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MOTHS COUNT

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NIEA Northern Ireland Environment Agency www.ni-environment.gov.uk

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Butterfly Conservation
Saving butterflies, moths and our environment

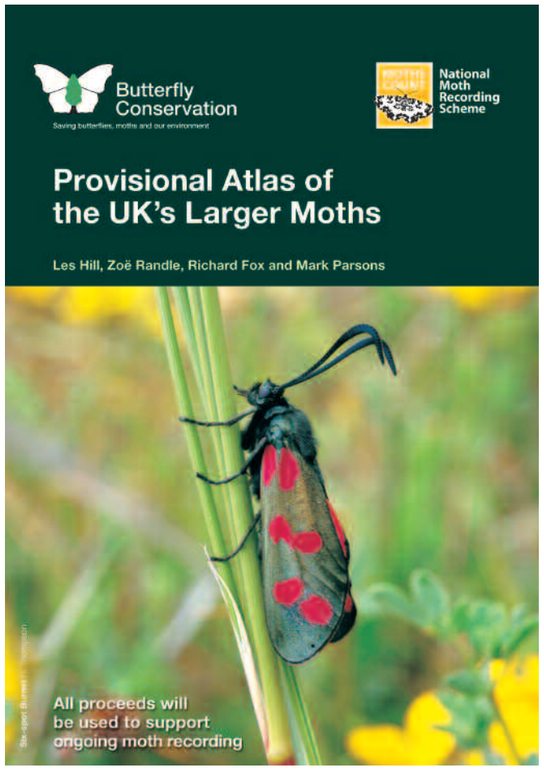
MOTHS COUNT

Moths Count Newsletter 2011

The NMRS: Putting Moths on the Map

In the early days of the Moths Count project the establishment of a National Moth Recording Scheme (NMRS) was extremely ambitious, particularly as many vice-counties didn't have a computerised dataset; records were stored on a card-index or in some cases even on scraps of paper in cardboard boxes! Furthermore, 34 vice-counties didn't have an active County Moth Recorder. Fortunately, due to the enthusiasm and willingness of many individuals these hurdles were overcome. The moth recording community rose to the challenge of either volunteering themselves for the vital role of County Moth Recorder or in assisting in the computerisation of hundreds of thousands of paper records enabling County Recorders to concentrate on the verification of records. The County Moth Recorder network is at the heart of the NMRS and without them we could not have achieved what we have.

Six-belted Clearwing (P. Clement)



The climax of the first four years of the Moths Count project was undoubtedly the publication of the *Provisional Atlas of the UK's Larger Moths*. The first print run sold out in a matter of weeks. However, it is **back in print and available NOW!** (see page 06). This landmark production is a compilation of years of recording and survey effort by the UK moth recording community. It is a great achievement to be able to publish the first up-to-date maps in 30 years for 868 macro-moth species. The maps for the Geometridae (over 300 species) are the first ever to be published!

The maps were generated from the NMRS database which, at the time, held 11.3 million moth records from all UK vice-counties plus the Channel Islands and Isle of Man. We hope that it is exciting and rewarding, as well as useful, for individual moth recorders to see their records in a national context. >>

>> A recurring question asked is “why is the atlas *provisional*?” The answer is that the NMRS database is still in its infancy; there are gaps in recording coverage, due to under-recording or data that have yet to be submitted, and historical records are particularly sparse (almost 60% of the records held in the database are from the year 2000 onwards). Another reason why the atlas is provisional is because there are apparent errors in the data, despite the huge efforts undertaken by County Moth Recorders, local and national experts to verify the records.

The atlas is not a definitive record of the exact distribution of each species, past and present. However, it is an important and significant step forward in our knowledge of moths. Furthermore, the publication of the atlas means that potential errors can be identified and that recorders can tackle gaps in recording coverage. These so called ‘white holes’ provide the ideal excuse for a moth-ing trip or holiday!

Since the production of the Provisional Atlas the NMRS database has continued to grow. We have received 54 refreshed vice-county datasets which, once incorporated into the NMRS, will take the total number of records to over 12 million. Whilst the moth recording community continues to record moths, the database continues to expand. To contribute to the NMRS please send your records to your County Moth Recorder, contact details can be found on the Moths Count website (**www.mothscount.org**).

Moth records from the Republic of Ireland were not included in the Provisional Atlas because the publication was a specific output of the Heritage Lottery funded Moths Count project, which was explicitly UK-based. However, in the future, we hope to collaborate with Moths Ireland and the National Biodiversity Data Centre to produce maps of the whole of Britain and Ireland. If any UK moth recorders do visit the Republic and record moths please forward your records to the Moths Ireland team via **records@mothsireland.com**.

The NMRS database has a multitude of potential uses primarily focussed on moth conservation. Our knowledge of moth ecology and distribution can be improved, trends will be generated and revised threat statuses for each species can be produced. Butterfly Conservation and its collaborative partners are working on these analyses as a matter of urgency.

The database can also be used to inform land-use planning and management decisions that impact on biodiversity. County Moth Recorders can contribute to this by sharing their datasets with local environmental records centres and, at the national level, the NMRS database is available to Natural England and Countryside Council for Wales staff (and Scottish Natural Heritage staff too shortly, we hope) for use in their conservation work. The distribution maps are an important tool in assessing species’ range changes, both positive and negative within the UK.

We can also use them to look at species colonisations. Several species have colonised or re-colonised the UK in recent years. For example, only three records (dating back to the 19th century) of the Tree-lichen Beauty had been reported in the UK up until 1991. Over the next decade many more were recorded as probable immigrants, but around the year 2001, migration turned into colonisation. Resident populations are now established in southern counties (Kent, Essex, Surrey and Middlesex, with migrants or wanderers being seen much further afield) (Figure 1). A single adult was trapped at the Houses of Parliament in Westminster in 2007!

