 45 sites for Marsh Fritillary, 35 of which were visited and this led to 28 SRDP applications. Of these all but one was successful in gaining entry into the scheme. Most Argyll farmers are now aware that having Marsh Fritillary on their ground is very beneficial under SRDP and are actively seeking advice. Over a dozen successful applications were made on the islands of Mull and Lismore, where farming is very marginal and the income from the scheme is often crucial to economic survival.

Highlights of the year include discovering a number of new Marsh Fritillary colonies, including one on the north coast of Mull and another at Kilchrenan, near Loch Awe where the butterfly has not been recorded for over 30 years.

A new woodland grazing option within the SRDP, that has great potential to maintain/enhance the habitat for the two woodland glade/edge butterflies Pearl-bordered Fritillary & Chequered Skipper, was launched by the Scottish Government during 2010. During the year we have been involved with 21 sites for either or both of these butterflies. Fifteen of these sites were visited, three resulting in applications, all of which were successful. It is hoped that most of the remaining sites will be developed into successful SRDP applications next year.

Work on Slender Scotch Burnet is outlined in section 3.1.

This work has only been possible through funding from Butterfly Conservation, Scottish Natural Heritage, Forestry Commission Scotland and several charitable trusts to allow Butterfly Conservation Scotland to employ a project officer to undertake this vital work. We would also like to thank Scottish Agricultural College and Agrimony for their crucial contributions, and to the individual farmers/owners for their co-operation and enthusiasm.

Contributed by Dr Tom Prescott, *Species Conservation Officer*, Butterfly Conservation Scotland  
[tprescott@butterfly-conservation.org](mailto:tprescott@butterfly-conservation.org)

#### 4.1.2 Central Belt Lowland Peat Project

Much of our past work has been in the north and west of Scotland, where vast tracts of excellent wildlife habitat still exist and where we are trying to ensure that good colonies of UK rarities and declining species remain. In complete contrast, the Central Belt of Scotland is not renowned for its butterflies and moths, but it does possess one of the greatest concentrations of lowland raised mire in the UK.

Pre-eminent of these mires is Flanders Moss, a huge, complex area of mires to the west of Stirling, part of which makes up Flanders Moss NNR. UK Biodiversity Action Plan (BAP) species of note on the reserve include **Large Heath** *Coenonympha tullia* and **Argent & Sable** *Rheumaptera hastata*, along with **Rannoch Brindled Beauty** *Lycia lapponaria* and the micro-moth **Lampronia fuscata**. Other mires in the Central Belt are locally important for **Small Pearl-bordered Fritillary** *Boloria selene*, **Green Hairstreak** *Callophrys rubi* and **Wood Tiger** *Parasemia plantaginis*. However, many of the mires are very under-recorded, and most have suffered damage in the past through peat-

cutting, attempts at drainage, fires, scrub encroachment etc.

To help assess the importance of these peatlands, we have teamed up with Buglife Scotland to host a BTCV *Natural Talent* lowland raised bog apprenticeship. These 12 month placements have the aim of providing the taxonomic skills to help produce a new generation of skilled field naturalists. Thus, Daisy Shepperd started work in the Butterfly Conservation Scotland office in February as the 30<sup>th</sup> apprentice, and she will be paying special attention to the invertebrate fauna of the scrub and adjacent 'lagg' woodland of several bogs, with the intention of identifying important features that will help inform future management.

As part of this focus on Central Belt bogs, Butterfly Conservation Scotland has created its third nature reserve at Wester Moss, a 30 hectare raised bog SSSI near Fallin, Stirling. The site will be jointly managed with the owners, Stirling Council, in conjunction with the local community, under a management agreement. The bog is suffering from the effects of old drains and scrub encroachment, but still supports a good colony of Large Heath butterfly and a good selection of moths including Wood Tiger, **Emperor Moth** *Saturnia pavonia*, **Orange Underwing** *Archiearis parthenias* and **Grass Wave** *Perconia strigillaria*. Monitoring is already in place, and we have already held work parties to remove scrub.

Contributed by Paul Kirkland, *Director, Scotland*, [pkirkland@butterfly-conservation.org](mailto:pkirkland@butterfly-conservation.org).

## 4.2 Butterfly Conservation in Northern Ireland

2010 is the third and final year of our current round of funding from the Northern Ireland Environment Agency. In order to meet targets, Butterfly Conservation has forged strong links with the network of biodiversity officers in post across Northern Ireland, with many of these staff helping to promote initiatives such as the *Big Butterfly Count*, *National Moth Night*, branch events and our various monitoring schemes within their council areas. As a result it has been the best year ever for attendance at branch outings and events, and the *Big Butterfly Count* achieved almost 2000 individual sightings in Northern Ireland, an unprecedented response based on interest in citizen science surveys in previous years.

### Species highlights

In Omagh, County Tyrone, several new sites for the **Green Hairstreak** *Callophrys rubi*, a local Biodiversity Action Plan (BAP) species, have been discovered by local community groups. **Large Heath** *Coenonympha tullia* has recolonised the newly restored bog at the An Creagan centre and a new **Marsh Fritillary** *Euphydryas aurinia* colony has been discovered near Greencastle.

In County Down, the Northern Ireland branch of Butterfly Conservation carried out extensive surveys for the **Wall** *Lasiommata megera* during 2010. Its range is now confirmed from Cranfield Point, the southerly tip of Northern Ireland, along the east coast of County Down to Sheeplands.

In Fermanagh the newly appointed biodiversity officer has worked with Butterfly Conservation and Roads Service to develop a management plan for known **Dingy Skipper** *Erynnis tages* sites along the Enniskillen-Derrygonnelly road.

At the Umbra, an Ulster Wildlife Trust owned nature reserve in County Derry, larvae of the **Small Eggar** *Eriogaster lanestris* has increased in range and abundance after an absence of several years.

The **Bordered Grey** *Selidosema brunnearia* had its best ever year with a substantial colony rediscovered by a 15 year old branch member at Peatlands Park, County Armagh (before 2010 there were only 12 records of this species in the Northern Ireland database, a figure which has now trebled.)

A **Poplar Lutestring** *Tethea or* was also found at Baronscourt Estate, Strabane, the first record of this moth in County Tyrone.

Work on **Argent & Sable** *Rheumaptera hastata* is reported in section 3.1.

## Monitoring

In collaboration with the Irish National Centre for Data and Recording, a new Red List for Irish Butterflies has been published. This new work will help to focus resources in the Republic of Ireland, but also highlight the need to potentially include the **Dark Green Fritillary** *Argynnis aglaja* on the Priority Species list in Northern Ireland.

Transect coverage in Northern Ireland has increased to 17 active transects across the country with 75% of data being submitted in Transect Walker after a training course in the software was held in October. In previous years all but one transect reached Butterfly Conservation in paper form, and this shift has greatly sped up the transfer of data. We also covered 16 of our Wider Countryside Squares with help from a Spanish student placement in August.

Thanks to funding from the Moths Count project, a new MapMate group has been established in Northern Ireland for Moth Recorders. It is hoped this software will help lessen the load of data entry on our Volunteer Moth Recorder, and also help recorders when sharing records and targeting sites in their area for recording.

Contributed by Catherine Bertrand, *Senior Regional Officer, Northern Ireland*, [cbertrand@butterfly-conservation.org](mailto:cbertrand@butterfly-conservation.org).

### 4.2.1 Conserving the Marsh Fritillary in Northern Ireland

Since the discovery of **Marsh Fritillary** *Euphydryas aurinia* occurring at a landscape scale in the west of Northern Ireland in 2007, Butterfly Conservation have been working closely with both the Northern Ireland Environment Agency (NIEA) and the Department for Agriculture and Rural Development (DARD) to increase our knowledge of the butterflies range in this area. Staff from DARD's Countryside Management Branch have been trained to identify the larval foodplant, Devil's-bit Scabious *Succisa pratensis*, while they carry out their standard farm checks and visits. With the farmer's consent, Butterfly Conservation arrange with DARD and the landowners for permission to visit the site to look for evidence of breeding Marsh Fritillary during August and September.

To date we have 23 farms identified as having potential habitat, and of these seven have been found to have Marsh Fritillary breeding on them. It is hoped that all of these farms will be able to enter the new Northern Ireland Countryside Management Scheme when it reopens to ensure positive management for this butterfly.

Six of the eight historical sites for Marsh Fritillary in the east of Northern Ireland were also monitored. The butterfly appears stable or increasing on four of these sites and has recolonised Montiaghs Moss, County Antrim, where it was thought to be extinct. There is evidence of heavy parasitism at Aughnadarragh Lough, County Down, with counts down from ~200 webs in 2009 to just 10 this year. The butterfly was also rediscovered at the National Trust property Divis Mountain, Belfast, by AllenMellon Environmental after an absence of over 15 years. However, extensive searching only discovered 2 webs, one of which was almost immediately parasitised.

Finally, a new information leaflet on the Marsh Fritillary was developed in collaboration with DARD and NIEA. This was launched by Michelle Gildernew, Minister for Agriculture and Rural Development, at the Fermanagh County Show in August 2010 and can be downloaded from [www.butterfly-conservation.org/northernireland](http://www.butterfly-conservation.org/northernireland).

Contributed by Catherine Bertrand, *Senior Regional Officer, Northern Ireland*, [cbertrand@butterfly-conservation.org](mailto:cbertrand@butterfly-conservation.org).

### 4.3 Butterfly Conservation in Wales

Farmer and contract manager guidance has been written for the species in the targeted element of the new Wales Agri-environment scheme, Glastir. The all Wales element was opened for applications and perceived problems lead to an independent review panel examining the issues. Butterfly Conservation Wales staff were heavily involved in feeding our ideas in to the review.

There were further discoveries of **Welsh Clearwing** *Synanthedon scoliaeformis* in Mid Wales. Extensive work by volunteers and Welsh Water staff has increased the known range of the species and its population density. A Mid Wales Action Group met to determine survey priorities for the year ahead, standardise information gathered and plan some trial management. Two funding applications were submitted to undertake outreach work with landowners in North Wales.

Searches were also undertaken for **Argent & Sable** *Rheumaptera hastata* at the location of its last known record in Mid Wales. While these searches were unsuccessful, at the same time a colony (up to six adults counted) was discovered in a failed conifer plantation in Merionethshire. The plantation is adjacent to an extensive area of Bog Myrtle *Myrica gale*. Larval searches are planned in 2011.

The **Silurian** *Eriopygodes imbecilla* was the focus of a research project. Larval counts were undertaken from the two known breeding sites. These were followed by day visits to characterise the vegetation. The initial vegetation analysis does not help to determine if a particular niche is used by the moths. Other potential breeding habitat that is reasonably accessible on the moorland plateau was identified for larval searches in 2011.

Russel Hobson, *Head of Conservation Wales* [rhobson.bcw@btconnect.com](mailto:rhobson.bcw@btconnect.com) and Clare Williams, *Conservation Officer* [cwilliams.bcw@btconnect.com](mailto:cwilliams.bcw@btconnect.com).

#### 4.3.1 Marsh Fritillary in Wales

Work is continuing on a standardised approach to **Marsh Fritillary** *Euphydryas aurinia* surveillance in Wales. Visits have now been made to those sites considered to hold core Welsh populations and site-specific monitoring protocols have been agreed with the surveyors/site managers. Work is also continuing on collating and standardising historic monitoring data for these sites to allow the production of site trends. This will feed into developing a clearer picture of the butterfly's Welsh population trends which in turn will inform future conservation measures for the Marsh Fritillary in Wales.

Elsewhere Marsh Fritillary was recorded from new sites in the *Mynydd Mawr* project area after good weather in the flight period in South Wales. Projects are also being developed in the South Wales Valleys on the back of commuted sums in compensation for developments. Two meetings were also held to resolve issues regarding excessive burning on some of the Gower Commons. The first larval count for many years at RAF Pembrey, Carmarthenshire, was undertaken but only two larval webs were found. The improved grazing of the core breeding area is improving the habitat and Devils-bit Scabious *Succisa pratensis* appears to be spreading.

Russel Hobson, *Head of Conservation Wales* [rhobson.bcw@btconnect.com](mailto:rhobson.bcw@btconnect.com) and Clare Williams, *Conservation Officer* [cwilliams.bcw@btconnect.com](mailto:cwilliams.bcw@btconnect.com).

#### 4.3.2 High Brown Brackenlands

The Old Castle Down and Alun Valley transects showed a 25% increase in adult **High Brown Fritillary** *Argynnis adippe* numbers on 2009 figures. Also up to 30 larvae were found in an area of *Molinia*, adjacent to a patch that had been cleared of scrub the previous winter.

The vegetation has been monitored every four years since 2002. The 2010 results are yet to be fully analysed but show stable abundance of violets *Viola* spp., an increase in bracken/leaf litter and a sustained 50% reduction in sward height. The negative indicators—grass, bramble and bluebell cover - have all shown a continued, albeit small drop in abundance. Along with sustained numbers of adults

this information demonstrates that the management is having a positive affect. It is also benefiting other species with huge increase in numbers of Early Purple Orchid *Orchis mascula* and twayblade *Listera* sp., a first record of Hornet Robberfly *Asilus crabroniformis*, good numbers of Dotted Bee-fly *Bombylius discolor* as well as increases in **Silver-washed Fritillary** *Argynnis paphia* and **Small Pearl-bordered Fritillary** *Boloria selene*.

The winter work parties have continued but the project is entering a period of uncertainty as the previous owner of part of the valley sadly passed away. We are currently negotiating future access arrangements with the Estate and hope to secure a formal lease in the coming year.

The Species Challenge Fund grant for the wider landscape work also came to an end in March 2010. Some of the sites will continue to be managed by volunteer work parties. Also a new area North West of Alun Valley will be restored thanks to a Biffaward Flagship grant being administered on behalf of commoners by PONT, the Wales Grazing Animal Scheme. We will be advising the commoners on the restoration work and monitoring its success.

Russel Hobson, *Head of Conservation Wales*, [rhobson.bcw@btconnect.com](mailto:rhobson.bcw@btconnect.com).

### 4.3.3 Conserving Lepidoptera on Forestry Commission Land in Wales

Butterfly Conservation Wales (BCW) is continuing to work closely with Forestry Commission Wales (FCW) to incorporate features of key importance to Lepidoptera into our Welsh woodlands. Survey, monitoring and management work is being targeted at sites which hold our most threatened woodland Lepidoptera and regionally important populations of particular species.

At Pembrey Forest on the south Carmarthenshire coast, BCW and FCW have joined forces with the British Trust for Conservation Volunteers (BTCV) to deliver targeted management and equip volunteers with key skills. Key works include: re-instating management on an exemplar 'Butterfly Ride' to create a sunny, wide, scalloped, well-connected ride, with varied 'three-zone structure' and rotational cutting; selective scrub clearance from remnant sand dunes supporting nationally important populations of **Small Blue** *Cupido minimus* and **Grizzled Skipper** *Pyrgus malvae*; and annual monitoring to assess effectiveness of management.

Slade Wood, near Rogiet in Gwent, is one of the most important sites for butterflies and moths in South East Wales. Magor Explorer Scouts are helping clear scrub from an old quarry, a valuable area for **Dingy Skipper** *Erynnis tages* and Grizzled Skipper. Work to open up larger areas has been incorporated into the management programme, so when conifers are felled, opportunities are taken to extend the cutting to create beneficial habitat for Lepidoptera.

At Harlech Forest on the west coast of Merionethshire, rotational trackside management and conifer removal is connecting suitable habitat to help the Dingy Skipper and its foodplant to spread through the forest.

Hendre Woods just north of Monmouth, is the Welsh stronghold of the **Drab Looper** *Minoa murinata*. FCW and BCW are working with local contractors and volunteers to help maintain the suitability of a small core area in the woods whilst a longer term plan to create a coppice coupe system and ride corridor management is progressed. A masters project in 2011 will hopefully provide further insight into the habitat requirements of the moth and inform subsequent management.

The **Small Pearl-bordered Fritillary** *Boloria selene* has been studied for nine years in the 5,500ha upland spruce plantation of Clocaenog Forest (Denbighshire), to understand how it responds to management at a landscape scale. The butterfly occurs at over 50 discrete riparian sites or recent clear-fell areas. Our research has shown that these sites are linked by occasional movements and we are working with FCW to maintain site quality, to keep the sites connected and to undertake the management at an appropriate scale to keep this dynamic forest system functioning. Over 3.5km of riparian habitat was managed for the species in 2010 with further extensive works planned for 2011.

A draft newsletter has been produced to highlight the work undertaken by BCW and FCW for Lepidoptera on FCW managed land. The aim of the newsletter is to promote the good work being

undertaken to a wider FCW audience and to raise awareness amongst FCW staff, particularly site managers, of beneficial management for Lepidoptera and where further advice can be obtained from. The newsletter is due out in Spring 2011.

Contributed by Clare Williams, *Conservation Officer*, [cwilliams.bcw@btconnect.com](mailto:cwilliams.bcw@btconnect.com).

#### 4.4 Butterfly Conservation in the West Midlands

Butterfly Conservation currently employs three staff in the region headed by Dr. Jenny Joy, Senior Regional Officer. Both Nick Williams and Mike Slater are part-time Midlands Fritillaries Project Officers. Mike Slater is also the part-time Warwickshire Small Blue Project Officer. Although the Senior Regional Officer continues to represent BC across the region, in 2009 work became increasingly focussed on the *Midlands Fritillaries Project* which targets eight key West Midlands landscapes plus the Forest of Dean in South West England (see below).

Thanks to further Forestry Commission England (FCE) funding, the regional officer has again been active (together with support from the local Butterfly Conservation branches) developing collaborative landscape projects to help deliver the joint *Lepidoptera on Forestry Commission Land in England Conservation Strategy 2007-2017*. A project to conserve the **Wood White** *Leptidea sinapis* in six FCE woodlands in South Shropshire commenced in April 2010 as part of the *Midlands Fritillary Project* (see section 4.4.1). An application by FCE for a project involving research, survey and management work at Oversley Wood focussed on Aspen *Populus tremula* feeding invertebrates, including two UK Biodiversity Action Plan (BAP) micro-moths, was supported. This project application was successful and commenced in December 2010 with funding from SITA Trust and support from the Butterfly Conservation Warwickshire Branch. A project to assess whether there is the potential for more of a landscape approach to the conservation of **Small Pearl-bordered Fritillary** *Boloria selene* at Cannock Chase also gained momentum in 2010 with some key work being progressed and the involvement of the two key organisations (FCE and Staffordshire County Council). Finally, in the latter part of the year a landscape-scale project for the Wyre Forest area was submitted for funding. This proposed project, *Re-connecting the Wyre*, would implement a major programme of coppice restoration and ride management and build on work successfully piloted in parts of the Wyre Forest through the *Back to Orange project* (which ran from 2007-2010). However, *Re-connecting the Wyre* is far more ambitious in scope and will focus on restoring coppice to establish a long-term economically sustainable coppice management system.