Clancy’s Rustic is another recent colonist, the first British record was from Kent in 2002 and the following year six were recorded in South East England. Three years later (2005) a staggering 160 were recorded along the south coast, 60% of them in Kent. This species is now well established as a resident in coastal areas of southern counties from Devon to Suffolk (Figure 2). The Small Ranunculus was once a resident in the UK and could be found primarily in South East England and East Anglia. However, by 1939 the moth had disappeared and was thought to be extinct. It was rediscovered in Kent in 1997 and by the following year both adults and larvae were found, indicating that the moth was breeding in the UK once more. It has gone from strength to strength since then and this moth is now well established in the South East of England and even in South Wales, where historically only a few scattered sightings had been documented (Figure 3).

The NMRS database currently holds 11.8 million moth records from the UK, Channel Islands and the Isle of Man. The majority of moth records in the NMRS database are from England (81%). Wales and Scotland have contributed 10% and 8% of records respectively, Northern Ireland 1.3%, whilst the Channel Islands have submitted 0.4% and the Isle of Man 0.2% of records. With the exception of the Channel Islands, these figures are not surprising as they reflect the overall human population density and moth recorder density within the different countries.

Vice-county (VC) datasets are very variable in size; the largest VC datasets in the NMRS database at present for England, Wales, Scotland and Northern Ireland are presented in the table below.

Table 1: Top three VCs for each country

	Vice-county	No. records
England	South Hampshire	763,538
	Hertfordshire	546,040
	South Lancashire	465,521
Wales	Glamorgan	268,376
	Ceredigion	207,267
	Pembrokeshire	178,395
Scotland	Stirlingshire	119,940
	East Inverness-shire	90,825
	West Ross	86,675
Northern Ireland	Down	58,078
	Antrim	35,871
	Fermanagh	27,916

The NMRS maps can be viewed on the Moths Count website (**www.mothscount.org**), the NBN Gateway (another data refresh to the Gateway will be happening this summer), the UK Moths website and even on the BirdGuides British Moths app for iPhone and iPad; moth recording really has made it into the modern age!

It was hoped that online recording for the NMRS would be available for use at the beginning of the moth recording season this year; however, it is still in development. A period of extensive testing will begin in due course and a ‘going live’ date will be announced later this year.

Another long awaited publication is also available now (see page 06). *British and Irish moths: an illustrated guide to selected difficult species (covering the use of genitalia characters and other features)* has been produced by the Moths Count project with funding from the Heritage Lottery Fund, John Spedan Lewis Foundation and others.

NMRS provisional distribution maps showing moth distribution at 10km square resolution.

Fig 1. **Tree-lichen Beauty**

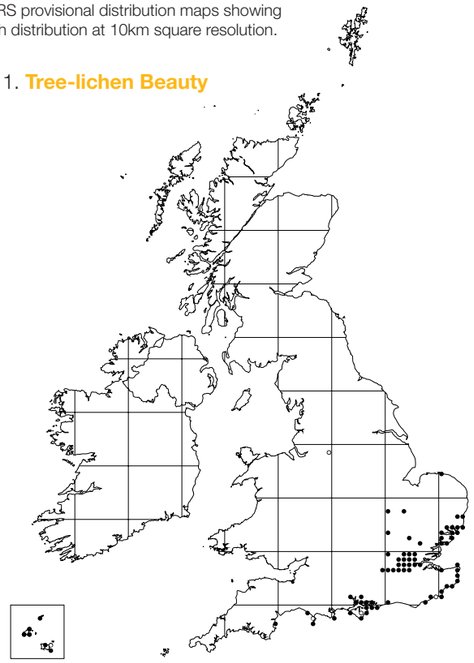


Fig 2. **Clancy’s Rustic**

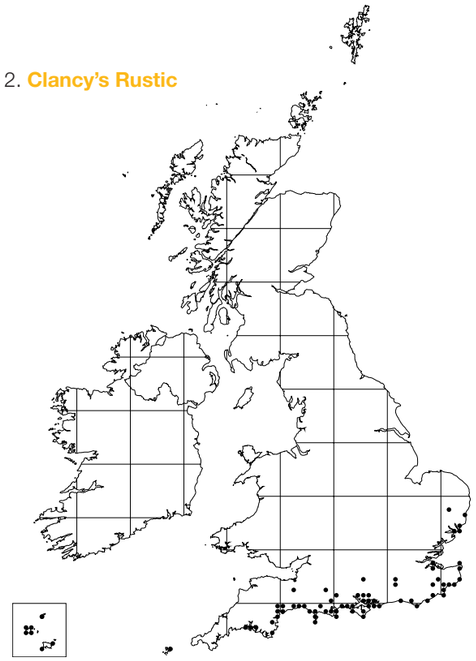
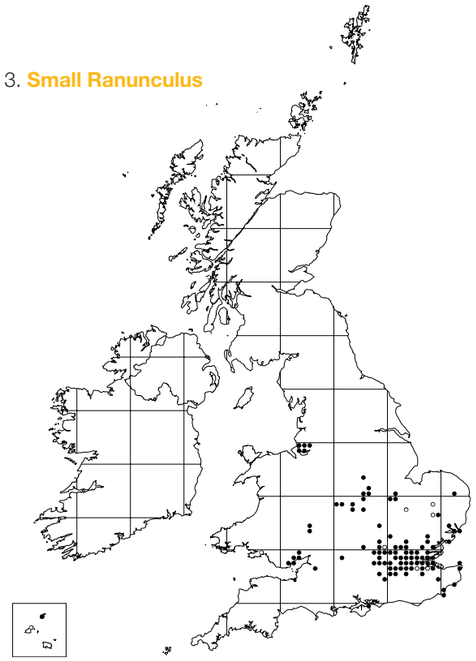


Fig 3. **Small Ranunculus**



Moths Count: the end of the beginning

One of the main aims of the Moths Count project was to stimulate and encourage moth recording throughout the UK. Moths are often underrated; they are feared by some, blamed for holes in woollen jumpers (even though only around one quarter of 1% of moth species are responsible for this) and considered to be dull and boring in appearance. We have worked very hard to get moths portrayed in a more accurate and positive light so as to inform people of their beauty and importance in the natural world.

Moths have received phenomenal media stardom in recent years, as we've previously reported. Last year was no exception. Moths and moth recording were featured on BBC Two's *Gardeners' World* last autumn. Toby Buckland was illuminated by the amazing variety of moths found at Greenacres, the BBC Gardeners' World garden in Birmingham. He was so inspired he is even including a section on attracting moths to your garden and moth trapping in his next book!

Humming-bird Hawk-moths were featured on BBC One's *The One Show* and, more recently the fascination with moths was featured in a half-hour programme on Radio 4 called *Requiem for a moth.* Several moth recorders from across the UK were interviewed for the programme, along with the Britain's foremost living composer Sir Harrison Birtwistle, and explained their affections for these creatures of the night.

To summarise all this publicity, since the launch of the Moths Count project in May 2007 we have had at least 80 articles in national and regional newspapers, 49 national TV and radio features, 52 local radio features and 103 magazine articles.

Over the past four and a half years in excess of 100,000 colourful, informative moth leaflets have been distributed to members of the public, school children, wildlife groups and other interested parties.

Ninety-five public moth trapping events were held during the project. These attracted in excess of 2,000 people, 30% of which were women and one quarter children under 16. These two groups are generally under-represented in the moth recording community. It is hoped that these public events have gone some way to educate people about moths and to encourage the next generation of moth recorders.

Another way we have been raising awareness about moths to the general public has been via our simple online citizen science surveys. Garden Moths Count ran from 2007 to 2009 and, since 2008, we have run a more focused online survey for the Humming-bird Hawk-moth (and Painted Lady butterfly). The Humming-bird Hawk-moth survey is continuing this year, to log your sightings please visit **www.butterfly-conservation.org/migrantwatch**.

Butterfly Conservation's Big Butterfly Count is also running again this year from 16th to 31st July. Two day-flying moths, Six-spot Burnet and Silver Y are included in this. For more information and to take part visit **www.bigbutterflycount.org**.

The programme of training events aimed at moth recorders with a wide range of differing experience was a huge success; 125 workshops were run and over 1,700 people attended. The majority of workshops were held in England (75), with a further 18 in Wales, 15 in Scotland, 15 in Northern Ireland, one on the Isle of Man and one in the Channel Islands. Of the complete beginners who participated in introduction to moth recording workshops, 88% wanted to get involved in moth recording in the future.

Twelve 'national' moth recorders' meetings have been held since the launch of the Moths Count project. These events have been attended by a myriad of people from County Moth Recorders, researchers and beginners to moth recording. In September 2010 a weekend event was held in at Garrison, County Fermanagh, Northern Ireland. Moth recorders from across Ireland attended. The talks were excellent and around 20 moth traps were set on the Friday and Saturday nights. Unfortunately catches were not great due to cold, windy weather. It was great to hear how moth recording in the Republic of Ireland is growing in popularity. Recording coverage has increased dramatically in recent years as a result of the Moths Ireland project (**www.mothsireland.com**) and the National Biodiversity Data Centre.

Lunchtime at National Meeting (R. Fox)

Our first UK-wide moth recorders' meeting was held earlier this year in Birmingham. Over 100 people attended and we had to hire a larger lecture theatre than in previous years! Speakers came from England, Scotland, Wales, Northern Ireland and The Netherlands. Unfortunately this was not true of the delegates, almost all of whom were from England.

Although we appreciate the effort and cost involved in travelling to such a meeting, it would be great to see more moth recorders from different parts of the UK; it is a great day out where you can chat about moths with friends and colleagues. Delegates heard about the conservation successes and failures of several different moth species across the UK. The picture for moths in the Netherlands looks quite alarming; moths are suffering similar population declines to those seen in the UK (see page 08).

National Moth Recorders' Meeting 2012

The 28th January 2012 is the date set for the next National Moth Recorders' Meeting to be held at the Birmingham and Midland Institute, central Birmingham. Further details and how to book a place will be circulated in due course on the Moths Count website events page.

Marsh Moth workshop (P. Waring)

Six-spot Burnet a target species for Big Butterfly Count (Z. Randle)

Butterfly Conservation publications

Provisional Atlas of the UK's Larger Moths

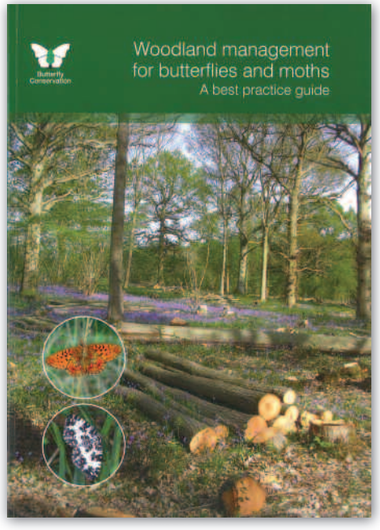
A second print run of this publication has been produced due to popular demand. Copies are now available at the recommended retail price of £20 (plus £5 P&P to UK addresses). It is unlikely to be reprinted again, so get your copy while you can. All profits will be used to support ongoing moth recording.

Difficult Species Guide

British and Irish moths: an illustrated guide to selected difficult species (covering the use of genitalia characters and other features) focuses mainly, but not exclusively on genitalia characteristics. It provides the next step for those wishing to make definitive identifications of 72 species of difficult macro-moths such as dark and grey daggers, ear moths, copper underwings and the november moth group.