Elsewhere, Butterfly Conservation enabled implementation of the Lepidoptera Conservation Strategy on three other FCE sites in 2010 (Shelve Forestry, Shrawley Wood and Sywnnerton) and continued to support FCE's SITA Trust funded *Herefordshire Wood White Project* which has been hugely successful (see Wood White account in section 3.2).

The regional office continues to support the work of the Local BAP (LBAP) Partnerships in the Region as well as sitting on the External Funding Group of the West Midlands Biodiversity Partnership. In 2010 other particular areas of involvement have included continued brownfield work in the Telford & Wrekin area of Shropshire (focussed on the management of **Dingy Skipper** *Erynnis tages* sites), contributions to the developing Landscape Partnership proposal for the Stiperstones and Corndon Hill Country (through the Shropshire Hills Area of Outstanding Natural Beauty), discussion with the National Trust regarding its proposals for quarries in the Wenlock Edge area of Shropshire and input into the Regional Forestry Framework.

The office has also supported the local branch's involvement in a landscape level project in the Forest of Feckenham area of Worcestershire. As part of this ongoing work, Butterfly Conservation West Midlands Branch has developed a *Hedgerows for Hairstreaks* project which was submitted to the Prince's Countryside Fund for funding. The aims of this project are to work with farmers to improve hedgerow management for the **Brown Hairstreak** *Thecla betulae* butterfly, to identify new sources of farm income, and to demonstrate wider community benefit. Although this initial project application was unsuccessful, Butterfly Conservation is committed to continued working with the

branch to identify alternative sources of funding. Worcestershire Wildlife Trust has recently submitted a Heritage Lottery Fund application covering part of the area (the Bow Brook catchment) which has been supported by Butterfly Conservation and, if successful, will further our conservation work within the area.

Contributed by Dr. Jenny Joy, *Senior Regional Officer*, [jjoy@butterfly-conservation.org](mailto:jjoy@butterfly-conservation.org).

#### 4.4.1 Midlands Fritillaries Project

This project is now well into its second year. During summer 2010 the main priority was the start of the South Shropshire Woods project (see section 4.4.3) as well as continuation of the Princethorpe Woods project (see section 4.4.2). Elsewhere, efforts were largely focussed on the Wyre Forest, Forest of Dean, Cannock Chase, Herefordshire Commons and Shropshire Rush Pasture landscapes with a different work emphasis in each area. Most of the goals identified for this project have already been exceeded, e.g. in terms of the number of volunteer training workshops (goal was eight, nine already achieved), number of fritillary surveys (goal 67, 81 achieved), fritillary monitoring counts (goal 47, 87 achieved), volunteer work parties (goal four, 13 achieved), local partnership group meetings (goal six, 10 achieved), habitat management workshops (goal four, five achieved), and number of local volunteers involved in survey and monitoring (goal 40, 70 achieved) despite the project still having another year to run. The amount achieved by the volunteer work parties in various project areas (e.g. Forest of Dean, Princethorpe Woods and the Wyre Forest) has been particularly rewarding as has been the continued level of partnership support and the success of efforts to get more key sites into Higher Level Stewardship (HLS) and woodland grant schemes. One other significant output for 2010 was the collation, printing and distribution of a national sites dossier for the **Wood White** *Leptidea sinapis* butterfly (see section 3.2) which provided a snapshot of the current status and distribution of this butterfly. It has already raised awareness of the huge decline in the distribution of this species and will hopefully lead to further funding for work on this butterfly.

Contributed by Dr. Jenny Joy, *Senior Regional Officer*, [jjoy@butterfly-conservation.org](mailto:jjoy@butterfly-conservation.org).

#### 4.4.2 Princethorpe Woods Habitat Restoration Project

All planned work was completed on schedule by March 2010. Additional coppice plots were cut at Wappenbury Wood (2ha), Coombe Abbey (0.5ha), Brandon Wood (0.5ha) and Ryton Wood (0.5ha). Three additional butterfly banks and 10 ride side scallops were also completed at Ryton Wood. Post funding the *Princethorpe Woods Project* has continued to deliver, but at a reduced scale, thanks to volunteer efforts and accessing smaller pots of available funding. Five coppice plots (5 ha) and 22 (4.4 ha) ride side coppice plots have been completed. Monitoring by butterfly transects is now established at six sites. In 2010 **Silver-washed Fritillary** *Argynnis paphia* colonised Bubbenhall Wood and Shrubs Wood and was recorded for the first time at Old Nunn Wood. The highest ever numbers of Silver-washed Fritillary were recorded at Ryton Wood in 2010. For the first time the **Wood White** *Leptidea sinapis* was recorded from Wappenbury Wood and Shrubs Wood set-aside. The **Grizzled Skipper** *Pyrgus malvae* re-colonised Pagets Pool after an absence of 13 years.

Contributed by Mike Slater *Princethorpe Woods Project Officer*, [m Slater@butterfly-conservation.org](mailto:m Slater@butterfly-conservation.org).

#### 4.4.3 Conserving the Wood White Butterfly in the South Shropshire Woods Project

Initial habitat assessment work was undertaken in four of the six target woodlands over the summer months. This work mapped the presence, absence and abundance of **Wood White** *Leptidea sinapis* larval and nectar foodplants throughout the main rides and access tracks in all four woods. Monitoring of adult butterflies was undertaken by means of butterfly transects established in three of the woods plus supplementary visits. Volunteers have been recruited and trained to assist with monitoring and the project has been well publicised via the local media. Data gathered has enabled a plan of agreed habitat management work to be produced in co-operation with Forestry Commission England. This plan will involve ride widening, scalloping, thinning, conifer removal and glade creation aimed at reducing levels of shading within the woods, improving connectivity both within and between



woods and encouraging the Wood White to colonise new habitat. Experimental ground disturbance is planned in six identified areas within one of the woodlands to investigate whether this will encourage the spread of Wood White foodplants. Contractors have been identified and recruited to carry out the required work planned to start in January 2011. Monitoring will continue throughout 2011 together with habitat assessments in the remaining woods with a view to establishing future priorities for management.

Contributed by Mike Williams, *South Shropshire Woods Contractor*.

#### 4.4.4 Bringing Back the Small Blue Project

Practical management work (15 sites) and monitoring increased in intensity this year. The most notable success of the project is that the number of extant **Small Blue** *Cupido minimus* colonies has doubled to six. Adults and ova were seen at Southam Bypass North and Bishops Bowl Tisha and ova were located at Stockton Cutting. **Dingy Skipper** *Erynnis tages* colonised two new sites Nelson's Quarry and Southam Bypass North following seeding of cleared areas with Common Bird's-foot-trefoil *Lotus corniculatus*. One of the extant sites Bishops Bowl, has now been entered into the project due to a change of owner. Volunteer work parties on the site have already cleared scrub and planted new areas with Kidney Vetch *Anthyllis vulneraria*. Following discussion with Natural England this is now a priority site for entry into Higher Level Stewardship in 2011. Regular moth monitoring has been established at Bishops Hill Yellow Land and new butterfly transects were established or restarted with new volunteers at Harbury Spoilbank North, Harbury Spoilbank South, Ufton Fields and Stockton Cutting. Timed counts have additionally been established at all six extant Small Blue sites to be carried out on the same day to compare population sizes.

Contributed by Mike Slater, *Warwickshire Small Blue Project Officer*,  
[m Slater@butterfly-conservation.org](mailto:m Slater@butterfly-conservation.org).

#### 4.5 Butterfly Conservation in Northern England

Butterfly Conservation currently employs two staff in the region headed by Dr. Dave Wainwright, Regional Officer. Martin Wain is part-time Morecambe Bay Limestones Project Officer. Although the Regional Officer continues to represent Butterfly Conservation across the region, in 2010 work became increasingly focussed on the *Morecambe Bay Limestones* and the *North York Moors Dukes and Pearls* projects.

Butterfly Conservation currently co-ordinates the High Brown Fritillary Action Group encompassing sites in south Cumbria and north Lancashire, the North York Moors Butterfly and Moth Action Group and the Durham Small Pearl-bordered Fritillary Action Group as well as attending meetings of the Cumbria Marsh Fritillary Action Group.

In County Durham, the regional officer continues to provide advice to owners of sites that support populations of the **Small Pearl-bordered Fritillary** *Boloria selene* in the Durham Coalfield Pennine Fringe and to organisations involved in their management. Butterfly Conservation initiated management of these sites in 2002. Monitoring is now largely undertaken by staff from other organisations and volunteers. Two of the remaining seven colonies are monitored by transect; 2010 saw the highest counts since transect monitoring commenced in 2003. Evidence suggests that control of grazing pressure on streamside damp grassland/wet flush habitats is the key to the conservation of this species in County Durham. Further fencing was installed in 2010 at sites identified as potentially capable of supporting the species. Attempts to create habitat through planting violet *Viola* spp. plug plants also appear to be successful with 41 adults recorded from a small restored field where none were seen in 2003. In summary the habitat resource for this species in County Durham has been tripled by management since 2002 and by five-fold when previously unrecorded habitat is included. Butterfly Conservation is currently advising Durham Wildlife Trust on best practice for establishing populations at further sites.

In Cumbria the **Marsh Fritillary** *Euphydryas aurinia* re-introduction programme continues, with releases undertaken on two further sites making six in total. Populations on three of the four original

sites continue to thrive while research into the impact of pheasants on larvae at the fourth, which is faring less well, has been initiated. Work to improve habitat condition on these and other sites continues as does the captive breeding programme, with a view to further re-introductions to develop sustainable population networks.

The regional officer also advises on the **Netted Carpet** *Eustroma reticulata* in Cumbria and the **Dark Bordered Beauty** *Epione vespertaria* in North Yorkshire, as well as co-ordinating the collation of butterfly transect data from the Morecambe Bay area. Additionally, the regional office deals annually with a number of planning issues especially on the Cumbrian coast (**Small Blue** *Cupido minimus*, **Dingy Skipper** *Erynnis tages*, **Grayling** *Hipparchia semele*) and in County Durham and Tees Valley (Dingy Skipper, Grayling).

Contributed by Dr. Dave Wainwright, *Regional Officer*, [dwainwright@butterfly-conservation.org](mailto:dwainwright@butterfly-conservation.org).

#### 4.5.1 Conserving the High Brown Fritillary on the Morecambe Bay Limestones Project

Management has been undertaken on 20 sites on the Morecambe Bay Limestones, a large proportion by contractors, but volunteer contributions have also been significant. To date almost 150 volunteers have spent over 350 days engaged in practical site management as well undertaking ongoing site surveys and butterfly monitoring. Tasks have included coppicing, scrub clearance and burning of cut material. Training workshops have been held; subjects covered include management of grasslands for butterflies, butterfly identification and use of computer software for monitoring, as well as on-site practical training. A very successful partnership with the Forestry Commission England (FCE) has been developed, who are now targeting key sites with funding through their Woodland Improvement Grants programme (WIGs). In conjunction with FCE, we have developed management plans for a number of sites in the original project list and as a result the extent of management has been far greater than initially envisaged. Work at some sites, which was initially scheduled to be funded through the project, is now being funded through FCE grants, which has provided an opportunity for additional sites to be included in the project.

Contributed by Dr. Dave Wainwright, *Regional Officer*, [dwainwright@butterfly-conservation.org](mailto:dwainwright@butterfly-conservation.org) and Martin Wain, *Morecambe Bay Limestones Project Officer*, [mwain@butterfly-conservation.org](mailto:mwain@butterfly-conservation.org).

#### 4.5.2 Conserving North York Moors Limestone Grassland for Dukes and Pearls Project

The lowland calcareous grasslands located along the southern edge of the North York Moors represent one of the most important areas for Lepidoptera in northern England, supporting nationally important populations of the **Duke of Burgundy** *Hamearis lucina* and **Pearl-bordered Fritillary** *Boloria euphrosyne*. The new *Conserving North York Moors Limestone Grassland for Dukes and Pearls Project* will implement a programme of landscape-scale limestone grassland habitat restoration on 32 sites, identified through the *Fit for a Duke* feasibility study undertaken in 2008-09. Proposed management includes scrub control, vegetation cutting, bracken and bramble management, coppicing, ride widening, *Primula* planting and violet *Viola* sp. seeding. A re/introduction programme for both target species is planned on some restored sites where natural colonisation in the short to medium term is unlikely. The project is principally funded by WREN.

Monitoring extant and some former Duke of Burgundy and Pearl-bordered Fritillary sites continued in 2010. Several potential sites were also surveyed in preparation for the commencement of the new *Dukes and Pearls* project in October 2010. Management of three sites by coppicing, ride and grassland management has already commenced, with a further seven sites to be managed this winter. Four volunteer work parties have been organised to assist with site management. A transect workshop was recently held in Pickering, leading to the establishment of a monitoring group based in the North York Moors sites; attendees were taught how to use relevant computer software. A further workshop will take place in early April 2011 in order to facilitate monitoring of a wider suite of sites.

Contributed by Dr. Dave Wainwright, *Regional Officer*, [dwainwright@butterfly-conservation.org](mailto:dwainwright@butterfly-conservation.org) and Dr. Sam Ellis, *Head of Regions*, [sellis@butterfly-conservation.org](mailto:sellis@butterfly-conservation.org).

## 4.6 Butterfly Conservation in South East England

Butterfly Conservation's work in the region is supported by Dr. Dan Hoare, Senior Regional Officer, who manages the *South East Woodlands Project* and represents Butterfly Conservation across the region. 2010 saw a good flight season for many of our threatened butterflies and moths, but this is not solely the result of favourable weather. Suitable weather conditions allow species to take advantage of available breeding habitat, and in 2010 we saw several years' of targeted habitat creation pay off, with species occupying many new patches for the first time.

The *South East Woodlands Project* has been a major focus of our work, funding co-ordinated surveys and management advice for some of the region's most threatened species. For **Pearl-bordered Fritillary** *Boloria euphrosyne* we aim to survey every colony in the south-east each year, as well as giving specific management advice. Fortunately this task has become a little larger in recent years following two re-introductions, in East Sussex and Kent, in collaboration with Forestry Commission England and RSPB. A third re-introduction took place in Sussex in 2010 in a privately-owned woodland where a revived coppicing programme should provide new breeding habitat on a regular basis. Carefully planned re-introductions can be a valuable part of a conservation programme but it is vital that they are closely monitored so that we can learn which techniques succeed and make the most of limited resources. **Small Pearl-bordered Fritillary** *Boloria selene* received a boost with Butterfly Conservation's acquisition of a new reserve at Rowlands Wood in East Sussex. Directly adjoining our existing Park Corner Heath reserve, but nearly ten times its area, management is already taking place to open up rides and clearings for Small Pearl-bordered Fritillary, **Anania funebris** moth and other scarce wildlife.

An ongoing programme of habitat creation by Forest Commission England at Chiddingfold Forest in Surrey is proving very successful for **Wood White** *Leptidea sinapis*, which was seen in good numbers in both spring and summer broods here. Scallop-shaped open habitat at the ride edge are created each year, with advice from Butterfly Conservation, and nine of 13 scallops surveyed in 2010 held suitable breeding habitat for Wood White, with eggs found in seven of these. Overall the scallop programme is an effective way of providing diverse habitats for a range of species: 84% of scallops held breeding habitat for at least one of the target species, which include **Dingy Skipper** *Erynnis tages* and **Drab Looper** *Minois murinata*. Wood Whites had a good year overall in their Surrey/Sussex stronghold, expanding into new habitat and colonising new sites, but the apparent loss of a colony in Oxfordshire shows that there is much still to do to secure the future of this species.

The **Duke of Burgundy** *Hamearis lucina* is the target of increasing conservation effort across the region. Habitat management at key sites and intensive monitoring in Kent and West Sussex have shown that it can be brought back from the brink even where numbers are low. At one West Sussex colony, following the removal of sheep grazing and careful scrub management, Duke of Burgundy numbers have risen from three in 2007 to 51 in 2010. With a total of more than 250 Duke of Burgundy counted in co-ordinated surveys at DSTL Porton Down (Defence Science and Technology Laboratory) in 2010, and good numbers elsewhere in Hampshire, West Sussex and Kent, the region holds a high proportion of the national population. Concern is mounting for the species in the Chilterns though, with positive records from only a handful of sites. We are now developing a major project to target Duke of Burgundy populations across the region, aiming to improve both woodland and grassland habitats in several landscapes.

Contributed by Dr. Dan Hoare, *Senior Regional Officer*, [dhoare@butterfly-conservation.org](mailto:dhoare@butterfly-conservation.org).

### 4.6.1 South East Woodlands Project

The *South East Woodlands Project* draws to a close in April 2011 with the publication of a series of national resources promoting best practice woodland management for butterflies and moths. Launched in 2007, the project aimed to tackle the decline of threatened butterflies and moths and promote them as indicators of sustainably managed woodlands rich in biodiversity. As well as encouraging management for wildlife across the south-east, the project had a particular focus on three extensive demonstration areas where mechanisms for co-ordinating management at a landscape scale could be tested: the Denge Woods (Kent), the Rother Woods (East Sussex), and the Tytherley Woods (Hampshire/Wiltshire). A combination of training, information and grant support

helped landowners, volunteers and local communities improve the condition of their woodlands for wildlife. With three full-time staff for most of the project, the final stages of work in 2010 have been delivered by Project Officers Caroline Kelly and Laura McLellan, concentrating on assessing the impact of the project and sharing our findings with policy makers.

The project, supported by funders including the Heritage Lottery Fund, the Tubney Charitable Trust and Forestry Commission England, has exceeded its targets for site advisory work and public involvement, but the real challenge is to ensure that progress is maintained once the project funding ends. An overwhelming response from both land managers and volunteers demonstrated that there is a real need for advice and support in helping people manage woodlands effectively for wildlife. We provided detailed advice to 215 sites across the region, held 200 events (from guided walks to technical workshops on woodfuel) attended by more than 4000 people, and volunteers contributed well over 1000 hours in surveys, practical work parties and other tasks.