Copies of the Guide are available from Butterfly Conservation and from specialist retailers. The recommended retail price is £20, but it is available at a special initial offer price of £15 (plus £2 P&P to UK addresses).

Those who have already bought the book, as well as those considering purchase, should be aware that Figure 48 (female Satin Beauty *Deileptenia ribeata*) on p.41 is incorrect and, as a consequence, the key on p.40 is also incorrect. A corrected version of pp.40-41 is available at http://www.mothscount.org/text/104/ guide_to_difficult_species.html.
If you cannot access this correction online, please contact Butterfly Conservation on **01929 400209** or **info@butterfly-conservation.org**.



Woodland Management Handbook

Woodland management for butterflies and moths: a best practice guide is aimed at anybody involved in the management of UK woodlands. Focussing on the requirements of butterflies and moths, this guide brings together information from a wide range of published and previously unpublished sources to provide practical advice for owners, land managers and advisors on how to improve all woodland habitats for wildlife.

This guide has been produced as part of Butterfly Conservation's South East Woodlands Project. Chapters can be downloaded free through the Butterfly Conservation website, but print copies are also available directly from booksellers and from Butterfly Conservation, with a special half-price introductory offer of £7.50 (plus £1 P&P to UK addresses) until 31st July 2011.

To order any of these publications from Butterfly Conservation visit **www.butterfly-conservation.org/shop** or phone **01929 400209**.

The latest edition of the Lepidoptera Conservation Bulletin (number 11) is now available to download **www.butterfly-conservation.org/lepidopteraconservationbulletin.**

The Belted Beauty in Lancashire

During July 1975, Pat Livermore, a botanist, was working her way along a rather remote part of Lancashire's coastline. Her plan for the day to record the plants present in this open and windswept area several miles south west of Lancaster. Bending down to examine one particular plant, she came face to face with a striking silver-grey caterpillar with a broad yellow side stripe. Little did she know that this would start a chain of events leading to the dramatic discovery of a major colony of one of Britain's rare and enigmatic moths, the Belted Beauty.

In the early 20th century, the moth had been known to occur at quite a few scattered coastal sites in North Wales and North West England, particularly where stabilising dune slacks occurred, and had strong colonies in parts of Western Scotland. However by the late 1960s, extensive coastal development in England and Wales had seriously depleted suitable breeding habitat and it was considered to be extinct in Lancashire. Things were not looking good for the moth.

Seven years passed before the next sighting in Lancashire, and this time a bird watcher noticed and photographed a male close to Pat's original location. Word obviously got around as over the next decade or so a couple of visits were made to the site by local lepidopterists and one or two moths were found, the last being in 1993. Nothing was published about the finds and it is assumed the moths were considered to be wanderers from elsewhere or a small remnant colony. With so much pressure on the species it seemed this was to be the last we would hear of the Belted Beauty in Lancashire.


Belted Beauty female (S. Palmer)


Belted Beauty male (S. Palmer)

But the Belted Beauty is no ordinary moth - its life history is one of 'living on the edge'. The female is wingless (resembling a large hairy woodlouse) and consequently has very limited powers of dispersal. The males, although quite capable of flight, spend much of their time resting on the vegetation or fence posts, presenting easy pickings for potential predators. On still and mild April mornings the males occasionally get airborne, flying rapidly just above vegetation height in an erratic fashion seeking out the females. But even this is not without its hazards. Spiders lie in wait, their webs spread between the rush tops and it is not unusual to find four or five males wrapped up in silk in the corner of each web. On occasions, wandering females have been known to become a tasty snack for Common Lizard.

So how did the Lancashire colony fare after 1993? Following the formation of the Lancashire Moth Group moth in 1999, moth records were sought from as many sources as possible and it was not long before news of the larval find in 1975 came to light. In 2001, I was shown a photograph of a male Belted Beauty which remarkably turned out to be the one photographed back in 1982. The Group quickly swung into action, organising a widely advertised search day in April 2002, accompanied by Dr Paul Waring.

The first thing that struck us was the almost total lack of suitable vegetated sandy areas for breeding habitat. It was not until one member of the group decided to check an area of saltmarsh that we found our first Belted Beauty, a female low down on an old fence post. By the end of the day we had found seven moths and the scene was now set for regular studies of the moth's habitat requirements, larval foodplants and local distribution. >>

Regular visits over the following years proved that a large and healthy colony was present along about 2km of this coastline. But perhaps the most remarkable discovery was that the moth was exclusively using the saltmarsh area, a habitat dominated by tall dense clumps of Sea Rush. The area receives somewhere in the region of 25 to 30 tidal inundations each year, creating a breeding habitat for the moth that is completely different to any previously recorded.

During April, the incoming tide forces females to clamber up the rush stems to escape the incoming water, while the males are inclined to accept their fate, seemingly making no attempt to fly or even walk away. Despite this the larvae have been found happily feeding on a wide variety of plants such as Sea Plantain, White Clover, and several other salt tolerant plants, but its favourite by far is Autumn Hawkbit, a common plant in the area. A potential threat to the moth in the future is that of sea-level rise and increased inundation predicted with climate change. This might alter the plant community and the habitat may become unsuitable for the Belted Beauty to persist.

More than 35 years on from Pat's find, the moth is doing exceedingly well and the figures for 2010 broke all previous records. Nearly 1,700 moths were found in a single day's search. This remote and windswept coastline now plays host to visitors from far afield, keen to catch a glimpse of this strange moth that has made its home 'on the edge', obligingly sitting for all to see in amongst the saltmarsh rushes. Long may it continue to do so.

Steve Palmer
County Micro-moth Recorder for Lancashire

Are you missing out on E-moth?

E-moth is an electronic newsletter from the Moths Count project, which is produced approximately four times a year. The last issue was sent by email in April 2011. If you are not receiving E-moth and would like to, please contact Butterfly Conservation (01929 400209 or info@butterfly-conservation.org) with your email address.

The state of the Dutch macro-moth fauna

Moths make up a significant part of the biodiversity both in north-western Europe and globally. In the Netherlands for instance, 766 species of larger moths are considered native. The interest of amateur recorders in this group in the Netherlands is growing rapidly. This has led to a strong increase in the number of records in the central database (which contains almost 2 million records of macro-moths), allowing better and more precise calculations on the local trends of moths. Data from 1980 onwards were analysed to assess trends of resident species (migrants were not included in the study).

More information on the calculations is given at www.vlindernet.nl and in Groenendijk & Ellis (2011). This article summarizes the main results, which were also presented at the National Moth Recorders' Meeting on 22nd January 2011 in Birmingham.

About one third of the species in our analysis are decreasing and could be listed as threatened if IUCN criteria were applied to them to draw up a national Red List. Even many rather common species show a strong decline. On the other hand, some species are strongly increasing. All species together show a significant, declining trend in abundance.

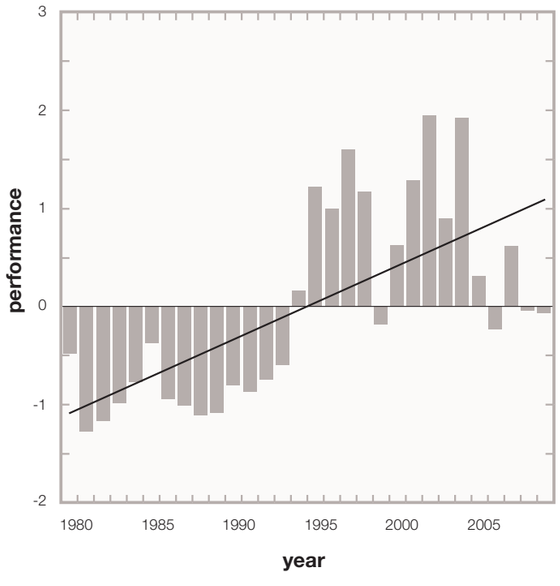


Fig. 4
Yearly performance (1980-2010), defined as the difference of the annual abundance minus average abundance, divided by the standard deviation of Cinnabar in the Netherlands.

One of the species increasing is Cinnabar; this is the opposite of the situation in Britain where the trends calculated from the Rothamsted Insect Survey suggest that this species is declining. This contrast may be a true difference between countries, or it may be attributed to the differences in data collection. In the Dutch study, daytime records of day-flying species (like Cinnabar) are included in the dataset, which is not the case in the Rothamsted network. However in recent years the abundance of the Cinnabar in the Netherlands is lower, this may indicate the start of a longer term decline (Figure 4).

The example of the Cinnabar shows the complexity of the interpretation of the data. In this and in other species there are clear annual fluctuations due, for example, to weather conditions and these may obscure the interpretation of the trends of species. One of our conclusions, therefore, is that the changing climate has a strong impact on our moth fauna. Another very important result in our study was that the absolute number of individuals of the common species has dropped by one third. This means that the total number of individual moths in a Dutch light trap nowadays is over 30% lower compared with the early eighties!

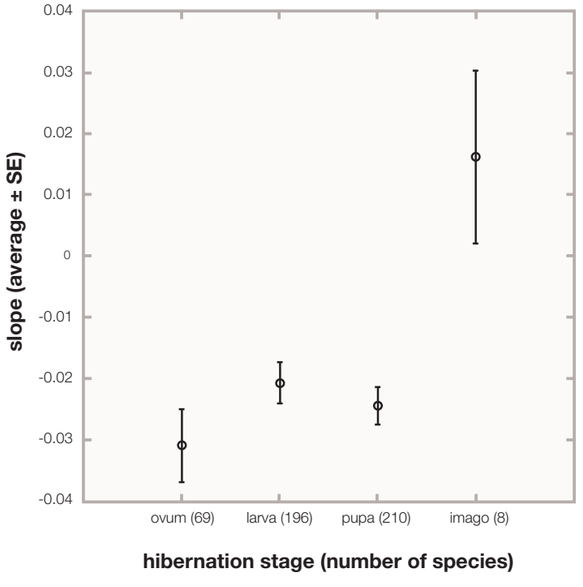


Fig. 5
Relationship between the average of the slopes of the linear regression of the performance on year, and hibernation stage. The number of larger moth species in each category is given in brackets. Error bars present standard errors.


Cinnabar (M. Parsons)

Although there are some different trends for particular species between Britain and the Netherlands, the general pattern is strikingly similar. We compared our data with the data presented in the *State of Britain's Larger Moths* (2006) and we found very similar patterns and figures, despite the differences in methods, calculations and datasets between both countries. An example of this similarity is given in Figure 5 where the average trend is given for groups of moth species classified by their over-wintering strategy. This shows that moths which spend the winter in the adult stage have fared well on average, while those that overwinter as eggs, larvae or pupae have, on average, decreased. The similarity in patterns of trends in larger moths in both countries is, in our opinion, a strong pointer for taking the results very seriously.

For the Netherlands, this is the first time that we have been able to calculate trends on a large scale for our larger moths. The results show a rather strong decline in many moth species, as well as in overall moth numbers. We argue that the resulting decrease in herbivore pressure on the vegetation must have had a negative impact on plant biodiversity. The need for better protection of moths in north-western Europe is also implicated by the fact that many species of birds, bats and other groups depend on moths (or their larvae) as their main food sources.

Dick Groenendijk & Willem Ellis
Dutch Butterfly Conservation & Working Group Lepidoptera Faunistics

More information:
Groenendijk and Ellis. 2011. *Journal of Insect Conservation* **15**, 95-101.