The project included writing long-term management plans and putting in place grants totalling more than £300,000 from the Forestry Commission's English Woodland Grants Scheme to support ongoing management for years to come. More than £115,000 of targeted management was funded by SITA Trust and Biffaward. 2010 saw our target species starting to respond to this new management. In the Tytherley Woods, every new habitat patch on widened rides or hazel coppice was occupied in 2010 by **Pearl-bordered Fritillary** *Boloria euphrosyne*, **Small Pearl-bordered Fritillary** *Boloria selene* or **Argent & Sable** *Rheumaptera hastata*. Pearl-bordered Fritillary also recolonised a wood at least 2.5km from existing colonies following ride improvements under a Forestry Commission grant. In Kent, where only two small colonies of **Duke of Burgundy** were known in 2007, a combination of new habitat and increased survey effort produced colonies at nine sites in 2010, many of which are now in Higher Level Stewardship.

Volunteers, supported by the Regional Officer, will continue to monitor how butterflies and moths respond to the work we've put in place, pass on further management advice and work with partner organisations to maintain management activity.

Contributed by Dr. Dan Hoare, *Senior Regional Officer*, [dhoare@butterfly-conservation.org](mailto:dhoare@butterfly-conservation.org).

#### 4.7 Butterfly Conservation in Eastern England

Butterfly Conservation currently employs Sharon Hearle as East of England Regional Officer. Although the Regional Officer continues to represent Butterfly Conservation across the region, in 2010 work became almost entirely focussed on the *Norfolk Brecks Heathland Restoration for Threatened Butterflies and Moths* and the *Managing Elms for the White-spotted Pinion in the Cambridgeshire Fens* projects. Between January and June 2010 the post became part-time (3 days per week) due to funding constraints.

At the Devil's Dyke near Newmarket in Suffolk the butterfly transect continued in 2010 for its eighth year with a high count of 28 **Dingy Skipper** *Erynnis tages* and 1126 **Chalkhill Blue** *Polyommatus coridon*. Natural England is now using these data as Site of Special Scientific Interest (SSSI) habitat condition indicators on Therfield Heath and Devils Dyke.

A presentation on **Four-spotted** *Tyta luctuosa* and its habitat requirements was given to over 60 farmers in groups of 20 at a FWAG event in Essex on 28<sup>th</sup> June 2010. Further meetings were held with Natural England staff to explore potential with Environmental Stewardship options for improving habitat in Essex and Cambridgeshire.

The Regional Conservation Day was held on 13<sup>th</sup> February 2010 and attended by 14 volunteers from all 5 branches in the Eastern Region. The event included a field trip to Over Railway Line to look at the recently created mitigation area for **Grizzled Skipper** *Pyrgus malvae*.

The Grizzled Skipper site dossier covering 57 sites surveyed between 2005 and 2010 was completed for the Eastern Region. It is feared that 11 sites in the dossier are already extinct and the butterfly was only recorded in double figures at 11 sites.

The **Grey Carpet** *Lithostege griseata* project report has also been completed and distributed, listing results at each plot site. Although created with Grey Carpet in mind, some sites now provide good habitat for **Forester** *Adscita statures* and **Lunar Yellow Underwing** *Noctua orbona* moths.

Contributed by Sharon Hearle, *Regional Officer*, [shearle@butterfly-conservation.org](mailto:shearle@butterfly-conservation.org).

#### 4.7.1 Norfolk Brecks Heathland Restoration for Threatened Butterflies and Moths Project

The successful *Conserving the Grey Carpet in the Brecks* project demonstrated the effectiveness of ground disturbance in increasing populations of larval hostplants, nectar plants and the target moth species on a series of Suffolk Brecks sites. This new project focuses on restoring heathland habitat on 15 Norfolk Brecks sites to benefit a wide suite of threatened moths, as well as some butterflies. The principal objective of practical management will also be ground disturbance (vegetation mowing, scarification, rotovation) but on some sites scrub and bracken management will be undertaken. Over half the sites are Forestry Commission England (FCE) woodlands where rides will be targeted to increase the area of heathland but also improve connectivity. This £220k project is principally funded by WREN.

Targeted survey work on **Dingy Skipper** *Erynnis tages* and **Grizzled Skipper** *Pyrgus malvae* was carried out by staff and volunteers across the Brecks area of Norfolk and Grizzled Skipper was confirmed at four sites and Dingy Skipper at six sites. This information has been used to target conservation work and to provide feedback and management advice for landowners. FCE is a key landowner in the Brecks and ride management is critical to long term survival of colonies. The next stage will be to implement practical conservation working with volunteers and contractors to improve and extend habitat for Grizzled and Dingy Skipper and enable the butterflies to re-colonise forest rides.

The Brecks is a huge landscape with individual sites that cover many hectares so lots of volunteer help is needed to cover the ground. Twelve survey training events were organised during 2010 to increase volunteer numbers and ensure sustainability in the long term. The project has organised four tasks with Thetford Green Gym volunteers and organised walks for Walking for Health groups to increase awareness and encourage more recording.

The bare ground plots created in the Brecks early in 2010 were alive with butterflies and moths in the summer due to the abundance of flowers and nectar attracting key breckland species including **Marbled Clover** *Heliopsis viriplaca*, **Forester** *Adscita statures* and **Grey Carpet** *Lithostege griseata*. One 150m long plot along the forest ride in Cranwich was covered in Viper's-bugloss *Echium vulgare* a typical wildflower in the Brecks, but usually restricted to small areas of disturbance by rabbits or moles. Underneath the canopy of Viper's Bugloss other plants included Common Bird's-foot-trefoil *Lotus corniculatus* and Basil Thyme *Clinopodium acinos* - foodplant for **Basil Thyme Case-bearer** *Coleophora tricolor* moth. Other bare ground plots at Barnham Cross Common have featured other scarce Breckland plants such as Tower Mustard *Arabis glabra* and Breckland Pansy *Viola tricolor* spp. *curtissii*. New sites have been confirmed for Forester, **Tawny Wave** *Scopula rubiginata* and Grey Carpet moths.

In the winter further bare ground plots were created along verges in Cranwich and included large rotovated plots up to 0.5ha in size at Brettenham Heath. **Lunar Yellow Underwing** *Noctua orbona* larvae have already been confirmed on smaller bare ground plots created as part of the Grey Carpet project and these large plots should create significant habitat for this species.

Contributed by Sharon Hearle, *Regional Officer*, [shearle@butterfly-conservation.org](mailto:shearle@butterfly-conservation.org) and Dr. Sam Ellis, *Head of Regions*, [sellis@butterfly-conservation.org](mailto:sellis@butterfly-conservation.org).

#### 4.7.2 Managing elms for the White-spotted Pinion in the Cambridgeshire Fens

The Cambridgeshire Fens are the national stronghold for the **White-spotted Pinion** *Cosmia diffinis*, one of the UK's rarest and fastest declining moths. It breeds on elms *Ulmus* spp. and its decline is probably linked to Dutch Elm Disease. This project aims to halt and reverse that decline through a

programme of habitat management on 29 locations around Huntingdon, at the centre of the moth's UK distribution. Volunteers will play an important role in the project, assisting with survey and monitoring, but also establishing new plantings, undertaking maintenance and replacing losses. This £55k project is principally funded by SITA Trust.

This project started in June 2010 and will continue for two days a week over the next two years. Initial work concentrated on survey and monitoring visits and training events for volunteers. There is evidence of Dutch Elm Disease across Cambridgeshire and Huntingdonshire but many old stands of trees remain unaffected.

Survey visits were undertaken to assess the quality of elm habitat within known and potential sites for White-spotted Pinion. Several very large veteran elm trees have been found with a circumference of over 4.25 metres in some cases. Over 38 volunteers were involved in survey and monitoring work for the adult moth in July and August 2010 and its known range has been extended with 12 new sites confirmed by targeting light traps at stands of mature elm. The results included one new site for the moth where only two mature elm trees remain and another site where 25 adults were recorded in a single actinic light trap.

The project will continue to work with local volunteers and landowners to map suitable elm, undertake elm tree planting using local stock, survey for White-spotted Pinion and investigate other UK Biodiversity Action Plan Priority Species in the area. Most of the work will take place along public byways and sites where elm is vulnerable rather than in existing large woodlands.

Tree planting began in October using two different methods; the first involves moving elm sucker growth from stands of surviving mature elm trees that have not succumbed to Dutch Elm Disease. The second method has involved planting trees micro-propagated by The Conservation Foundation at various tree nurseries from East Anglian tree stock.

Contributed by Sharon Hearle, *Regional Officer*, [shearle@butterfly-conservation.org](mailto:shearle@butterfly-conservation.org) and Dr. Sam Ellis, *Head of Regions*, [sellis@butterfly-conservation.org](mailto:sellis@butterfly-conservation.org).

#### 4.8 Butterfly Conservation in South West England

Butterfly Conservation's work in the region is supported by the following members of staff: Jenny Plackett, working on the *Two Moors Threatened Butterflies Project* on Dartmoor and Exmoor (see section 4.8.1); John Davis, *Head of Reserves*, working on the Forestry Commission England led *Neroche Scheme* in the Blackdown Hills (see section 6.2) in addition to work on Butterfly Conservation reserves; and Amber Rosenthal, Mark Parsons, Bernadette Noake, Dr. Caroline Bulman and Dr. Nigel Bourn, members of Butterfly Conservation's national species team who carry out much of their work on UK Biodiversity Action Plan butterflies and moths in the south west. *The Midlands Fritillary Project* (see section 4.4.1) also covers the Forest of Dean in Gloucestershire.

During 2010, Butterfly Conservation's species team has worked directly on **Pearl-bordered Fritillary** *Boloria euphrosyne*, **Heath Fritillary** *Melitaea athalia*, **Large Blue** *Maculinea arion*, **Marsh Fritillary** *Euphydryas aurinia*, **Lulworth Skipper** *Thymelicus acteon*, **Adonis Blue** *Polyommatus bellargus*, **Duke of Burgundy** *Hamearis lucina*, **Dingy Mocha** *Cyclophora pendularia*, **Barberry Carpet** *Heliothis maritima*, **Silky Wave** *Idaea dilutaria*, **Shoulder-striped Clover** *Heliothis maritima*, **Argent & Sable** *Rheumaptera hastata*, **Richardson's Case-bearer** *Eudarcia richardsoni*, **Coleophora vibicella**, **Scythris siccella** and **Narrow-bordered Bee Hawk-moth** *Hemaris tityus* in the south west. See section 3.1 (moths) and 3.2 (butterflies) for information about the work carried out on these species.

Over a number of years, Butterfly Conservation staff and local recorders have been working with Forestry Commission England near Exeter in Devon on three Pearl-bordered Fritillary sites. In 2010, in addition to survey work and management advice, a successful funding application was submitted by Butterfly Conservation to SITA Trust to carry out further management at these sites to benefit Pearl-bordered Fritillary. See the Pearl-bordered Fritillary account in section 3.2 for more information about this project. Butterfly Conservation was also successful in a funding application to SITA Trust for Large Blue on the Polden Hills. This three year project, beginning in April 2011 aims to increase

the area of suitable habitat by 64.5ha through a programme of landscape-scale habitat restoration on a network of 15 sites. This will both strengthen existing populations and increase the likelihood of colonisation of currently unoccupied sites.

Contributed by Bernadette Noake & Amber Rosenthal, *Conservation Officers (Threatened Species)*, [arosenal@butterfly-conservation.org](mailto:arosenal@butterfly-conservation.org).

#### 4.8.1 Two Moors Threatened Butterfly Project

*The Two Moors Threatened Butterfly Project* is a landscape scale project operating across Dartmoor and Exmoor, to reverse the declines of Britain's three most rapidly declining fritillary butterflies: the **Marsh Fritillary** *Euphydryas aurinia*, **High Brown Fritillary** *Argynnis adippe* and **Heath Fritillary** *Melitaea athalia*. The project works with farmers and landowners within identified priority areas, providing habitat management advice and help in securing funding to pay for management works.

For example, the Heddon Valley in Exmoor supports important populations of the High Brown Fritillary. Over the last year, the National Trust have carried out bracken management and burning to improve the quality of breeding habitat, and 0.5 hectares of woodland have been coppiced to restore an additional area. Private landowners are also engaged with the project and working to increase the area of suitable habitat in the valley system. At one farm, 0.5ha of scrub clearance has been carried out and at another over 600 metres of fencing has been erected to facilitate the re-introduction of grazing.

The project has expanded its work to encompass a new Priority Area on Dartmoor, and is now working with landowners and commoners on the Trendlebere-Welstor bracken slopes, to improve habitat for the High Brown Fritillary and **Pearl-bordered Fritillary** *Boloria euphrosyne*. Practical management has already begun in the area, with volunteer work tasks underway to manage dense bracken and control invading scrub.

During the last year, the project has visited 102 sites, resulting in management works being carried out on 38 sites, and management advice provided on a further 33 sites. Two sites were entered into the Higher Level Stewardship (HLS) scheme, and advice was provided to landowners and Natural England staff for a further four HLS agreements; it is hoped that these will come into force as soon as Natural England re-open the scheme to new entrants.

With the limited access to capital works funding through agri-environment schemes, the project has been working closely with conservation and voluntary organisations to carry out practical habitat management, and in the last year 192 volunteer days were spent on key butterfly sites across Dartmoor and Exmoor. Public events and training workshops involved a total of 106 people, and more are planned for the coming year.

Contributed by Jenny Plackett, *Two Moors Project Officer*, [jplackett@butterfly-conservation.org](mailto:jplackett@butterfly-conservation.org).

## 5 Lepidoptera Recording Updates

### 5.1 Moths Count and the National Moth Recording Scheme

#### Moths Count

The initial phase of the *Moths Count* project, funded by the Heritage Lottery Fund, was completed at the end of 2010, after four and a half years of challenging but very successful work. There have been many significant achievements including:

- A new *National Moth Recording Scheme* has been set up (see below).
- Over 3500 people attended 220 moth training events.
- Over 100,000 moth leaflets have been distributed to various wildlife groups and members of the public.
- Millions of people have been enlightened to the positive aspects of moths via numerous interviews on national and local television and radio and in the press.
- 13 'national' meetings of moth recorders have been organised across the UK.
- Thousands participated in *Garden Moths Count* and the **Humming-bird Hawk-moth** *Macroglossum stellatarum* survey, our simple online 'citizen science' surveys, learning about the beauty, importance and accessibility of the UK's larger moth fauna.
- *National Moth Night* has continued (see separate article).

The *Moths Count* project will continue in the future, with a focus on maintaining the momentum of the National Moth Recording Scheme. Sadly, as a result of the main grant funding coming to an end, we have lost two members of the project team, Susan Anders (Outreach Officer) and Laura McLellan (Project Assistant). Susan and Laura were great members of the team and were invaluable in helping to make the project the success it has been. Richard Fox, Les Hill and Zoë Randle will continue to take the *Moths Count* project forward over the next year.

#### The National Moth Recording Scheme

The National Moth Recording Scheme (NMRS) currently holds 11.8 million moth records from 119 Vice-counties. The NMRS already contains some 2010 records; however, we will be undertaking a major refresh of county datasets during the spring. The first UK-wide National Moth Recorders' Meeting was held in January 2011. Over 120 people attended and listened to talks from across Britain and Ireland. Dr. Dick Groenendijk from De Vlinderstichting (Dutch Butterfly Conservation) also presented a talk on the state of the Dutch macro-moth fauna. The day was a great success and another meeting is planned for next year.

An update of the NMRS database was sent to the National Biodiversity Network (NBN) Gateway late in 2010. All of the county datasets submitted to the NMRS by 10<sup>th</sup> December 2010 were incorporated in this latest refresh to the NBN. This included two Vice-counties, Dorset and Anglesey, that were previously unrepresented on the online maps, and 45 updated datasets. The updated online distribution maps can be viewed via the *Moths Count* website ([www.mothscount.org](http://www.mothscount.org)). Butterfly Conservation is the largest provider of data to the NBN, and the NMRS remains the largest dataset on the NBN Gateway with 11.4 million records. We will continue to refresh the online dataset approximately every six months. Thank you to everyone who submits their moth records to the NMRS via their County Moth Recorder.

#### Moths Count publications

Two major new publications were produced by *Moths Count* at the end of 2010 and are now on sale. Limited numbers of both publications are available, so you are advised to order early to avoid disappointment. All proceeds received by Butterfly Conservation for both publications will be used towards ongoing moth recording.

The *Provisional Atlas of the UK's Larger Moths* shows up-to-date distribution maps for 868 resident and immigrant macro-moth species. This is the first atlas to cover all the UK's macro-moths and it includes the first distribution maps for the c.300 geometrid species ever published, as well as the first new maps for over 20 years for other species. As such it is a major step forward in our knowledge of moth distributions and a 'must have' for moth recorders. The maps include historical records (pre 2000) and current records (2000 onwards). The 455 page softback publication is a tribute to the hard



work of County Moth Recorders, Record Collators, the Moths Count team and of course the recorders on the ground who contribute records. The production of the atlas is the first step towards helping our declining moth fauna; we are also working on analyses of the data, taking account of the changing recording effort over time. Under-recorded areas are indicated in the Provisional Atlas and will enable targeted recording and ultimately knowledge and conservation. The Provisional Atlas can be ordered for £20 (plus £5.00 P&P) by cheque to Butterfly Conservation Head Office or via [www.butterfly-conservation.org/shop](http://www.butterfly-conservation.org/shop).

*British and Irish moths: an illustrated guide to selected difficult species (covering the use of genitalia characters and other features)* aims to make available up-to-date information on the identification of difficult macro-moths, beyond what is currently available in the field guides. Written by moth experts Martin Townsend, Jon Clifton and Brian Goodey, 72 macro-moth species (plus their subspecies and forms) are included. Much of the Guide is focussed on genitalia characteristics, although there are discussions of other characteristics such as wing markings. It provides the next step for those wishing to make definitive determinations of difficult moths such as ear moths, dark/grey daggers, copper underwings and the November Moth group. The Guide runs to 91 pages and contains over 130 colour illustrations. It is spiral bound to aid use and has protective plastic covers. Copies of the Guide are available from Butterfly Conservation ([www.butterfly-conservation.org/shop](http://www.butterfly-conservation.org/shop) or by cheque) and from specialist retailers. The recommended retail price is £20, but it is available from Butterfly Conservation at a special initial offer price of £15 plus £2 post and packaging to UK addresses.

Contributed by Zoë Randle, *Moth Recording Co-ordinator*, [zrandle@butterfly-conservation.org](mailto:zrandle@butterfly-conservation.org).

## 5.2 Butterflies for the New Millennium

The *Butterflies for the New Millennium* (BNM) project, the butterfly distribution recording scheme for Britain and Ireland, started a new five-year survey in 2010. This will run from 2010-2014 and will be the fourth such survey since the BNM project began in 1995. Local datasets of 2010 records have only just started to arrive in the central database, so it is too early to assess recording progress for last year, but with somewhat improved summer weather, it is hoped that the new survey has got off to a good start. Many thanks to all those butterfly recorders and Local Co-ordinators who have participated in the recording scheme.