Aspen and moths in Scotland

An upsurge in interest in the natural history and ecology of Aspen in Scotland has resulted in an unprecedented series of fantastic discoveries associated with the tree. Aspen is a Cinderella species that has previously been overlooked, an ancient woodland indicator and a relic of the Boreal forest. So far c.300 lichens, 266 fungi and 14 species of threatened dead-wood flies have been discovered on Aspen. Around 43 species of moths in Scotland feed on Aspen, 12 of these are polyphagous also feeding on other plants, whilst 14 also feed on willows and poplars which are very closely related to Aspen.

That leaves 17 Aspen-specialists, all bar one feeding on the leaves. This latter group includes Poplar Lutestring, Seraphim, Swallow Prominent, Lead-coloured Drab and Poplar Grey. The flagship species is undoubtedly Dark Bordered Beauty known only from three UK sites – two in Scotland and one in England. Things are different south of the border as English larvae feed on Creeping Willow and not Aspen.

As a UK BAP species, one objective is to increase the number of occupied sites. Approval had been given to translocate Dark Bordered Beauty to the RSPB's Insh Marshes reserve in 2011, where, despite suitable habitat, several years of light trapping and daytime searches had not recorded the moth. A small captive breeding population was established from larvae collected in 2009 and boosted by wild caught adults in 2010. At the same time, Robin Wynde, on an RSPB sabbatical, undertook detailed vegetation monitoring to identify the best potential release sites. Amazingly, on the very last day of his study, Robin located a population of the moth, recording 15 individuals. So, the translocation project had to be put on hold!

Dark Bordered Beauty habitat (R. Leverton)

Dark Bordered Beauty (R. Leverton)

Recently, 19th century Dark Bordered Beauty specimens labelled from Sutherland were discovered in the Natural History Museum, maybe a fifth UK site awaits discovery? Two species of micro-moth also remain 'missing in action'; the blotch-miner *Leucoptera sinuella* last seen by Aviemore railway station in 1945 and the Tortrix *Gypsonoma nitidulana* also last recorded near Aviemore, exactly 100 years ago!

The fortunes of Aspen and its iconic and unique biodiversity are reliant on increasing the area of Aspen woodland and connecting the current stands. One major constraint is the cost and availability of trees of local origin; it is very rare for Aspen to flower or set seed in Scotland. The Highland Aspen Group (HAG) is trying to overcome this by vegetative propagation from root-sections collected from local stands. An Aspen seed-orchard has been established in an attempt to produce seed by cross-pollination.

Tom Prescott
Species Conservation Officer, Butterfly Conservation Scotland

Acknowledgements
This project takes a multi-species and multi-partnership approach. Work on Dark Bordered Beauty has been co-ordinated by RSPB and Butterfly Conservation Scotland and would not have been possible without the enthusiastic support and co-operation of the landowners, several volunteers, and financial assistance from Scottish Natural Heritage and the Cairngorms National Park Authority. HAG is run by a group of dedicated Aspen enthusiasts.

Climate and moth distributions in South East Wales

At the National Moth Recorders' Meeting in January 2011, Martin Anthoney (County Moth Recorder, Monmouthshire VC35) presented a talk on the distribution of moths and butterflies in his vice-county in relation to climatic conditions. This is a summary of his presentation.

In Monmouthshire the mean summer temperature correlates well with the height above sea level. The coolest areas correspond to the uplands in the north and west of Monmouthshire (shown by grey shading on the maps Figures 6 & 7) where they rise towards the Brecon Beacons and Black Mountains. Unsurprisingly the warmest areas are the lowlands, around Newport in the south, in the east along the Wye Valley and around Penallt to the south-east of Monmouth.

These warmest areas have average temperatures that are comparable with the highest recorded across the UK. As a result, many moths and butterflies with a south-eastern UK distribution often reach the limit of their range in south-east Monmouthshire.

Met Office data show that between 1971 and 2000 average summer temperature in Monmouthshire rose by about 1°C. Moth species at the north-western limit of their range are likely to have benefitted from this. For example, the Scarlet Tiger moth was only recorded from one 5km square by 1980 compared to thirteen 5km squares by 2010. The moth is now breeding in the warmest areas of south and east Monmouthshire. Martin has been moth trapping north of Newport for 30 years, his first Scarlet Tiger was recorded in 2006.

A similar pattern of range expansion has been seen for the Dusky Sallow, recorded in only one 5km square up to 1980 (Figure 6) and in sixteen 5km squares by 2010 (Figure 7).

The Cypress Carpet arrived in Newport in 2007 and is now well established. Last year an adult Brown-tail moth was trapped at the Newport Wetlands Reserve. Breeding of this species was confirmed when earlier this year a Brown-tail larval web was discovered close to Newport.

Dusky Sallow (M. Anthoney)

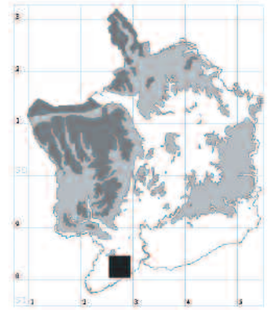


Fig. 6
Distribution of the Dusky Sallow up to 1980 in VC35.

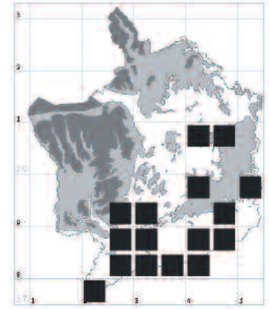


Fig. 7
Distribution of the Dusky Sallow up to 2010 in VC35.

New species to VC35 are usually first established in Newport, a port and trading town. This may explain why so many new species arrive in Monmouthshire by this route, but the climate helps their establishment as breeding species. However, species that are adapted to cooler climates are not faring so well. In Monmouthshire, upland species such as Scarce Silver Y, Small Autumnal moth and Northern Rustic are showing distribution declines and these trends may again be related to warmer climates.

Zoë Randle
Surveys Officer, Butterfly Conservation
Martin Anthoney
County Moth Recorder for Monmouthshire

Woodland management and rapidly-declining moths

Our understanding of the conservation of woodland moths has been increased by a collaborative project undertaken by Butterfly Conservation and the Wildlife Conservation Research Unit at the University of Oxford. The 10 month study investigating the effect of woodland management on moths produced interesting results. The target species were the 'Research Only' UK BAP Priority macro-moths, designated as such because they have suffered >69% national declines in abundance in the Rothamsted Insect Survey over 35 years.

Light-traps were set within six different stages of woodland management in the Tytherley Woods complex, on the Hampshire/Wiltshire border; one of Butterfly Conservation's South East Woodlands project demonstration areas.

Almost 12,000 individuals of 265 species were recorded between July and mid-October, 38 of which were 'Research Only' BAP species. Fifteen nationally scarce / Red Data Book species were trapped, including Triangle, Devon Carpet, Great Oak Beauty, Small Black Arches, Double Line, Mocha, Mere Wainscot and White-line Snout. Three threatened UK BAP Priority species were also trapped; Lunar Yellow Underwing, Light Crimson Underwing and Dark Crimson Underwing. Seven individuals of Clifden Nonpareil were also trapped.

Light Crimson Underwing (D. Green)

Moth abundance and species richness differed between the woodland management stages and were highest in sheltered rides and mature woodland. Overall, fewer individual moths and fewer species were found in open areas, such as young coppice, where there is a high proportion of bare ground.

Diverse woodland habitat (D. Hoare)

This pattern is opposite to that of day-flying Lepidoptera, where open areas have higher abundance and species richness, perhaps due to higher daytime temperatures. Wide rides, however, showed a mixed pattern for moths in this study, with relatively low abundance of individuals but high species richness (on a par with mature woodland).

The 'Research Only' group of UK BAP species showed some different trends to the overall results. Wide woodland rides in particular had relatively high abundance of these rapidly declining species. In addition, more than half of the 'Research Only' moth species recorded in the study occurred in equal or greater numbers in open, managed woodland habitats compared to more sheltered, less managed areas.

Sheltered, mature woodland areas were found to be important habitats for some scarce and Red Data Book species. Therefore maintenance of this successional stage should also be considered when undertaking woodland management. Coppicing and ride widening are valuable conservation tools for moths as well as butterflies. They increase the total species richness of woodlands, provide resources for species adapted to more open habitats, and benefit the 'Research Only' Priority species. However, in order to assist both the 'Research Only' Priority moths and the woodland specialists, management should also retain or enlarge core areas of existing mature forest.

Thomas Merckx
Wildlife Conservation Research Unit, University of Oxford

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

Moth trap by-catch part 2

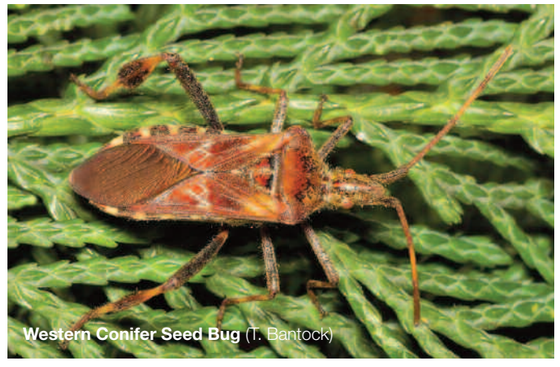
Shieldbug recording: you can help

Many British shieldbugs are large, colourful and distinctive insects which are frequently encountered and easy to identify. They are the subject of a new recording scheme (Terrestrial Heteroptera: Shieldbugs & allied insects) which aims to map current distributions and track population trends. Like moths, many shieldbug species are responding to the effects of climatic warming, habitat loss and degradation. Records are crucial to establish the importance of these factors and inform conservation management.

Great potential exists for moth enthusiasts to get involved and contribute records to the scheme. A number of shieldbugs may appear regularly in moth traps, for example the Forest Bug *Pentatoma rufipes*, Birch Shieldbug *Elasmostethus interstinctus* and Hawthorn Shieldbug *Acanthosoma haemorrhoidale*. Another species which sometimes comes to light in the autumn is the Western Conifer Seed Bug *Leptoglossus occidentalis*, a large and spectacular insect with leaf-like expansions on the hind legs. This squashbug is native to North America and was introduced to Europe around a decade ago. It has colonised Britain during the last few years and is probably well-established.

Most British shieldbugs and allied species can be identified from a good photograph. To get involved please send your records to me at **tristanba@googlemail.com**. For further information regarding identification and future recording developments, see the British Bugs website at **www.britishbugs.org.uk**.

Tristan Bantock
Terrestrial Heteroptera: Shieldbugs & allied insects



Western Conifer Seed Bug (T. Bantock)

Hawthorn Shieldbug (T. Bantock)

Caddis at light-traps – some feedback

In a previous issue of this newsletter I encouraged light-trap users to take an interest in the caddis they attract. About 700 records have accrued as a result – whilst small in comparison to moth recording, these are very useful, and hopefully the number of recorders will continue to increase. Many of the records I received are for new for sites, 10km squares or even new vice-county records.

There have been a few surprises. For example *Ecnomus tenellus* has turned up at several traps. Difficult to locate as a larva, it may be increasing, or perhaps it is susceptible to light traps. The biggest surprise to date, is a *Triaenodes* species found by Kevin Royles in a trap surrounded by a Huntingdonshire agricultural desert, it is certainly new to the UK list – what the species is, is currently under investigation.