Centrally, much of 2010 was spent undertaking verification and analysis of the BNM data gathered for 2005-2009. These 2.4 million records are now being put to use. A report, the *2010 Atlas of Butterflies in Britain and Ireland*, was produced towards the end of the year and distributed to BNM Local Co-ordinators, with remaining copies made available for sale. This report comprises up-to-date distribution maps for all resident and regular migrant species in Britain and Ireland. Analysis of the data is ongoing and the results will be published in a new *State of the UK's Butterflies 2011* report later this year.

Several analyses drawing on BNM data were published during 2010 (see bibliography for details). These included some provisional results from the 2005-2009 survey, which showed that the 2010 Target to halt the loss of biodiversity across the European Union had not been met for British butterflies. A new Red List of British Butterflies was developed using BNM trends and information from the UK Butterfly Monitoring Scheme (see section 5.3). This categorised 23 species (37%) as already extinct or threatened with extinction (two species as Critically Endangered, eight as Endangered and nine as Vulnerable). A further 11 butterfly species are classified as 'near threatened' in the new Red List, leaving fewer than half (45%) of Britain's butterflies considered to be safe at present. The research confirmed butterflies as a highly threatened group in Britain.

Also during 2010, a major refresh and revision was undertaken of the BNM data available on the National Biodiversity Network Gateway ([www.searchnbn.net](http://www.searchnbn.net)). A single dataset, containing 5.4 million records, now covers all BNM sightings for Britain for the period 1690-2004. Access to view these data has been improved and is now available down to the 2km grid square resolution. The 2005-2009 dataset will be made available on the Gateway early in 2011, although initially this will be only at summary (10km grid square) resolution. Butterfly Conservation is now the largest provider of data to the National Biodiversity Network.

Funding for the BNM project improved during 2010, and the recording scheme is now receiving funding (or will do shortly) from each of the UK statutory nature conservation agencies: the Countryside Council for Wales, Natural England, the Northern Ireland Environment Agency and Scottish Natural Heritage.

Contributed by Richard Fox, *Surveys Manager*, [rfox@butterfly-conservation.org](mailto:rfox@butterfly-conservation.org).

### 5.3 Butterfly monitoring – progress in 2010

2010 marked the thirteenth year of national collation of butterfly transect data by Butterfly Conservation, and the final year of the UK Butterfly Monitoring Scheme (UKBMS) phase II project, jointly run by Butterfly Conservation (BC) and the Centre for Ecology and Hydrology (CEH) and funded by a consortium of governmental agencies led by JNCC.

The UKBMS II project has three main linked objectives:

- (1) To maintain ongoing monitoring and surveillance activities, for three years.
- (2) Annual reporting, assessment and interpretation of population trends for butterflies, for three years.
- (3) The production of a costed development plan for the future of butterfly surveillance and monitoring, within one year.

Highlights in 2010 included:

#### Data collation

Further improvements in efficiency and increases in the volume of data collated. 726 transect datasets (78% of the total) were received by the end of November deadline, compared with 654 in 2009. By the end of January 2011, data from 925 transects had been collated, with 96% received electronically in Transect Walker format. We additionally received data from 110 timed/larval web count sites, bringing the total number of monitored sites to the highest ever level.

#### Reporting

A National Recorders meeting was held in March 2010 and attended by approximately 100 people. The production of the UKBMS annual feedback report to recorders for the 2009 season was completed in autumn 2010. The 48-page report contains the latest trends and results from the UKBMS and can be downloaded from [www.ukbms.org](http://www.ukbms.org).

The report highlighted that in 2009 following two of the poorest years on record for butterflies in the UK, most species made some recovery. It was a mixed year though, still ranking below average (23) in the 34-year series. The year ranked as the second best on record for **Painted Lady** *Vanessa cardui* migration with a huge influx in May/June. Many expanding species continued to do well, whilst five species produced their highest index of the series—**Comma** *Polygonia c-album*, **Green-veined White** *Pieris napi*, **Ringlet** *Aphantopus hyperantus*, **Speckled Wood** *Pararge aegeria* and the habitat specialist, **Large Heath** *Coenonympha tullia*. However, despite a warm, sunny start to the year, much of the butterfly season in July and August was once again characterised by wet weather having an adverse effect on a number of species. There were continued declines for some of our most threatened species—**Duke of Burgundy** *Hamaeris lucina*, **Lulworth Skipper** *Thymelicus acteon* and **Wood White** *Leptidea sinapis*. Other threatened species, as well as some of our commoner species, still produced low indices despite the slight recovery from 2008. For 47 of the 53 species assessed (89%), the mean flight date was advanced compared with the series average, whilst for the majority of species which fared better than in 2008, the mean flight date was advanced by 1-2 weeks.

Butterfly biodiversity indicators were updated (covering 1976-2009) for England, Scotland and the UK. Most of the butterfly indicators showed modest increases over 2008. However, short-term trends (since 2000) show moderate to steep declines in all butterfly indicators, except for Scotland where trends are classed as stable and for generalist species in England, where the trend is uncertain. Short-term trends (since 2000) show moderate to steep declines in all butterfly indicators, except for Scotland where trends are classed as stable and for generalist species in England, where the trend is uncertain. Over the long-term (since the 1970s) UK butterfly indicators show a decline in habitat specialists but little or no overall change for wider countryside species. UKBMS data also contributed to a European Climate Change Butterfly Indicator, which shows a significant and rapid increase in

European butterfly communities becoming increasingly composed of species associated with warmer temperatures.

### **Wider Countryside Butterfly Survey (WCBS)**

The second year of the WCBS was completed in 2010. The WCBS is run as a partnership between BC, CEH and the British Trust for Ornithology (BTO), with participants including BTO's Breeding Bird Survey (BBS) recorders and BC volunteers. Although the scheme was run on a very small budget, there was another excellent response to the survey. In total 1438 visits were made to 688 randomly selected 1km squares by 558 recorders, who collectively walked nearly 3000km of survey line, counting 82,224 butterflies of 46 species

Approximately 80% of the UK's regularly occurring butterfly species were recorded, bringing the total to 49 species over the two years of survey. **Grizzled Skipper** *Pyrgus malvae*, **Marsh Fritillary** *Euphydryas aurinia* and **Northern Brown Argus** *Aricia artaxerxes* were recorded for the first time, whilst there were no records in 2010 of **Green Hairstreak** *Callophrys rubi*, **Pearl-bordered Fritillary** *Boloria euphrosyne* and **Silver-studded Blue** *Plebejus argus*. Good coverage (present in 30 squares or more) was achieved for all of the target wider countryside species, with the exception of **Scotch Argus** *Erebia aethiops* (found in 12 squares). Optional spring visits boosted coverage for several species including **Brown Argus** *Aricia agestis* and **Wall Brown** *Lasiommata megera*, with the main bonus being good coverage for the **Orange-tip** *Anthocharis cardamines* (present in 42 squares).

**Meadow Brown** *Maniola jurtina* was the most widely recorded and abundant species being found in over 80% of squares with 11,698 individuals counted in July and August. Most species were ranked in more or less the same position as 2009 in terms of commonness and rarity, with some notable exceptions. The biggest change was the reduction in Painted Lady sightings, the butterfly being found in only 11% of squares compared to 83% in 2009. In contrast, it was a good year for the **Holly Blue** *Celastrina argiolus*, with a four-fold increase in numbers and presence in nearly 30% of squares compared to 10% in 2009. Meadow Brown, **Small White** *Pieris rapae*, **Large White** *Pieris brassicae* and **Gatekeeper** *Pyronia tithonus* constituted nearly 60% of all butterflies seen. Rather surprisingly, the data suggested 2010 was slightly worse for butterflies than 2009. On average, recorders counted 60 individual butterflies of seven species per survey made over the July and August period, compared to 80 individuals of eight species in 2009.

WCBS surveyors were again encouraged to count dragonflies and day-flying moths, with records generated in 333 squares (48% of the total). 1570 moths of 44 species were counted in 196 squares. This figure is almost four times the abundance recorded in 2009. A migrant, the **Silver Y** *Autographa gamma* was the most widespread and abundant species for the second year running, with 547 counted in 115 squares. The only other frequently encountered species was the **Six-spot Burnet** *Zygaena filipendulae* with 396 individuals counted in 23 squares. 3239 dragonflies of 28 species were counted in 243 squares, with Common Darter *Sympetrum striolatum* the most widespread species for the second year running.

The scheme will run for a third year in 2011, albeit at similar resource levels to 2009 and 2010 and we hope that volunteer recorders will once again take part en-masse, to ensure the continued success of this important new scheme.

### **Future of butterfly monitoring – the UKBMS Phase III**

Although details have yet to be finalised, it looks highly likely that government funding will be available to ensure the continued operation and development of the UKBMS for another three years from April 2011. The core funding package will support the co-ordination, collation and analysis of data from both the transect network and the WCBS, in order to continue to provide indicators of the state of the wider countryside, provide evidence to contribute to UK and country level reporting (Biodiversity Action Plan and Habitats Directive), and provide an evidence base that will be used to address current and emerging policy issues. There are a number of additional components to the package that are subject to further funding being secured, including the replacement of Transect Walker software with an online data entry and reporting system. The details of the funding package should be known by the date of the annual recorders meeting in March 2011, where recorders and co-ordinators will be fully updated.

Contributed by Dr. Tom Brereton, *Head of Monitoring*, [tbrereton@butterfly-conservation.org](mailto:tbrereton@butterfly-conservation.org).

## 6 News and Notes

### 6.1 Butterfly Conservation Europe: progress in 2010

This has been a landmark year for Butterfly Conservation (BC) Europe. We received our first core grant from the European Union (EU) and produced a new Red List of European Butterflies with the International Union for Conservation of Nature (IUCN). The EU grant is issued annually and we have to apply each year, with no certainty of repeat funding so it is difficult to plan very far ahead. However, it has enabled us to employ staff for the first time and we have taken on three part-time officers, each doing different tasks that were given a priority following earlier workshops with our Network Partners. Irma Wynhoff was employed to act as Information Officer to update the website and produce a newsletter and other materials; Svetlana Mitleva was employed as Network Co-ordinator to develop our Network Partners, including running training courses for eastern European countries. Several good contacts were made in Russia for the first time and we hope that three organisations will become Partners as a result.

A key priority for BC Europe is to lobby for improved policies for Lepidoptera and their habitats within the European Union. Sue Collins was appointed as Policy Director to lead this work and collaborate with other organisations working at the pan European level. She was appointed Vice Chair of the European Habitats Forum and led on work to develop a new set of targets to halt biodiversity loss post 2010. This informed the Nagoya declaration and the target agreed of 'Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible'. She also worked with World Wildlife Fund (WWF), Birdlife and the European Forum on Nature Conservation and Pastoralism to produce a report on High Nature Value Farming.

As a result of the grant we were able to update the Grassland Indicator of European butterflies which collates transect data from over 15 countries and shows that grassland butterflies have declined by over 60% in the last 15 years. The report highlights abandonment and poor management of semi-natural grasslands as the main causes. A separate report, also using transect data, produced an updated Climate Indicator of butterflies. This shows that butterfly communities have shifted north by 75 km in the last 20 years but climate zones have shifted north by 249 km (so going about 1/4 as fast as they need to).

The other landmark during the year was the publication of a new Red List of European butterflies. This showed that around 1/3 of species are declining and 9% are threatened. Details of the ecology and threats to every species can be found on the IUCN Red List website. However, the analysis required by the new IUCN criteria was severely hampered by the lack of good quantitative data on many countries, especially those in eastern Europe. A paper highlighting the limitations of the new IUCN criteria was subsequently published (Van Swaay, 2011).

A new application for funding in 2011 has been submitted to the EU, with priorities being a major upgrade of our website, a meeting of partners to be held in November 2011, and the development of an online system for collating European transect data. We have also submitted an application for research on the **Macedonian Grayling** *Pseudochazara cingovskii*, which is reduced to a single site and is threatened by marble quarrying. This is clearly our most endangered European butterfly and urgently needs conservation to save it from global extinction.

Contributed by Dr Martin Warren, *Vice Chair, Butterfly Conservation Europe*,  
[mwarren@butterfly-conservation.org](mailto:mwarren@butterfly-conservation.org)

#### Key references

(Most accessible from [www.bc-europe.eu](http://www.bc-europe.eu) )

Beaufoy, G. & Marsden, K. 2010. *CAP reform 2013: Last chance to stop the decline of Europe's High Nature Value Farming?* European Forum for Nature Conservation and Pastoralism, Birdlife International, Butterfly Conservation Europe, WWF.

Van Swaay, C., Cuttelod, A., Collins, S., Maes, D., Lopez Munguira, M., Šašić, M., Settele, J., Verovnik, R., Verstrael, T., Warren, M., Wiemers, M. and Wynhof, I. 2010. *European Red List of Butterflies*. Luxembourg: Publications Office of the European Union.

Van Swaay, C.A.M., Van Strien, A.J., Harpke, A., Fontaine, B., Stefanescu, C., Roy, D., Maes, D., Kühn, E., Ōunap, E., Regan, E., Švitra, G., Heliölä, J., Settele, J., Warren, M.S., Plattner, M., Kuussaari, M., Cornish, N., Garcia Pereira, P., Leopold, P., Feldmann, R., Julliard, R., Verovnik, R., Popov, S., Brereton, T., Gmelig Meyling, A., Collins, S. 2010. *The European Butterfly Indicator for Grassland species 1990-2009*. Report VS2010.010, De Vlinderstichting, Wageningen.

Van Swaay, C.A.M., Harpke, A., Van Strien, A., Fontaine, B., Stefanescu, C., Roy, D., Maes, D., Kühn, E., Ōunap, E., Regan, E.C., Švitra, G., Heliölä, J., Settele, J., Musche, M., Warren, M.S., Plattner, M., Kuussaari, M., Cornish, N., Schweiger, O., Feldmann, R., Julliard, R., Verovnik, R., Roth, T. Brereton, T. & Devictor, V. 2010. *The impact of climate change on butterfly communities 1990-2009*. Report VS2010.025, Butterfly Conservation Europe & De Vlinderstichting, Wageningen.

Van Swaay, C., Maes, D., Collins S., Munguira, M.L., Šašic, M., Settele, J., Verovnik, R., Warren, M., Wiemers, M., Wynhoff, I., Cuttelod, A. 2011. Applying IUCN criteria to invertebrates: How red is the Red List of European butterflies? *Biological Conservation*, **144**: 470-478.

## 6.2 Update on Butterfly Conservation Reserves in 2010

The implementation of our revised strategy for reserve acquisition has continued with the setting up of two reserves for 'new' species: - Myers Allotment in Lancashire for **High Brown Fritillary** *Argynnis adippe*, and Wester Moss, Stirling, for **Large Heath** *Coenonympha tullia*. The former site also adds **Northern Brown Argus** *Aricia artaxerxes* to the list of key species represented on our reserves. Myers Allotment is a 7ha limestone pavement site at the core of the nationally important Morecambe Bay Limestone landscape and habitat improvements should rapidly result in gains for the local meta-populations of the target species, including **Pearl-bordered Fritillary** *Boloria euphrosyne*. Wester Moss will be a partnership reserve with BC supplementing the maintenance carried out by the owner, Stirling Council, with measures specifically for Large Heath. The site is a raised bog and drying out through land drainage and scrub encroachment are the problems to remedy.

As the number of Butterfly Conservation reserves and monitoring transects has increased so has the range of species, providing us with a growing reference set of sites being managed specifically for the key species' needs. Being able to attribute observed population changes to habitat and other conditions we produce on our reserves will always be confounded by many other factors. Each reserve is also in a different landscape context—some are isolated strongholds whilst others are integral parts of the local landscape's habitat resources and the fate of key species on our reserves is partially or mainly dependent on factors outside of our control. Analysing the performance of Butterfly Conservation reserves in relation to the habitat management we undertake is therefore complicated for many sites and the use of indicators is being considered. Each reserve can continue to be assessed for any given species against its own average and past peak records and those of comparable sites in same area.

Overall 2010 was another good year for many key species and most common ones in our countryside. This was well reflected on our reserves and in some cases even more so. The good weather allowed species to consolidate population increases seen in 2009 and properly take advantage of ongoing habitat improvements.

Results that can be attributed to our habitat improvements with even partial degrees of confidence are the most satisfying, and the following outline some of the most significant results for key species on our reserves in 2010.

In step with the overall national picture for **Heath Fritillary** *Melitaea athalia* in 2010, the population on the small Lydford Old Railway Line reserve in Devon again had another strong emergence, actually exceeding that for 2009. The good 2010 results for this species in the reserve locality includes strengthening numbers on the adjoining Forestry Commission England land—which is managed very successfully for Pearl-bordered Fritillary and **Small Pearl-bordered Fritillary** *Boloria selene* but has yet to be proven Heath Fritillary breeding habitat. However, Heath Fritillary has colonised privately owned oak coppice habitat over ½km from the reserve and has clearly established into a strengthening breeding colony which is tracking the new habitat created through coppicing.

**Duke of Burgundy** *Hamearis lucina* numbers on the Prestbury Hill Reserve in 2010 were even higher than the previous summer's strong emergence. The species has maintained its new presence

on the Masts Field part of the reserve and all the usual grassland species including the Skippers fared at least as well. The thickening sward resulting from the lack of grazing as reported in *Lepidoptera Conservation Bulletin* No. 10, continues to be a very pressing concern.

In March 2010 three **Marsh Fritillary** *Euphydryas aurinia* larval webs were found on part of the Alners Gorse reserve in Dorset in habitat created through the scrub removal and grazing undertaken since 2005. Large Devil's-bit Scabious *Succisa pratensis* plants are now abundant in this re-opened grassland and the larval webs are the first known on site since 2003 when one was found along a ride edge. The colonisation distance from the neighbouring population is probably no more than 200 metres and it would be reasonable to assume it was facilitated by the removal of the secondary woodland in between.

Only a few **Adonis Blue** *Polyommatus bellargus* have usually been recorded each year on the Lankham Bottom reserve in Dorset since our monitoring and management began in 2001. With a strong long-standing population on a nearby downland site these were generally considered to be potential colonists. The sward had shortened quite markedly within 5 years of grazing being re-introduced (2001) but it was only in September 2010 that Horseshoe Vetch *Hippocrepis comosa* had appeared in local patches rather than rare occasional plants. From the number of freshly emerged male Adonis Blue in the same locality, we have concluded that the species might finally be considered to breed on the site. Though Marsh Fritillary populations on many Dorset downlands were very strong in 2010, numbers on this reserve have not yet recovered the post-colonisation explosion seen in 2006. The quantities of Devil's-bit Scabious *Succisa pratensis* also remain much reduced from the extensive swathes evident on the best slopes in 2005.