Your recording efforts are leading to better maps on the National Biodiversity Network (NBN) Gateway. The database currently has 248,000 records, these are being edited and they will be available for you on the NBN Gateway at the end of this year with an Atlas next year.

To take part in the Caddisfly Recording Scheme simply take a good quality photograph of the Caddisfly and email your image stating your **name**, the **date** and **time**, and **location** (6 figure grid reference or postcode) where the photograph was taken to **ian.wallace@liverpoolmuseums.org.uk**.

Ian Wallace
Caddis Recording Scheme, World Museum Liverpool

Moths as pollinators

Moths are often mentioned as pollinators of plants, but it is surprising how little is known about this aspect of moth ecology. The sheer number and diversity of moths coupled with the fact that the adults of many species visit flowers to drink nectar implies that they must be involved in pollination – how could they not be? In addition there are some famous examples of moths as pollinators, but these are all from the tropics, such as the Yucca Moths in America and Morgan's Sphinx, the large hawk-moth that pollinates Darwin's orchid in Madagascar.

The current political fashion is to value biodiversity largely for the ecosystem services that habitats and species provide to humans. Such 'services' include the provision of clean water and air, maintenance of productive soils, crop pollination, pest control and the prevention of flooding. Even though moth recorders and nature conservationists value moths for their own intrinsic worth, their beauty and the interest and enjoyment they bring us, it would be very useful to know how moths contribute to ecosystem services such as pollination here in Britain and Ireland.

Insights are starting to emerge in response to this question. Research published this year by The Forestry Commission, Buenos Aires University and Bristol University, looked at the potential role in pollination played by nocturnal moths in Scottish pinewoods (Devoto *et al*., 2011). Light traps were used to capture moths, which were then swabbed for any pollen that was attached to their head or proboscis. A quarter of the moth species captured (25 species out of a total of 103 caught in the study) were carrying pollen, but most individual moths did not have any pollen on them. The species (both moths and plants) varied considerably from year to year, but this may simply be due to the limited amount of trapping carried out. Smoky Wainscot, Neglected Rustic, Ingrailed Clay and True Lover's Knot were responsible for most of the pollen transfer during the study.

Although many moths were not carrying pollen when captured, the researchers concluded that including nocturnal insects, in addition to the usual day-flying ones, was important to understand and conserve pollination 'services' in the future.

Burnished Brass with pollinia attached to its eyes (R. Sexton)

Regular participants in our National Moth Recorders' Meetings, will recall the brilliant talks given by Dr Roy Sexton about orchids and moth pollination. Charles Darwin, in his book on orchid pollination in 1862, realised that Greater and Lesser Butterfly Orchids were pollinated by large nocturnal moths and Dr Sexton has been working with moth recorders in Scotland to find examples of this taking place in the field.

Orchids are unusual in that their pollen grains are cemented into large, club-shaped masses (called pollinia) rather than being loose. The pollinia have a glue pad which sticks them onto a visiting insect as it drinks the orchid's nectar. In the Lesser Butterfly Orchid the two pollinia are located in such a way that they should become glued to the moth's proboscis, whereas those of the Greater Butterfly Orchid should become glued onto the insect's eyes. Noctuid moths are thought to be the main pollinators in both cases. No pollinators of the Lesser Butterfly Orchid have been found by Dr Sexton, so far, but moths including Silver Y, Beautiful Golden Y, Burnished Brass, Small Elephant Hawk-moth, Straw Dot, Spectacle, Gold Spangle and Gold Spot have all been found carrying the pollinia of the Greater Butterfly Orchid.

Please let the Moths Count team know if you see moths carrying orchid pollinia (and take photos if possible) and we'll pass the sightings on. Hopefully more insights will emerge over the coming years into the role that moths play as pollinators.

Richard Fox
Surveys Manager, Butterfly Conservation
with thanks to Dr Roy Sexton.

More information:
Devoto *et al.* 2011. *Ecological Entomology* **36**, 25-35.

Moth Night 2012

As you'll be aware there is no National Moth Night in 2011. After 12 glorious years it was time to take stock and review. The organisers, *Atropos* and Butterfly Conservation, have been hard at work planning a sustainable future for the annual celebration of moths and moth recording. As a result, the event has evolved and will return next year as Moth Night 2012.

Moth Night 2012 will retain the familiar combination of moth recording by enthusiasts across Britain and Ireland with local events aimed at raising awareness of moths among the general public. As in the past, each year will have a theme (although recorders are always welcome to do their own thing) and the event will take place on different dates. However, in response to feedback from participants, future events will be confined to the warmest months and each event will last for three consecutive nights (Thursday-Saturday). Recording can take place on any one or more of these nights. We hope that these changes will greatly improve the chances of favourable weather for moth recording during the event.

The other major change is a move to full online recording. We will be working in association with the Biological Records Centre (at the Centre for Ecology and Hydrology) to create a comprehensive but easy-to-use online recording system that will be the route for all future records. As well as vastly improving the efficiency of handling the many thousands of records received each year, this new system will give participants immediate feedback about the event.

The full findings will continue to be published in the journal *Atropos* (the results of National Moth Night 2010 will appear in the Autumn issue of *Atropos*) but, in the future, we will be providing better feedback to all those who take part in the event.

***Atropos* and Butterfly Conservation**

The vital information:

Moth Night 2012 will take place on **21st-23rd June 2012**. The theme will be the moths of brownfield habitats (such as old quarries, disused railway lines, reclaimed coal tips, gravel and clay workings etc.) and will include both daytime searches and the usual night-time recording. Further announcements will follow in *Atropos* magazine, E-moth newsletter and, of course, on the internet, but please make a note of the dates now.

Moth Night 2013 will take place on 8th-10th August 2013 and Moth Night 2014 will take place on 3rd-5th July 2014.

Butterfly Conservation

ATROPOS

Moth trapping in the forest (J. Peat)