The **Chalkhill Blue** *Polyommatus coridon* population on what is known as the 'original' chalk downland part of the Magdalen Hill Down reserve in Hampshire had been one of the conservation objectives for setting up the reserve. Their numbers have been steadily growing over the last 20 years of steady scrub control and grazing management, and the 2010 Transect result was the highest recorded during this period. The area of prime chalk downland on the nearby Yew Hill reserve is much smaller but provides very high quality habitat and 2010 saw the second highest count of this species in 21 years of monitoring.

The intensive habitat creation measures for **Dingy Skipper** *Erynnis tages* and **Grizzled Skipper** *Pyrgus malvae* on the Ryton Wood Meadows reserve in Warwickshire produced striking results during 2010. Dingy Skipper numbers on transect were the highest recorded in 21 years of monitoring and the species was seen for the first time in open rides and clearings in the neighbouring Ryton Wood reserve (Warwickshire Wildlife Trust). Grizzled Skipper numbers were double the previous peak results and the species has also colonised suitable habitat created in the neighbouring Ryton Pools Country Park.

A number of Butterfly Conservation reserves (formal and partnership arrangements) fall within the **Neroche Scheme** landscape which came to the end of its initial funding period in 2010. The most significant outcomes so far for the key Lepidoptera species include colonisations by Dingy Skipper, the beginnings of a dispersal of Duke of Burgundy into new open habitats were apparently suitable breeding conditions are developing. The situation for **Wood White** *Leptidea sinapis* is still un-clear as their initial expansion into newly available habitat does not appear to have been matched by strengthening numbers. A 2010 survey of their distribution and movement in the Ruttersleigh Common core area and newly colonised Staple Park Wood, compared grazed and un-grazed versions of the new habitats created through the project's wide-scale felling of conifer plantations. Despite a widespread availability of apparently suitable breeding habitat only two females were recorded and the estimated 22 males located were found to be moving widely around the large open spaces now available. There were no apparent deleterious effects from the cattle grazing during that particularly dry summer and the species does not appear inherently constrained by the greater mobility demands it now faces. Further surveying is needed to locate the full extent of the species current distribution over this core area.

Contributed by John Davis, *Head of Reserves*, [jdavis@butterfly-conservation.org](mailto:jdavis@butterfly-conservation.org).

### 6.3 Conserving Lepidoptera on Forestry Commission Land

Work to conserve priority butterflies and moths on Forestry Commission land in Wales, is reported in section 4.3.3.

In Scotland Butterfly Conservation Scotland (BCS) continues to work closely with Forestry Commission Scotland (FCS) at a number of sites and on a number of species. This has included providing site advice for **Marsh Fritillary** *Euphydryas aurinia*, **Kentish Glory** *Endromis versicolor*, **Small Blue** *Cupido minimus* and **Dingy Skipper** *Erynnis tages* as well as Scotland's two key woodland butterflies **Chequered Skipper** *Caterocephalus palaemon* and **Pearl-bordered Fritillary** *Boloria euphrosyne*. Liaison over the management, monitoring and promotion of our two joint reserves, Allt Mhuic in Lochaber and Mable Forest in Dumfries and Galloway continued. Two exciting landscape scale projects on Pearl-bordered Fritillary are also being developed, one in the Contin/Garve area of Easter Ross, the other in Glen Creran in Argyll.

BCS is grateful to FCS for their contribution towards this successful partnership.

In England, Butterfly Conservation has been working with Forest Commission England to implement the priorities identified in '*Lepidoptera on Forestry Commission land in England, Conservation Strategy 2007-2017*'. The Strategy details 140 Forestry Commission England sites known to be important for butterfly and moth species.

In 2010 Butterfly Conservation staff have visited a minimum of 37 priority sites listed in the Conservation Strategy to carry out habitat assessments, Lepidoptera surveys, practical habitat management (through work parties or by managing contractors on site), to provide management advice and to lead public events and training workshops. Management advice has been provided to on a minimum of 30 priority sites.

In addition to this work, a North York Moors Forest District review meeting was held to discuss habitat management at priority sites, the status and monitoring of key butterfly and moths on those sites. Each year a minimum of one Forest District review meeting is held with relevant Forestry Commission England staff, Butterfly Conservation staff and local recorders in monitoring the priority sites listed in the strategy.

In order to share and promote good management practices and to ensure the profile of the Conservation Strategy is maintained, *Speckled Wood*, a biannual email newsletter, is distributed to Forestry Commission England staff and to local butterfly and moth recorders and Butterfly Conservation branches. In 2010, the newsletter has included articles about **Wood White** *Leptidea sinapis* in the Clun Valley, **High Brown Fritillary** *Argynnis adippe* on the Morecambe Bay Limestones, **Barberry Carpet** *Pareulype berberata* in Dorset and work to create disturbance to benefit butterflies and moths in the Norfolk and Suffolk Breck.

Butterfly Conservation has a number of projects in key landscapes which include work on priority sites listed in the Conservation Strategy, which often enable further management work to benefit butterflies and moths. During the past year, Butterfly Conservation staff have worked on priority Forestry Commission England sites through the following projects, the *Midlands Fritillary Project*, *Conserving the Wood White butterfly in the South Shropshire Woods Project*, *Norfolk Brecks Heathland Restoration for Threatened Butterflies and Moths Project*, *Conserving the High Brown Fritillary on the Morecambe Bay Limestones Project*, *Conserving North York Moors Limestone Grassland for Dukes and Pearls Project* and the *South East Woodlands Project*. See section 4 for more information about these projects. A new three year project will begin in April 2011 in Devon to improve the habitat for Pearl-bordered Fritillary at three Forestry Commission England priority sites listed in the Conservation Strategy. The project, *Saving Devon's Precious Pearls*, has funding from SITA trust and donations through an appeal to Butterfly Conservation members. It will enable a targeted programme of practical conservation, including scrub and bracken management, clear-felling, coppicing, thinning, ride scalloping, stump removal, ground disturbance and planting violets.

Scotland section: contributed by Dr Tom Prescott, *Species Conservation Officer*, Butterfly Conservation Scotland, [tprescott@butterfly-conservation.org](mailto:tprescott@butterfly-conservation.org).

England section: contributed by Bernadette Noake, *Conservation Officer (Threatened Species)*. For more information about the Strategy, Butterfly Conservation's work on Forestry Commission England sites, or to receive a copy of the email newsletter, please contact Amber Rosenthal, [arosenthal@butterfly-conservation.org](mailto:arosenthal@butterfly-conservation.org), 01929 406029.

## 6.4 Butterfly Conservation Publicity Highlights

2010 was very successful for publicity and raising the profile of butterflies and moths in the press with a number of new and exciting initiatives taking place.

### Marks and Spencer Partnership

Marks and Spencer (M&S) and Butterfly Conservation are now working in partnership to help promote the importance of butterflies and moths. This partnership includes the company giving a percentage of income on certain products sold in their stores to Butterfly Conservation as well as having staff from our Head Office advising M&S farmers on how best to manage their land with regards to butterfly and moth species.

The launch of the partnership took place at the Bath and West Show in June and was covered by a number of national newspapers plus consumer magazines and many regional papers. The radio audience numbers for our M&S partnership coverage came in at just over 26 million.

The partnership also saw the piloting of a new public survey in July entitled the "Big Butterfly Count". National publicity was generated by Butterfly Conservation encouraging people to record butterflies and moths for 15 minutes in their garden via a website designed by both organisations ([www.bigbutterflycount.org](http://www.bigbutterflycount.org)) over a one week period. A total of 187,000 individual sightings were recorded by the public and press releases were generated after the count detailing the results. People that submitted their sightings are now regularly sent an email newsletter encouraging them to become involved in conservation.

The partnership is ongoing and Butterfly Conservation are planning to run the scheme again this year, with particular focus on school engagement.

Also in June, the *Guardian* published a piece on the **Large Blue** *Maculinea arion*, detailing a successful year for the species and its re-introduction to the Cotswolds. Butterfly Conservation's work regarding the species was heavily featured.

The same month, a story was featured in the *Daily Express* regarding the **Humming-bird Hawk-moth** *Macroglossum stellatarum* and **Painted Lady** *Vanessa cardui* online survey. Dr Tom Brereton, Head of Monitoring at Butterfly Conservation, was quoted in the news piece. The article detailed how the general public could record their sightings of both species and also how they could become involved in other surveying and monitoring.

In March, Butterfly Conservation held its sixth International Symposium, where butterfly experts from around the world gathered in Reading, Berkshire. The charity's President, Sir David Attenborough, gave a speech and expressed his concern over the global problem of butterfly declines. The Symposium was called to assess the success of efforts around the world in meeting the United Nations target of halting biodiversity declines by 2010. The Symposium received mentions in *The Independent* and *The Telegraph*.

Also in March, a press release entitled "Fears grow for future of Britain's rarest butterflies" detailed figures for butterfly sightings in 2009 having raised fears that five of Britain's rarest butterflies face a growing risk of extinction. The species mentioned in the release were the **Duke of Burgundy** *Hamearis lucina*, **Wall Brown** *Lasiommata megera*, **Small Skipper** *Thymelicus sylvestris*, **Green Hairstreak** *Callophrys rubi* and **Small Tortoiseshell** *Aglais urticae*. The press release followed analysis of data collected by the UK Butterfly Monitoring Scheme (UKBMS) from over 1,000 sites



nationwide. The UKBMS is co-ordinated by the Centre for Ecology & Hydrology and Butterfly Conservation.

A **Small Blue** *Cupido minimus* butterfly sighted on the Southam bypass in Warwickshire in May generated press coverage, the story highlighted that the sighting gave hope to conservationists battling to save the species in Warwickshire and to encourage volunteer effort in the area.

A new Red List of British butterflies preceded a press release entitled "Red Alert For Britain's Butterflies". The press release gave the news that a new Red List has outlined 23 species which are already extinct in the UK or whose numbers have dropped to such low levels that they are vulnerable to extinction. The **High Brown Fritillary** *Argynnis adippe* and its dramatic decline, was featured in the release. The Red List press release received fantastic coverage, securing a place on BBC News as well as having large features in the *Daily Mail*, the *Mail Online*, the *Express* and *The Times*. Richard Fox was also involved in a number of radio interviews on the back of the story including BBC Radio 4 Six o'clock News and BBC Radio Devon.

This year's National Moth Night, a public participation event run in conjunction with *Atropos*, received very good coverage including interviews with members of staff on BBC breakfast and Radio Five, articles in *The Independent* and the BBC *Gardeners' World* magazine and substantial local coverage. The theme this year was nocturnal wildlife and Butterfly Conservation teamed up with The Bat Conservation Trust and *Atropos* to encourage people to attend events around the country to record their sightings.

BBC's *The One Show* came down to Dorset and ran a story on the Humming-bird Hawk-moth, including an interview with Richard Fox, Surveys Manager for Butterfly Conservation. This was aired in the autumn. Dr Zoe Randle, Moth Recording Co-ordinator, also appeared on *Gardener's World* in August, promoting moths and running a moth trap.

Patrick Barkham, Environmental Editor for the *Guardian*, published a book entitled "The Butterfly Isles: a Summer in Search of our Emperors and Admirals". The publicity team helped promote the book which received good coverage in the *Guardian*, in October. Butterfly Conservation's work is mentioned in the coverage as well as featuring heavily in the book.

*The Two Moors Threatened Butterfly Project* in Devon received substantial coverage including BBC Somerset and Devon in December. The press release covered the **Marsh Fritillary** *Euphydryas aurinia*, which had a successful year in Dartmoor and Exmoor, with numbers doubling at many sites across the moors. It stated that the butterfly has not only increased in abundance, but has spread its wings and colonised new areas where they were previously unrecorded.

The **Death's-head Hawk-moth** *Acherontia atropos* press release "Report Any Sightings of a Mythical Shrieking Beast this Halloween", aimed at encouraging people to record their sightings of the moth, received a large article and picture in the *Telegraph* and was also mentioned in *The Observer*. It also had a large feature in *BirdGuides*.

Our December press release featured an overview of the how well some species of butterfly have done this year. Species that were mentioned as having made improvements included the Small Tortoiseshell, **Heath Fritillary** *Melitaea athalia* and Marsh Fritillary. The press release received coverage in *The Times* and Richard Fox was interviewed for BBC Radio Four.

In order to increase public engagement and awareness of butterflies and moths, the Publicity team has also recently setup Butterfly Conservation on social media sites Facebook ([www.facebook.com/savebutterflies](http://www.facebook.com/savebutterflies)) and Twitter ([www.twitter.com/savebutterflies](http://www.twitter.com/savebutterflies)).

Contributed by Louise Keeling, *Senior Publicity Officer*. For further information contact Natalie Ngo, [ngo@butterfly-conservation.org](mailto:ngo@butterfly-conservation.org).

## 6.5 National Moth Night 2010 and the future of National Moth Night

National Moth Night (NMN) 2010, organised jointly by *Atropos* and Butterfly Conservation, took place on 15<sup>th</sup> May. This year in collaboration with the Bat Conservation Trust, the emphasis was on moths and bats with encouragement given to promoting public events.

Just under 4,000 records were received which is well below the normal volume of data expected for NMN. However, the main factor for the low return was the weather which was not conducive to moth recording! As a result, recorded participation was also well below expectation, probably mainly due to recorders not forwarding data for nil returns.

At the time of writing data processing and verification is still taking place. The full results and highlighted significant records will appear in the spring 2011 issue of *Atropos*.

There is no NMN for 2011; however, NMN will return during 2012 following a period of consultation and development of new ideas for the annual moth recording event. Full details will be made available at [www.nationalmothnight.info](http://www.nationalmothnight.info) in due course.

Contributed by Les Hill, *Data Manager, National Moth Recording Scheme*, [lhill@butterfly-conservation.org](mailto:lhill@butterfly-conservation.org).

## 6.6 Coppicing and woodland ride management effects on UK BAP moths

The Wildlife Conservation Research Unit (University of Oxford) has teamed up with Butterfly Conservation to conduct a 10-month study which aims to increase our understanding of the effects of woodland conservation management practices on widespread but nationally rapidly declining 'Research only' UK Biodiversity Action Plan (BAP) larger moth species (Rothamsted Research trends: >69% national decline in abundance over 35 years).

Thanks to Butterfly Conservation's *South East Woodlands Project*, we placed light-traps at 36 fixed sites within the Tytherley woodland landscape, on the Hampshire/Wiltshire border. Six 'management' treatments (young/medium/old coppice; standard/wide ride; woodland) were each represented by six sites, and these were all sampled nine times between July and mid-October. We avoided bias by sampling all management groups every trap night, in equal numbers, and only under suitable weather conditions.

The total list amounted to 11,670 individuals from 265 species of larger moth. Thirty-eight of these were 'Research only' species (891 individuals). Seven woodland species that might have been expected to occur did not and their dramatic national declines (87-97% over 35 years) may well explain their absence. We trapped 249 individuals of fifteen nationally scarce/Red Data Book species: **Festoon** *Apoda limacodes*, **Triangle** *Heterogenea asella*, **Mocha** *Cyclophora annularia*, **Devon Carpet** *Lampropteryx otregiata*, **Great Oak Beauty** *Hypomecis roboraria*, **Small Black Arches** *Meganola strigula*, **Kent Black Arches** *Meganola albula*, **Double Line** *Mythimna turca*, **Mere Wainscot** *Chortodes fluxa*, **Waved Black** *Parascotia fuliginaria*, **White-line Snout** *Schrankia taenialis*, **Lunar Yellow Underwing** *Noctua orbona*, **Light Crimson Underwing** *Catocala promissa*, and **Dark Crimson Underwing** *Catocala sponsa*. The last three of these are also UK BAP Priority species. A remarkable find was **Clifden Nonpareil** *Catocala fraxini*. Seven individuals, both male and female, were trapped on four nights, always near suitable habitat, pointing strongly towards a local population of this species.

A key finding was that overall moth abundance and species richness differed considerably between the management treatments, and appeared to be closely linked to the amount of shelter and bare ground associated with them. It is very likely that such factors impact on levels of convective cooling, and hence activity/occurrence for these night-flyers. Overall abundance was lowest in young coppice (characterised by plenty of bare ground), intermediate in medium/old coppice and wide rides, whereas most moths were found in the sheltered standard rides and woodland. Similarly, overall species richness was lowest in coppice and highest at sheltered sites. Wide rides, though characterised by lower overall abundance, nevertheless had richness levels similar to sheltered sites. This overall picture hence contrasts with the one for day-flying Lepidoptera, where open woodland

conditions generally mean higher abundance and species richness, due to higher day temperatures and other key resources.

A closer look, however, reveals that while this overall picture for larger moths applies to most species, irrespective of their scarcity or national trend, the 'Research only' group of UK BAP species showed the smallest difference in abundance between sheltered and more open sites. Wide woodland rides in particular had relatively high abundance of these rapidly declining species. Also, when dividing the species into groups depending on their level of woodland affinity, we found that the species group without any direct affinity to woodland had much higher abundance and species richness in wide woodland rides and young coppice than in older coppice and more sheltered sites, compared to the other species groups, with some or a strong woodland affinity.

Another key finding was that the total area of woodland surrounding coppiced plots had a strong positive effect on the abundance of 'Research only' moths. It also increased overall species richness (at least in medium/old coppice), particularly through its effect on the species group which is declining nationally (Rothamsted Research trends: 0-69% national decline in abundance over 35 years).

In addition to general patterns of abundance and species richness, we found that 124 species (i.e. 47% of the total) occurred in lower numbers at sheltered sites compared to coppice and wide rides. Of these 124 species, 49 (18% of the total) were in fact restricted to these open areas. This pattern was strongest for the 'Research only' moths, with 22 of the 38 species (i.e. 58%) occurring in equal or higher numbers at managed (open) compared to unmanaged sites. Focusing on this group, we showed that more species occurred in young and medium coppice than in old coppice, although overall abundance increased from young, over medium, to old coppice, leading us to the conclusion that the whole coppice cycle is of value to this rapidly declining group of species. We believe that widening woodland rides is also valuable to this species group, as their overall abundance was higher in wide compared to standard rides.

Our work shows that coppicing and ride widening are valuable conservation tools for moths as well as butterflies; they increase the total species richness of woodlands by increasing the micro-climatic and structural diversity of woods and providing additional resources for species with an affinity for more open biotopes, especially benefiting 'Research only' species. Although there are benefits to increased coppicing and ride widening within woodlands, we show that the greatest benefits are likely to be had within larger woods and mainly so for the nationally declining and rapidly declining species groups.

However, our results also show that the sheltered, dark, humid, late-successional high forest biotope is characterised by high numbers of moths and species, and is especially valuable for some scarce and RDB species. This study has demonstrated the importance of this valuable woodland biotope and that this stage of the succession clearly needs to be accounted for within woodland management.

Our main recommendations are (i) to enlarge existing high forest and create new ones, in order to have cores of typical dark woodland habitat, and (ii) to 'buffer' these dark woodland cores from the open matrix by creating lighter woodland zones at their edges. This can be done by coppicing or the creation of wide woodland rides. Such zoning will safeguard the dark and humid environment needed by shade- or moisture-loving woodland specialists, whilst at the same time allowing easy access for species of mixed and more open biotopes to a light and open woodland biotope. This two-tier approach may well be vital both for woodland specialists as well as the declining, once-widespread species that are finding it ever more difficult to locate enough resources within current degraded landscapes.

This work has been funded by DEFRA (Project CR 0470: *Understanding the role of woodland management in the conservation of UK BAP moths*). The involvement of the *South East Woodlands Project* in this work was supported by The Heritage Lottery Fund.

Contributed by Dr. Thomas Merckx, *Post-doctoral Researcher*, Wildlife Conservation Research Unit, University of Oxford, [thomas.merckx@zoo.ox.ac.uk](mailto:thomas.merckx@zoo.ox.ac.uk).

## 6.7 Bringing Reedbeds to Life (RSPB/Natural England Countdown 2010 project)

Bringing Reedbeds to Life is a research project aiming to develop updated reedbed management advice for broad biodiversity. The project involves wildlife surveys, reedbed condition audits and further investigation into factors affecting Bittern *Botaurus stellaris* breeding success. Wildlife surveys have been carried out on a range of invertebrates, mammals, amphibians and plants. The aim of the wildlife surveys was to discover what wildlife lives in reedbeds, what reedbed habitats support greatest biodiversity and how to manage reedbeds to promote broad biodiversity. Surveys included moth trapping at Stodmarsh (Kent), Hickling Broad (Norfolk) and Ham Wall (Somerset). At each site, 12 actinic heath traps were set three times at randomly selected points around the reedbed. The traps were mounted on poles because some points had standing water. Sampling was often far into the reedbed in locations only accessible by boat. Between June and August 2010, three rounds of trapping were undertaken at each site. Moth identifications were provided by Sean Clancy (Stodmarsh), Jon Clifton and Jim Wheeler (Hickling Broad) and James McGill (Ham Wall). Surveys of the habitat around each trap were undertaken by Chris Nall (RSPB volunteer) and myself.

One hundred and thirty-five species were recorded at Hickling Broad, 78 at Ham Wall and 128 at Stodmarsh. Twenty UK Biodiversity Action Plan (BAP) species were encountered, 19 of these 'Research only' species. The remaining UK BAP species was **Fenn's Wainscot** *Chortodes brevilinea*, five being recorded over four trap points at Hickling Broad. Two Endangered (RDB 1) moths were trapped: **Scarce Chocolate-tip** *Clostera anachoreta* (trapped once at Stodmarsh) and **Small Dotted Footman** *Pelosia obtusa* (17 trapped at Hickling Broad). Three Vulnerable (RDB 2/provisional RDB 2) species were encountered: **Reed Leopard** *Phragmataecia castaneae* (58 individuals trapped at Hickling Broad), **Cnephasia genitalana** (one at Hickling Broad) and **Monochroa divisella** (seven at Hickling Broad). Data relating species diversity and abundance to habitat variables is still being analysed. Many thanks to the fieldwork team, site managers and Mark Parsons of Butterfly Conservation for his advice and support in this project. It is intended that management findings will be disseminated through RSPB Wetland Advisory workshops and publications.

Contributed by Chloe Hardman, *Reedbed Project Officer*, RSPB, [chloe.hardman@rspb.org.uk](mailto:chloe.hardman@rspb.org.uk).

## 6.8 Pine-tree Lappet Update

Butterfly Conservation Scotland has continued to work closely with Forestry Commission Scotland, Forest Research, Forestry Commission Plant Health and others, as part of the Outbreak Management Team, to help determine the extent and origins of the Scottish **Pine-tree Lappet** *Dendrolimus pini* population.

Targeted survey work using MV light and pheromone traps, co-ordinated by Butterfly Conservation Scotland and Forest Research, showed a slight increase in the known range of Pine-tree Lappet in 2010. However, catches per light trap were slightly lower in 2010 than in 2009. The moth has only been found in even-aged commercial plantations and has now been recorded at twelve sites and confirmed as breeding at five. Currently capture sites all lie within 7km, and known breeding sites all lie within a 4km radius, of Kiltarlity.

Counts of larvae caught on glue bands placed around the trunks to catch descending larvae in autumn 2009 and those ascending in spring 2010 suggest that the population is at a very low level, giving a larval density of 0.37/tree at the highest and 0.015/tree at the lowest population sites. There was also a significant reduction in the numbers of larvae caught on the glue bands during their descent in 2010 compared to the previous year, although we will have to wait for the spring ascent to confirm whether there has been a major decline in the population.

One of the key factors that will determine whether control or eradication measures are implemented is the origin of the Scottish population. Mitochondrial DNA analysis undertaken by Forest Research on European Pine-tree Lappet specimens showed them to be split into three distinct groups: northern, south western and southern, with Scottish moths being part of the latter group. Initially this might suggest that Pine-tree Lappet is far less likely to have spread to and colonised Scotland naturally. However, recent work on the **Pine Processionary** moth *Thaumetopoea pityocampa* shows a similar population division and identifies a potential route for Pine-tree Lappet to have naturally

colonised the UK. Further specimens of Pine-tree Lappet, particularly from eastern France and Italy, are being sought for analysis in the hope of clarifying this further.

Climate modelling has also been undertaken and shows that future climatic conditions in the Moray Firth area are more likely to favour the moth. This is based on predictions of Seljaninov's Hydrothermal Coefficient (SHC) that has been used in Eastern Europe to identify areas at risk from Pine-tree Lappet outbreaks. However, the suitability and accuracy of SHC alone to predict outbreaks needs further investigation.

Restrictions on the movement of timber and brash have been imposed on woodland owners in the Kiltarlity area as a precaution to reduce the risk of accidental spread.

Further monitoring of the population and its distribution, along with DNA analysis and climate suitability, will continue. In addition it is hoped to determine the growth rates of larvae under near natural conditions and studies of mortality factors. Volunteers are being sought for further survey work in 2011, particularly over the weekend of 25<sup>th</sup>/26<sup>th</sup> June. Please contact Tom Prescott at Butterfly Conservation Scotland (Email: [tprescott@butterfly-conservation.org](mailto:tprescott@butterfly-conservation.org)) if you are interested for more information.

Butterfly Conservation Scotland will continue to work with all parties and warmly welcomes the commitment that Forestry Commission and others have made to help determine its pest status.

Contributed by Dr. Tom Prescott, *Species Conservation Officer*, Butterfly Conservation Scotland, [tprescott@butterfly-conservation.org](mailto:tprescott@butterfly-conservation.org).

## 6.9 Dungeness, Kent: A Public Inquiry and proposed new designations

As highlighted in *Lepidoptera Conservation Bulletin No. 10*, in early 2010 Shepway District Council approved Lydd Airport's re-submitted plan to extend the existing runway by 300 metres, going against the recommendations of their own Planning Officers. A new terminal is also planned which, if built, will be able to handle up to 500,000 passengers per year. In addition to any direct land take, there is likely to be increased pollution, especially through increased levels of nitrogen, which could upset the fragile ecology of this internationally important site. Natural England called upon the Secretary of State to call in this plan, which duly happened. At the time of writing a Public Inquiry is underway, with a report to be submitted to the Secretary of State in July 2011. It is not known when a decision will be made.

Additionally, it is not known at this stage whether any plans have been made to upgrade the local infrastructure in relation to the above application, but this too has the potential to further impact on Dungeness and the surrounding Romney Marsh.

In the autumn of 2010, Butterfly Conservation also provided input to the consultation process for the designation of a new Ramsar site (under the Ramsar Convention to protect wetland habitats and species) and extending the Special Protection Area SPA covering Dungeness, Romney Marsh and Rye Bay, co-ordinated by Natural England. It was particularly pleasing to see the **Marsh Mallow Moth** *Hydraecia osseola hucherardi* highlighted in the proposed Ramsar citation.

Contributed by Mark Parsons, *Head of Moth Conservation*, [mparsons@butterflyconservation.org](mailto:mparsons@butterflyconservation.org).

## 7 Selected Bibliography

## Lepidoptera literature 2010 – Mark Parsons & Richard Fox

This section intends to be a highly selective bibliography of references primarily of conservation importance or relevance published during 2010, but also includes taxonomic works, such as those that may aid identification. This is not comprehensive and it is probable that we have overlooked some references, for example there are useful articles in the newsletters of local moth groups that have not been trawled for the purposes of this summary. If there are any significant oversights, please let us know and we will try to include them in next year's update. **Unfortunately, we are not able to offer a reference service.** This year we have included several papers that have been published online although weren't available as hard copy at the time of compilation. Typically an abstract is available for these papers free to view online. These references are produced below in a slightly different format. Those papers from the Butterfly Conservation International Symposium (March 2010) for the *Journal of Insect Conservation* have now been published (2011) and will be given in full in *Lepidoptera Conservation Bulletin No. 12*.

BC produces *Butterfly*, three times a year, which includes illustrated articles on a wide range of Lepidoptera and their conservation. The 2009 Annual Exhibition of the British Entomological and Natural History Society is summarised in the *British Journal of Entomology and Natural History*, **23**: 175-205. There are also many useful records in the field meetings reports in that journal. Dr Paul Waring produces a column on moths for each edition of *British Wildlife* magazine; this covers many aspects of moth recording and conservation. Nick Bowles and Richard Fox produce a similar column for butterflies in the same journal. The results of National Moth Night 2009 are covered by Mark Tunmore and Les Hill in *Atropos*, No. 40: 58-77. The GMS (Garden Moth Scheme), co-ordinated by David Grundy, has produced seasonal newsletters over the year, highlighting trends for some species, whilst we received the Light-trap Newsletter 2010 from Rothamsted Research late in 2010, summarising some of the results and changes in the network. The Microlepidoptera Review of 2009 by John Langmaid & Mark Young is published in the *Entomologist's Record and Journal of Variation*, **122**: 233-253.

### Additions for 2009

Allen, D. & Mellon, D. 2009. *The Argent and Sable Rheumaptera hastata (Linnaeus, 1758) in Northern Ireland 2009*. Report for the Northern Ireland Environment Agency.

Rosenthal, A., Plackett, J. & Bourn, N. 2009. *Heath Fritillary on Exmoor: 2009 Status Report*. *Butterfly Conservation, Wareham*. (Report No. S09-45).

Rosenthal, A. & Bourn, N. 2009. *Heath Fritillary in the Blean Woodlands: 2009 Status Report*. *Butterfly Conservation, Wareham*. (Report No. S09-46).

Kelly, C., Rosenthal, A., Bourn, N. & Bulman, C., 2009. *Heath Fritillary in the Tamar and Lydford Valleys: 2009 Population Status Report and Habitat Assessment*. *Butterfly Conservation, Wareham* (Report No. S09-47).

### Additions to the Lepidoptera fauna of the British Isles

Deans, M.J. & Clifton, J. 2010. Plumbeous Spruce Tortrix *Cymolomia hartigiana* (Saxesen, 1840) (Lep: Tortricidae) new to the British Isles. *Entomologist's Record & Journal of Variation*, **122**: 8-11.

Mead-Briggs, M. & Eeles, P. 2010. *Argynnis cybele* (Lepidoptera: Nymphalidae) – a 'new' record for the British Isles. *British Journal of Entomology and Natural History*, **23**: 167-169.

Elliott, B. 2010. *Blastobasis vittata* (Wollaston, 1858) (Lepidoptera: Blastobasidae), another Madeiran endemic apparently in the process of establishing itself in the British Isles. *Entomologist's Gazette*, **61**: 173-176.

Evans, D. 2010. *Stegania cararia* (Hb.) (Lep.: Geometridae) at Merriott, Somerset – the first record for mainland Britain. *Entomologist's Record & Journal of Variation*, **122**: 11-12.

Hall, P. 2010. *Ectoedemia longicaudella* Klimesch, 1953 (Lep.: Nepticulidae) new to Britain. *Entomologist's Record & Journal of Variation*, **122**: 112.

Homan, R. 2010. *Tuta absoluta* (Meyrick, 1917: Lep: Gelechiidae): An adventive species new to Britain. *Entomologist's Record & Journal of Variation*, **122**: 31-32.

Langmaid, J.R. & Agassiz, D.J.L. 2010. *Cephasia pumicana* (Zeller, 1847) (Lep.: Tortricidae) stat. rev. newly recognised as British. *Entomologist's Record & Journal of Variation*, **122**: 137-142.

Oakes, L., Oakes, H., Clifton, J. & Plant, C.W. 2010. *Barea asbolaea* (Meyrick, 1833) (Lep.: Oecophoridae *sensu stricto*): An adventive moth new to the British fauna. *Entomologist's Record & Journal of Variation*, **122**: 185-190.

Odin, N. 2010. *Dinumma deponens* Walk. At Languard Bird Observatory, Suffolk. *Atropos*, No. 41: 19-20

Plant, C.W. 2010. An examination of the status of *Diachrysis stenochrysis* (Warren, 1913) and its possible occurrence in Britain as a sibling of *D. chrysitis* (L.) (Lep.: Noctuidae). *Entomologist's Record & Journal of Variation*, **122**: 128-136.

Truscott, L. 2010. Brasy Waved Umber *Menophora japygiara* (Costa) in Cornwall: Accidental import or possible immigrant? *Atropos*, No. 39: 19-20.

van Nieuwerkerken, E.J., Laštůvka, A. & Laštůvka, Z. 2010. Western Palaearctic *Ectoedemia* (*Zimmermannia*) Hering and *Ectoedemia* Busck s.str. (Lepidoptera, Nepticulidae): five new species and new data on distribution, hostplants and recognition. *Zookeys*, **32**: 1-82.  
Adds *E. heckfordi*.

### **Distribution maps, county and local lists**

Cubitt, M. 2010. Macro moth status changes in West Lothian (VC84). *Entomologist's Record & Journal of Variation*, **122**: 148-153.

Hill, L. Randle, Z., Fox, R. & Parsons, M. 2010. *Provisional atlas of the UK's larger moths*. Butterfly Conservation, Wareham.

Knowler, J.T. 2010. *An annotated checklist of the larger moths of Stirlingshire, West Perthshire and Dunbartonshire*. Glasgow Natural History Society, Glasgow.

Young, M., Bland, K., Harper, M. & Langmaid, J. 2010. A collated list of Microlepidoptera from the Outer Hebrides. *Entomologist's Gazette*, **61**: 105-118.

### **Identification**

Huemer, P. & Karsholt, O. 2010. *Gelechiidae II. Microlepidoptera of Europe. Volume 6*. Apollo Books, Stenstrup.

Kuchlein, J.H. & Bot, L.E.J. 2010. *Identification keys to the Microlepidoptera of The Netherlands*. Tinea Foundation, Wageningen.

Thomas, J. & Lewington, R. 2010. *The butterflies of Britain & Ireland*. British Wildlife Publishing, Milton on Stour.

Townsend, M. 2010. Observations on the use of wing-markings and genitalia to distinguish Dark-barred Twin-spot Carpet *Xanthorhoe ferrugata* (Cl.) and Red twin-spot Carpet *X. spadicearia* ([D. & S.]). (Lep.: Geometridae) and on the implications for recording these species. *Entomologist's Record & Journal of Variation*, **122**: 120-127.

Townsend, M.C., Clifton, J. & Goodey, B. 2010. *British and Irish moths: an illustrated guide to selected difficult species*. Butterfly Conservation, Wareham.

### **Red lists**

Fox, R., Warren, M.S. & Brereton, T.M. 2010. *A new Red List of British butterflies. Species status no. 12*. Joint Nature Conservation Committee, Peterborough.

Fox, R., Warren, M.S., Brereton, T.M., Roy, D.B. & Robinson, A. 2010. A new red list of British butterflies. *Insect Conservation and Diversity* DOI: 10.1111/j.1752-4598.2010.00117.x

Regan, E.C., Nelson, B., Aldwell, B., Bertrand, C., Bond, K., Harding, J., Nash, D., Nixon, D., & Wilson, C.J. 2010. *Ireland Red List No. 4 – Butterflies*. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

Van Swaay, C., Cuttelod, A., Collins, S., Maes, D., Lopez Munguira, M., Šašič, M., Settele, J., Verovnik, R., Verstrael, T., Warren, M., Wiemers, M. & Wynhof, I. 2010. *European Red List of Butterflies*. Publications Office of the European Union, Luxembourg.

### **UK BAP Priority species – Butterflies**

(See also Butterfly Conservation reports section below)

Botham, M.S., Ash, D., Aspey, N. Bourn, N.A.D., Bulman, C.R., Roy, D.B., Swain, J., Zannese, A. & Pywell, R.F. 2010. The effects of habitat fragmentation on niche requirements of the marsh fritillary, *Euphydryas aurinia*, (Rottemburg, 1775) on calcareous grasslands in southern UK. *Journal of Insect Conservation* DOI 10.1007/s10841-010-9344-9

Klapwijk, M.J., Gröbler, B.C., Ward, K., Wheeler, D. & Lewis, O.T. 2010. Influence of experimental warming and shading on host–parasitoid synchrony. *Global Change Biology*, **16**: 102–112.  
Covers Marsh Fritillary.

Masterman, A. 2010. The distribution and habitat of Mountain Ringlet *Erebia epiphron* (Knoch) in Scotland). *Atropos*, No. 41: 10-18.

Merckx, T. & Berwaerts, K. 2010. What type of hedgerows do Brown hairstreak (*Thecla betulae* L.) butterflies prefer? Implications for European agricultural landscape conservation. *Insect Conservation and Diversity*, **3**: 194–204.

Sielezniew, M., Dziekańska, I. & Stankiewicz-Fiedurek, A.M. 2010. Multiple host-ant use by the predatory social parasite *Phengaris* (= *Maculinea*) *arion* (Lepidoptera, Lycaenidae). *Journal of Insect Conservation* DOI 10.1007/s10841-009-9235-0

Smee, M., Smyth, W., Tunmore, M., Ffrench-Constant, R. & Hodgson, D. 2010. Butterflies on the brink: habitat requirements for declining populations of the Marsh Fritillary (*Euphydryas aurinia*) in SW England. *Journal of Insect Conservation* DOI 10.1007/s10841-010-9334-y

### **UK BAP Priority species – Moths** (excluding 'Research only' species)

(See also Butterfly Conservation reports section below)

Clancy, S. 2010. A new colony of Four-spotted *Tyta luctuosa* in Kent. *Atropos*, No. 41: 59-61.

Dickerson, B. 2010. The Concolorous *Chortodes extrema* (Hb.) (Lep.: Noctuidae) in Huntingdonshire. *Entomologist's Record & Journal of Variation*, **122**: 86.

Gould, P.J. 2010. Second record of the Clay Fan-foot *Paracolax tristalis* Fabr. (Lep.: Noctuidae) for Dorset, VC9. *Entomologist's Record & Journal of Variation*, **122**: 276-277.

Jewess, P. 2010. A record of *Sciota hostilis* (Stephens) (Lep.: Pyralidae) from Kent and some notes on its occurrence in the country. *Entomologist's Record & Journal of Variation*, **122**: 167-168.

Parsons, M. & McGill, J. 2010. *Celypha woodiana* (Barrett) (Lep.: Tortricidae) – an update. *Entomologist's Record & Journal of Variation*, **122**: 49-52.

Waring, P. 2010. Extreme mothing: Capture of three White-spotted Pinion moths *Cosmia diffinis* (L.) (Noctuidae) at light in Bedfordshire during four hours of pouring rain and other recent news of this UK Biodiversity Action Plan Priority species. *Entomologist's Record & Journal of Variation*, **122**: 53-54.

### **Other Lepidoptera references**

Note: Some references may cover UK BAP species in part.

### **General**



Burgess, P. 2010. Conserving the Culm. *British Wildlife*, **21**(6): 402-411.

Chapman, J.W., Nesbit, R.L., Burgin, L.E., Reynolds, D.R., Smith, A.D., Middleton, D.R. & Hill, J.K. 2010. Flight orientation behaviours promote optimal migration trajectories in high-flying insects. *Science*, **327**: 682-685.

Ellis, S., Wainwright, D. Berney, F., Bulman, C. & Bourn, N. 2010. Landscape-scale conservation in practice: lessons from northern England, UK. *Journal of Insect Conservation* DOI 10.1007/s10841-010-9324-0

Haaland, C. & Gyllin, M. 2010. Butterflies and bumblebees in greenways and sown wildflower strips in southern Sweden. *Journal of Insect Conservation* DOI 10.1007/s10841-009-9232-3

Invertebrate Link. 2010. Invertebrate translocation – A Code for Conservation Practice. *British Journal of Entomology and Natural History*, **23**: 207-217.

Oliver, T.H., Roy, D.B., Hill, J.K., Brereton, T., & Thomas, C.D. 2010. Heterogeneous landscapes promote population stability. *Ecology Letters*, **13**: 473–484.

Parsons, M. 2010. The changing moth and butterfly fauna of Britain – the first decade of the Twenty-first Century (2000-2009). *Entomologist's Record & Journal of Variation*, **122**: 13-22.

Warren, M.S. & Bourn, N.A.D. 2010. Ten challenges for 2010 and beyond to conserve Lepidoptera in Europe. *Journal of Insect Conservation* DOI 10.1007/s10841-010-9356-5

### **Climate Change/Phenology**

Altermatt, F. 2010. Climatic warming increases voltinism in European butterflies and moths. *Proceedings of the Royal Society B*, **277**, 1281–1287.

Forister, M.L., McCall, A.C., Sanders, N.J., Fordyce, J.A., Thorne, J.H., O'Brien, J., Waetjen, D.P. & Shapiro, A.M. 2010. Compounded effects of climate change and habitat alteration shift patterns of butterfly diversity. *PNAS*, **107**: 2088–2092.

Mallet, J., Wynne, I.R. & Thomas, C.D. 2010. Hybridisation and climate change: brown argus butterflies in Britain (*Polyommatus* subgenus *Aricia*). *Insect Conservation and Diversity* DOI: 10.1111/j.1752-4598.2010.00122.x

Singer, M.C. & Parmesan, C. 2010. Phenological asynchrony between herbivorous insects and their hosts: signal of climate change or pre-existing adaptive strategy? *Philosophical Transactions of the Royal Society B*, **365**, 3161–3176.

Thackeray, S.J., Sparks, T.H., Frederiksen, M., Burthe, S., Bacon, P.J., Bell, J.R., Botham, M.S., Brereton, T.M., Bright, P.W., Carvalho, L., Clutton-Brock, T., Dawson, A., Edwards, M., Elliott, J.M., Harrington, R., Johns, D., Jones, I.D., Jones, J.T., Leech, D.I., Roy, D.B., Scott, W.A., Smith, M., Smithers, R.J., Winfield, I.J. & Wanless, S. 2010. Trophic level asynchrony in rates of phenological change for marine, freshwater and terrestrial environments. *Global Change Biology*, **16**: 3304-3313.

### **Butterflies**

Adey, J.P. & Wilson, S.F. 2010. The impact of the M40 Motorway on populations of Chalkhill Blue *Lysandra coridon* and Silver-spotted Skipper *Hesperia comma* at Aston Rowant National Nature Reserve. *British Journal of Entomology and Natural History*, **23**: 7-19.

Asher, J., Fox, R. & Warren, M.S. 2010. British butterfly distributions and the 2010 target. *Journal of Insect Conservation* DOI: 10.1007/s10841-010-9346-7

Brereton, T.M., Cruickshanks, K.L., Risely, K., Noble, D.G. & Roy, D.B. 2010. Developing and launching a wider countryside butterfly survey across the United Kingdom. *Journal of Insect Conservation* DOI 10.1007/s10841-010-9345-8

Brereton, T., Roy, D.B., Middlebrook, I., Botham, M. & Warren, M. 2010. The development of butterfly indicators in the United Kingdom and assessments in 2010. *Journal of Insect Conservation* DOI 10.1007/s10841-010-9333-z

Fox, R. 2010. 2009: The year of the Painted Lady *Vanessa cardui* (L.). *Atropos*, No. 40: 3-14.

- Fox, R. & Dennis, R.L.H. 2010. Winter survival of *Vanessa atalanta* (Linnaeus, 1758) (Lepidoptera: Nymphalidae): a new resident butterfly for Britain and Ireland? *Entomologist's Gazette*, **61**: 94-103.
- Fox, R., Roy, D.B., Dennis, R.L.H. & Asher, J. 2010. A new look at the changing distribution of British butterflies: different analysis, same results. *Entomologist's Gazette*, **61**: 225-234.
- Gardiner, T. 2010. Insects of Waveney Forest (Fritton Warren) in East Norfolk. *Entomologist's Record & Journal of Variation*, **122**: 155-162.
- Hardy, P.B. & Dennis, R.L.H. 2010. A butterfly exploiting the matrix: *Pieris napi* (Linnaeus, 1758) (Lepidoptera: Pieridae) ovipositing amongst mown grass in a city park. *Entomologist's Gazette*, **61**: 155-158.
- Long, R. 2010. European Map *Araschnia levana* in Jersey. *Atropos*, No. 41: 63.
- Oliver, P. 2010. Autumn migration of the Painted Lady *Vanessa cardui* (L.) (Lep.: Nymphalidae). *Entomologist's Record & Journal of Variation*, **122**: 183.
- Olofsson, M., Vallin, A., Jakobsson, S. & Wiklund, C. 2010. Marginal eyespots on butterfly wings deflect bird attacks under low light intensities with UV wavelengths. *PLoS One* **5**: e10798.
- Page, R.J.C. 2010. Perching and patrolling continuum at favoured hilltop sites on a ridge: A mate location strategy by the Purple Emperor butterfly *Apatura iris*. Sims, I. 2010. *Entomologist's Record & Journal of Variation*, **122**: 61-70.
- Paull, D. & L. 2010. A December record of the Speckled Wood *Pararge aegeria*. *Atropos*, No. 41: 57.
- Prance, D.A. 2010. Two recent records of *Aricia agestis* ([Denis & Schiffmüller], 1775) (Lepidoptera: Lycaenidae) from West Middlesex. *Entomologist's Gazette*, **61**: 262.
- Pratt, C.R. & Hulme, N.A.C. 2010. The Queen of Spain Fritillary *Issoria lathonia* L. in Sussex during the Twenty-first Century. *Atropos*, No. 39: 3-8.
- Reppert, S.M., Gegeer, R.J. & Merlin, C. 2010. Navigational mechanisms of migrating Monarch butterflies. *Trends in Neurosciences*, **33**: 399-406.
- Smylie, B. 2010. British distribution of *Aricia* Lep: Lycaenidae. *Entomologist's Record & Journal of Variation*, **122**: 74-84.
- Whitehead, P.F. 2010. A Comma butterfly, *Polygonum c-album* (Linnaeus, 1758) (Lepidoptera: Nymphalidae) imbibing ferrous sulphate solution in Worcestershire. *Entomologist's Gazette*, **61**: 154.
- Young, M. 2010. A wild foodplant for the Large White *Pieris brassicae*. *Atropos*, no. 39: 75.

## Moths

- Allen, D., Mellon, C., Waring, P., Hughes, M., Telfer, M., Tyner, A., Weir, D. & Tickner, M. 2010. Further research on the White Prominent *Leucodonta bicoloria* (D. & S.) in Ireland, 2009. *Atropos*, No. 40: 16-24.
- Bailey, G. 2010. A Beautiful Snout *Hypena crassalis* in Essex. *Atropos*, No. 41: 54.
- Beavan, S.D. & Heckford, R.J. 2010. A previously unrecognized Scottish record of *Pancalia schwarzeella* (Fabricius, 1798) (Lepidoptera: Cosmopterigidae), which extends the known range of the species in Britain. *Entomologist's Gazette*, **61**: 171-172.
- Brown, D.C.G. Devon Carpet *Lampropteryx otregiata* (Metcalf) (Lep.: Geometridae) in Warwickshire. *Entomologist's Record & Journal of Variation*, **122**: 4.
- Clark, P. 2010. *Opogona omoscopa* resident on the Isles of Scilly. *Atropos*, No. 39: 75.
- Clifton, J. & A. 2010. *Cosmopterix zieglerella* (Hb.) (Lep.: Cosmopterigidae) in Staffordshire: A new moth to the West Midlands area. *Entomologist's Record & Journal of Variation*, **122**: 42.
- Cubitt, M. 2010. Chestnuts galore. *Entomologist's Record & Journal of Variation*, **122**: 197-199.
- Deans, M.J. 2010. Northern Rustic *Standfussiana lucernea* (L.) (Lep.: Noctuidae): New to Suffolk. *Entomologist's Record & Journal of Variation*, **122**: 60.

- Deans, M.J. 2010. *Pammene fasciana* (L.) [*juliana* (Steph.)] (Lep.: Tortricidae): a review of the historical and current status in Scotland. *Entomologist's Record & Journal of Variation*, **122**: 173-174.
- Dickerson, B. 2010. Devon Carpet *Lampropteryx oregiata* (Metcalf) and Tree-lichen Beauty *Cryphia algae* (Fabr.): Two new macro moth species in Huntingdonshire (VC31). *Entomologist's Record & Journal of Variation*, **122**: 52.
- Dickerson, B., Banthorpe, A. & Banthorpe, M. 2010. Lepidoptera mines on Evergreen oak *Quercus* sp. in Huntingdonshire. *Entomologist's Record & Journal of Variation*, **122**: 162-163.
- Fish, J. & Reeves, J. 2010. *Diaphania perspectalis* (Walker, 1859) (Lep.: Crambidae) in Hertfordshire. *Entomologist's Record & Journal of Variation*, **122**: 203-204.
- Fletcher, C. 2010. Key jangling – a little known technique for calming agitated moths. *Entomologist's Record & Journal of Variation*, **122**: 93.
- Fletcher, C.H. 2010. *Stigmella samiatella* (Zell.) (Lep.: Nepticulidae) bred from Oak *Quercus robor*. *Entomologist's Record & Journal of Variation*, **122**: 73.
- Fox, R., Conrad, K.F., Parsons, M.S., Warren, M.S. and Woiwod, I.P. 2010. Moths. In *Silent summer: the state of the wildlife in Britain and Ireland*, (ed. N. Maclean), pp.448-470. Cambridge University Press, Cambridge.
- Fox, R., Randle, Z., Hill, L., Anders, S., Wiffen, L. & Parsons, M.S. 2010. Moths Count: recording moths for conservation in the UK. *Journal of Insect Conservation* DOI: 10.1007/s10841-010-9309-z
- Fuentes-Montemayor, Goulson, D. & Park, K.J. 2010. The effectiveness of agri-environment schemes for the conservation of farmland moths: assessing the importance of a landscape-scale management approach. *Journal of Applied Ecology* DOI: 10.1111/j.1365-2664.2010.01927.x
- Gardiner, T. & Ringwood, Z. 2010. Species richness of orthopteroid insects and incidence of a rare moth on an island nature reserve threatened by sea level rise in the Walton Backwaters in eastern England. *Entomologist's Gazette*, **61**: 251-261.
- Gould, P.J.L. 2010. *Ethmia quadrillella* Goeze (Lep.: Ethmiidae) on the Channel Islands – a correction. *Entomologist's Record & Journal of Variation*, **122**: 224.
- Gould, P.J.L. 2010. Important records from the Rothamsted Estate, Harpenden, Hertfordshire (VC20) in 2009. *Entomologist's Record & Journal of Variation*, **122**: 254-256.
- Gould, P.J.L. 2010. Important records from the Rothamsted Insect Survey light-trap on Guernsey 2008. *Entomologist's Record & Journal of Variation*, **122**: 28-29.
- Gould, P.J.L. 2010. *Pseudatemelia flavifrontella* (D. & S.) (Lep.: Oecophoridae) new to Huntingdonshire, VC31. *Entomologist's Record & Journal of Variation*, **122**: 213.
- Gould, P.J.L. 2010. The Raspberry Clearwing *Pennisetia hylaeiformis* (Laspeyres) (Lep.: Sesiidae) in Hertfordshire, VC20. *Entomologist's Record & Journal of Variation*, **122**: 202-203.
- Gould, P.J.L. 2010. The Small Ranunculus *Hecatera dysodea* (D. & S.) (Lep.: Noctuidae) in Rothamsted insect Survey Light Traps. *Entomologist's Record & Journal of Variation*, **122**:
- Gould, P.J.L. 2010. The status of the Olive Crescent *Trisateles emortualis* (D. & S.) (Lep.: Noctuidae) and the Many-lined, *Costaconvexa polygrammata* Borkh. (Lep.: Geometridae) on the Channel Islands. *Entomologist's Record & Journal of Variation*, **122**: 217-218.
- Groenendijk, D. & Ellis, W.N. 2010. The state of the Dutch larger moth fauna. *Journal of Insect Conservation* DOI: 10.1007/s10841-010-9326-y
- Grundy, D. 2010. The Garden Moth Scheme – 2010 update. *Atropos*, No. 40: 54-57.
- Hall, P. *Cydia pactolana* (Zeller, 1840) (Lep.: Tortricidae): new to Buckinghamshire. *Entomologist's Record & Journal of Variation*, **122**: 146-147.

- Hayward, R. 2010. Footman moths (Lep.: Arctiidae, Lithosiinae) in a Berkshire garden 2007 to 2009, with special reference to the Hoary Footman *Eilema caniola* (Hb.). *Entomologist's Record & Journal of Variation*, **122**: 2-3.
- Heckford, R.J. 2010. A note on the biology of *Choreutis diana* (Hübner, 1822) (Lepidoptera: Choreutidae) in the British Isles. *Entomologist's Gazette*, **61**: 177-184.
- Heckford, R.J. 2010. A note on *Catoptria furcatellus* (Zetterstedt, 1840) (Lepidoptera: Pyralidae), including the ovum and early instars. *Entomologist's Gazette*, **61**: 267-272.
- Heckford, R.J. 2010. A note on the early stages of *Olethreutes schulziana* (Fabricius, 1776) (Lep.: Tortricidae). *Entomologist's Record & Journal of Variation*, **122**: 191-194.
- Heckford, R.J. 2010. *Endothenia oblongana* (Haworth, 1811) (Lepidoptera: Tortricidae) reared from a rootstock of *Plantago lanceolata* L. *Entomologist's Gazette*, **61**: 222-224.
- Heckford, R.J. 2010. Notes on the early stages of four species of Oecophoridae, Gelechiidae and Pyralidae (Lepidoptera) in the British Isles. *Entomologist's Gazette*, **61**: 207-221.
- Heckford, R.J. 2010. Notes on the history and biology of *Elachista triseriatella* Stainton, 1854, and *E. cahorsensis* Traugott-Olsen, 1992 (Lepidoptera: Elachistidae) in the British Isles. *Entomologist's Gazette*, **61**: 133-142.
- Heckford, R.J. 2010. On the biology of *Spatalistis bifasciana* (Hübner, 1787) (Lepidoptera: Tortricidae) in England. *Entomologist's Gazette*, **61**: 23-39.
- Heckford, R.J. & Beavan, S.D. 2010. A further note on the biology of *Pancalia schwarzeella* (Fabricius, 1798) (Lepidoptera: Cosmopterigidae) and a consideration of English records. *Entomologist's Gazette*, **61**: 159-170.
- Heckford, R.J., Henwood, B.P. & Beavan, S.D. 2010. Notes on the early stages of the Triangle *Heterogenea asella* ([D. & S.]) (Lep.:Limacodidae). *Entomologist's Record & Journal of Variation*, **122**: 97-111.
- Higgott, J.B. 2010. Devon Carpet *Lampropteryx otregiata* (Metcalf) (Lep.: Geometridae) in Suffolk – an update. *Entomologist's Record & Journal of Variation*, **122**: 4.
- Higgott, J.B. 2010. Further records of *Trifurcula squamatella* in Suffolk. *Atropos*, No. 40: 83.
- Higgott, J.B. & Davey, P. 2010. The Rannoch Looper *Itame brunneata* (Thunb.) in southern England, 2009. *Atropos*, No. 40: 26-34.
- Higgott, J.B. & Harvey, R.M. 2010. A record of *Cydia inquinatana* (Hb.) (Lep.: Tortricidae) from Suffolk. *Entomologist's Record & Journal of Variation*, **122**: 199-201.
- Hiscocks, G. 2010. Moths in the snow. *Atropos*, No. 41: 58.
- Homan, R. 2010. *Bucculatrix maritima* (Stt.) (Lep.: Bucculatricidae) feeding in October at two English sites. *Entomologist's Record & Journal of Variation*, **122**: 279-280.
- Johnson, C. 2010. Moth recording on South Uist. *Atropos*, no. 41: 21-24.
- Kitchener, P. 2010. *Lyonetia prunifoliella*: An exciting find on the Lizard, Cornwall. *Atropos*, No. 39: 73-74.
- Knill-Jones, S. 2010. Moths new to the Isle of Wight in 2009. *Entomologist's Record & Journal of Variation*, **122**: 5.
- Lewis, D. 2010. Observations on Winter Moths *Operopthera brumata* (L.) (Lep: Geometridae) during the winter of 2009-2010. *Entomologist's Record & Journal of Variation*, **122**: 94-95.
- Manning, D.V. & Dickerson, B. 2010. *Ectoedemia amani* Svensson (Lep.: Nepticulidae) in Bedfordshire (VC30), and a review of the current British records. *Entomologist's Record & Journal of Variation*, **122**: 207-208.
- McCormick, R. 2010. Interesting Lepidoptera in Devon during 2009. *Entomologist's Record & Journal of Variation*, **122**: 33-34.

- Merckx, T., Feber, R.E., Mclaughlan, C., Bourn, N.A.D., Parsons, M.S., Townsend, M.C., Riordan, P. & Macdonald, D.W. 2010. Shelter benefits less mobile moth species: The field-scale effect of hedgerow trees. *Agriculture, Ecosystems and Environment*, **138**: 147-151.
- Odin, N. 2010. Spurge Hawk-moth *Hyles euphorbiae* larvae in Suffolk. *Atropos*, No. 41: 58-59.
- Palmer, S. 2010. *Dicestra trifolii* (Hufn.) (Lep.: Noctuidae), the Nutmeg, in West Sutherland. *Entomologist's Record & Journal of Variation*, **122**: 153.
- Palmer, S. 2010. Lyme Grass *Chortodes elymi* (Tr.) (Lep.: Noctuidae) in both Lancashire Vice Counties, 59 and 60. *Entomologist's Record & Journal of Variation*, **122**: 229.
- Picozzi, N. 2010. Observations on the display of the Ghost Moth *Hepialus humuli* (Linn.) in North-east Scotland. *Atropos*, No. 40: 43-48.
- Plant, C.W. 2010. The Scarlet Tiger *Callimorpha dominula* (L.) in Hertfordshire and Middlesex. *Entomologist's Record & Journal of Variation*, **122**: 264-265.
- Pledge, D. 2010. Welsh Wave *Venusia cambrica* Curtis (Lep.: Geometridae) in Middlesex. *Entomologist's Record & Journal of Variation*, **122**: 190.
- Randle, Z. 2010. Moths Count, past, present and future. *Antenna*, **34**(2): 64-68.
- Randle, Z., Fox, R., Hill, L., Anders, S., McLellan, L. & Parsons, M. 2010. Moths Count: Outcomes and outlook. *Atropos*, No. 41; 26-37.
- Reid, J. 2010. Raspberry Clearwing *Pennisetia hylaeiformis* Lasp. in primocane raspberries. *Atropos*, No. 40: 52-53.
- Scanes, J. 2010. The likely establishment of the Plumed Fan-foot *Pechipogo plumigeralis* at Bexhill-on-Sea, East Sussex. *Atropos*, No. 41: 59.
- Sims, I. 2010. *Caloptilia leucapennella* (Stephens) (Lep.: Gracillariidae) at Jealott's Hill, Berkshire. *Entomologist's Record & Journal of Variation*, **122**: 182-183. (See also pp. 195-196)
- Sims, I. 2010. *Calybites phasianipennella* (Hb.) (Lep.: Gracillariidae) larvae in Berkshire. *Entomologist's Record & Journal of Variation*, **122**: 172-173.
- Sims, I. 2010. *Cosmopterix zieglerella* (Hb.) (Lep.: Cosmopterigidae) in east Berkshire, an update. *Entomologist's Record & Journal of Variation*, **122**: 59.
- Sims, I. 2010. Two species of hornbeam-feeding microlepidoptera new to Berkshire. *Entomologist's Record & Journal of Variation*, **122**: 22. (See also p. 166)
- Slade, D. *Phyllonorycter muelleriella* (Zeller, 1839) (Lep.: Gracillariidae) in Glamorgan (VC41). *Entomologist's Record & Journal of Variation*, **122**: 195.
- Sokoloff, P. 2010. *Prays peregrina* Agassiz, 2007 (Lep.: Yponomeutidae) – a further record from north-west Kent. *Entomologist's Record & Journal of Variation*, **122**: 207.
- Tilbury, C., Williams, D., Jukes, M. & Straw, N. 2010. The re-establishment of Gypsy Moth *Lymantria dispar* (Linn.) in the UK. *Atropos*, No. 40: 36-42.
- Tremewan, W.G. 2010. *Chloroclystis v-ata* (Haworth, 1809) (Lepidoptera: Geometridae) in November. *Entomologist's Gazette*, **61**: 52.
- Tyler-Smith, C. & Xue, Y. 2010. The Ruddy Carpet *Catarhoe rubidata* ([D. & S.], 1775) (Lep.: Geometridae) in Saffron Walden, Essex, 2004-2009. *Entomologist's Record & Journal of Variation*, **122**: 92.
- Wilton, D. 2010. Devon Carpet *Lampropteryx oregiata* (Metcalf) (Lep.: Geometridae) – new for Buckinghamshire in 2009. *Entomologist's Record & Journal of Variation*, **122**: 4-5.
- Young, M.R. 2010. A new foodplant for *Macaria alternata* ([Denis & Schiffermüller], 1775) (Lepidoptera, Geometridae) and notes on its occurrence in Scotland. *Entomologist's Gazette*, **61**: 71-72.

Wilton, D. 2010. *Pammene giganteana* (Peyerimhoff, 1863) (Lep.: Tortricidae) new to Buckinghamshire (VC24). *Entomologist's Record & Journal of Variation*, **122**: 147.

## **Butterfly Conservation reports (2010)**

### **General**

Noake, B., Bulman, C. & Bourn, N. 2010. *Contract between Forestry Commission England and Butterfly Conservation for the implementation of the 'Lepidoptera on Forestry Commission Land in England: Conservation Strategy 2007-2017'. Summary of progress from April 2009 to March 2010*. Butterfly Conservation, Wareham. (Report No. S10-09).

Williams, C. & Hobson, R. 2010. *Implementing Action Plans for Lepidoptera in Wales to 2010. Butterfly Conservation report to the Countryside Council for Wales. Summary of progress April 2009 to March 2010*. Butterfly Conservation, Wareham. (Report No. S10-14).

### **Butterflies**

Clarke, S.A. & Green, D.G. 2010. *Malverns Hills monitoring High Brown Fritillary Argynnis adippe breeding habitat. Second habitat survey, 2009*. Butterfly Conservation, Wareham. (Report No. S10-07).

Fox, R. 2010. *Atlas of Butterflies in Britain and Ireland*. Butterfly Conservation, Wareham. (Report No. S10-20).

Hoare, D.J. 2010. *A study of Wood White (Leptidea sinapis) distribution and habitat use in Chiddingfold Forest SSSI, 2009*. Butterfly Conservation, Wareham. (Report No. S10-21).

Joy, J., Hart, I. & Young, S. 2010. *Ewyas Harold Common, Herefordshire summary of monitoring data 1999-2010 with emphasis on Pearl-bordered Fritillary (Boloria euphrosyne)*. Butterfly Conservation, Wareham. (Report No. S10-18).

Joy, J., Williams, M. & Jeffcoate, S. 2010. *Conservation for the Wood White Butterfly (Leptidea sinapis). National sites dossier*. Butterfly Conservation, Wareham. (Report No. S10-16).

Masterman, A. 2010. *Distribution and altitudinal range of the Mountain Ringlet (Erebia epiphron Koch) in Scotland, and estimates of habitat quality and extent*. Butterfly Conservation, Wareham. (Report No. S10-01).

Plackett, J. & Bulman, C. 2010. *The Two Moors Threatened Butterfly Project progress report April 2009-March 2010*. Butterfly Conservation, Wareham. (Report No. S10-05).

Plackett, J. & Bulman, C. 2010. *The Two Moors Threatened Butterfly Project interim progress report, April - September 2010*. Butterfly Conservation, Wareham. (Report No. S10-17).

Sazer, D. 2010. *Mynydd Mawr final report*. Butterfly Conservation, Wareham. (Report No. S10-06).

Williams, N. 2010. *Habitat assessment, timed counts and habitat management for Small Pearl-bordered Fritillary (Boloria selene) in the Forest of Dean, Gloucestershire 2009*. Butterfly Conservation, Wareham. (Report No. S10-27).

### **Moths**

Clancy, S.P. 2010. *The Black-veined Moth Siona lineata (Scopoli, 1763) survey 2010*. Butterfly Conservation, Wareham. (Report No. S10-19).

Clancy, S.P. 2010. *The Bright Wave moth Idaea ochrata (Scopoli, 1763) survey 2010*. Butterfly Conservation, Wareham. (Report No. S10-23).

Clancy, S. P. 2010. *The Marsh Mallow Moth (Hydraecia osseola Stgr. ssp. hucherardi Mab.) survey 2010*. Butterfly Conservation, Wareham. (Report No. S10-25).

Clancy, S.P. 2010. *The Sussex Emerald moth (Thalera fimbrialis Scop.) survey 2010*. Butterfly Conservation, Wareham. (Report No. S10-22).

Haggett G.M. 2010. *The Barred Tooth-striped moth Trichopteryx polycommata (Dennis & Schiffermüller), Brecks survey 2009*. Butterfly Conservation, Wareham. (Report No. S10-03).

- Haggett G.M. 2010. *Basil Thyme Case-bearer moth* (*Coleophora tricolor* Walsingham, 1899) in the Norfolk and Suffolk Breck. Research and survey 2009. Butterfly Conservation, Wareham. (Report No. S10-04).
- Haggett G.M. 2010. *Lunar Yellow Underwing* *Noctua orbona* (Hufnagel), larval survey in Norfolk and Suffolk Breckland 2009-2010. Butterfly Conservation, Wareham. (Report No. S10-15).
- Haggett G.M. 2010. *The Barred Tooth-striped moth* *Trichopteryx polycommata* (Denis & Schiffermüller), Brecks survey 2010. Butterfly Conservation, Wareham. (Report No. S10-28).
- Hatcher, P.E. 2010. *Netted Carpet moth* *Eustroma reticulatum* ([Denis & Schiffermüller]) Lake District survey, September 2009. Butterfly Conservation, Wareham. (Report No. S10-11).
- Hearle, S. 2010. *Grey Carpet* *Lithostege griseata* (D. & S.) conservation and survey in Norfolk and Suffolk Breckland 2009. Butterfly Conservation, Wareham. (Report No. S10-26).
- Noake, B. 2010. *Dingy Mocha* *Cyclophora pendularia* larval survey in Dorset and south-west Hampshire, 2008-2010. Butterfly Conservation, Wareham. (Report No. S10-24).
- Rosenthal, A. 2010. *Status of the Barberry Carpet moth* *Pareulype berberata* and progress report 2009. Butterfly Conservation, Wareham. (Report No. S10-12).
- Rouse, T. 2010. *Fiery Clearwing* (*Pyropteron chrysidiformis* Esp.) population monitoring 2009. Butterfly Conservation, Wareham. (Report No. S10-02).
- Waring, P. 2010. *The Marsh Moth* *Athetis pallustris* (Hübner) in Lincolnshire: Research and survey in 2009. Butterfly Conservation, Wareham. (Report No. S10-13).

## Appendix A – List of UK Biodiversity Action Plan Priority Lepidoptera Species

## Current UK BAP Priority butterfly species (2007 list)

<b>Common name</b>	<b>Scientific name</b>
Brown Hairstreak	<i>Thecla betulae</i>
Chequered Skipper	<i>Carterocephalus palaemon</i>
Dingy Skipper	<i>Erynnis tages</i>
Duke of Burgundy	<i>Hamearis lucina</i>
Glanville Fritillary	<i>Melitaea cinxia</i>
Grayling	<i>Hipparchia semele</i>
Grizzled Skipper	<i>Pyrgus malvae</i>
Heath Fritillary	<i>Melitaea athalia</i>
High Brown Fritillary	<i>Argynnis adippe</i>
Large Blue	<i>Maculinea arion</i>
Large Heath	<i>Coenonympha tullia</i>
Lulworth Skipper	<i>Thymelicus acteon</i>
Marsh Fritillary	<i>Euphydryas aurinia</i>
Mountain Ringlet	<i>Erebia epiphron</i>
Northern Brown Argus	<i>Aricia artaxerxes</i>
Pearl-bordered Fritillary	<i>Boloria euphrosyne</i>
Silver-studded Blue	<i>Plebejus argus</i>
Small Blue	<i>Cupido minimus</i>
Small Heath	<i>Coenonympha pamphilus</i>
Small Pearl-bordered Fritillary	<i>Boloria selene</i>
Wall	<i>Lasiommata megera</i>
White Admiral	<i>Limenitis camilla</i>
White Letter Hairstreak	<i>Satyrium w-album</i>
Wood White	<i>Leptidea sinapis</i>
<b>Total</b>	<b>24</b>

## Current UK BAP Priority moth species (2007 list)

<b>Common name</b>	<b>Scientific name</b>
Argent & Sable	<i>Rheumaptera hastata</i>
Ashworth's Rustic	<i>Xestia ashworthii</i>
Barberry Carpet	<i>Pareulype berberata</i>
Barred Tooth-striped	<i>Trichopteryx polycommata</i>
Basil-thyme Case-bearer	<i>Coleophora tricolor</i>
Beautiful Pearl	<i>Agrotera nemoralis</i>
Belted Beauty	<i>Lycia zonaria britannica</i>
Betony Case-bearer	<i>Coleophora wockeella</i>
Black-veined Moth	<i>Siona lineata</i>
Bordered Gothic	<i>Heliophobus reticulata</i>
Bright Wave	<i>Idaea ochrata cantiata</i>
Brighton Wainscot	<i>Oria musculosa</i>
Chalk Carpet	<i>Scotopteryx bipunctaria</i>
Chalk-hill Lance-wing	<i>Epermenia insecurella</i>
Clay Fan-Foot	<i>Paracolax tristalis</i>
Common Fan-foot	<i>Pechipogo strigilata</i>
Concolorous	<i>Chortodes extrema</i>
Cousin German	<i>Protolampra sobrina</i>
Currant-shoot Borer	<i>Lampronia capitella</i>
Dark Crimson Underwing	<i>Catocala sponsa</i>
Dark-bordered Beauty	<i>Epione vespertaria</i>
Dingy Mocha	<i>Cyclophora pendularia</i>
Dorset Tineid Moth	<i>Eudarcia richardsoni</i>
Drab Looper	<i>Minoa murinata</i>
False Mocha	<i>Cyclophora porata</i>
Fenn's Wainscot	<i>Chortodes brevilinea</i>
Fiery Clearwing	<i>Pyropteron chrysidiformis</i>
Forester	<i>Adscita statices</i>



Four-Spotted Moth	<i>Tyta luctuosa</i>
Fuscous Flat-body Moth	<i>Agonopterix capreolella</i>
Goat Moth	<i>Cossus cossus</i>
Greenweed Flat-body Moth	<i>Agonopterix atomella</i>
Grey Carpet	<i>Lithostege griseata</i>
Heart Moth	<i>Dicycla oo</i>
Horehound Long-horn Moth	<i>Nemophora fasciella</i>
Large Gold Case-bearer	<i>Coleophora vibicella</i>
Least Owlet	<i>Scythris siccella</i>
Light Crimson Underwing	<i>Catocala promissa</i>
Liquorice Piercer	<i>Grapholita pallifrontana</i>
Lunar Yellow Underwing	<i>Noctua orbona</i>
Marsh Mallow Moth	<i>Hydraecia osseola hucherardi</i>
Marsh Moth	<i>Athetis pallustris</i>
Mistletoe Marble	<i>Celypha woodiana</i>
Narrow-bordered Bee Hawk-moth	<i>Hemaris tityus</i>
Netted Carpet	<i>Eustroma reticulata</i>
Netted Mountain Moth	<i>Macaria carbonaria</i>
New Forest Burnet	<i>Zygaena viciae argyllensis</i>
Northern Dart	<i>Xestia alpicola alpina</i>
Olive Crescent	<i>Trisateles emortualis</i>
Orange Upperwing	<i>Jodia croceago</i>
Pale Shining Brown	<i>Polia bombycina</i>
Pied Tineid Moth	<i>Nemapogon picarella</i>
Reddish Buff	<i>Acosmetia caliginosa</i>
Rest Harrow	<i>Aplasta ononaria</i>
Sandhill Pigmy Moth	<i>Stigmella zelleriella</i>
Sandhill Rustic (Cornish ssp.)	<i>Luperina nickerlii leechi</i>
Scarce Aspen Knot-horn	<i>Sciota hostilis</i>
Scarce Aspen Midget Moth	<i>Phyllonorycter sagitella</i>
Scarce Brown Streak	<i>Aplota palpella</i>
Scarce Crimson & Gold	<i>Pyrausta sanguinalis</i>
Scarce Long-horn Moth	<i>Nematopogon magna</i>
Scarce Pug	<i>Eupithecia extensaria occidua</i>
Scarce Vapourer	<i>Orgyia recens</i>
Shoulder-striped Clover	<i>Heliothis maritima</i>
Silky Wave	<i>Idaea dilutaria</i>
Slate Sober Moth	<i>Syncopacma albipalpella</i>
Slender Scotch Burnet	<i>Zygaena loti scotica</i>
Sloe Carpet	<i>Aleucis distinctata</i>
Small Dark Yellow Underwing	<i>Anarta cordigera</i>
Speckled Footman	<i>Coscinia cribraria bivittata</i>
Straw Belle	<i>Aspitates gilvaria gilvaria</i>
Striped Lychnis	<i>Shargacucullia lychnitis</i>
Surrey Midget Moth	<i>Phyllonorycter scabiosella</i>
Sussex Emerald	<i>Thalera fimbrialis</i>
Sword-Grass	<i>Xylena exsoleta</i>
Water-dock Case-bearer	<i>Coleophora hydrolapathella</i>
Western Sober Moth	<i>Syncopacma suecicella</i>
White-mantled Wainscot	<i>Archanara neurica</i>
White-spot	<i>Hadena albimacula</i>
White-spotted Pinion	<i>Cosmia diffinis</i>
White-spotted Sable Moth	<i>Anania funebris</i>
	<b>Total 81</b>

(The 71 UK BAP 'Research only' species are not shown above)