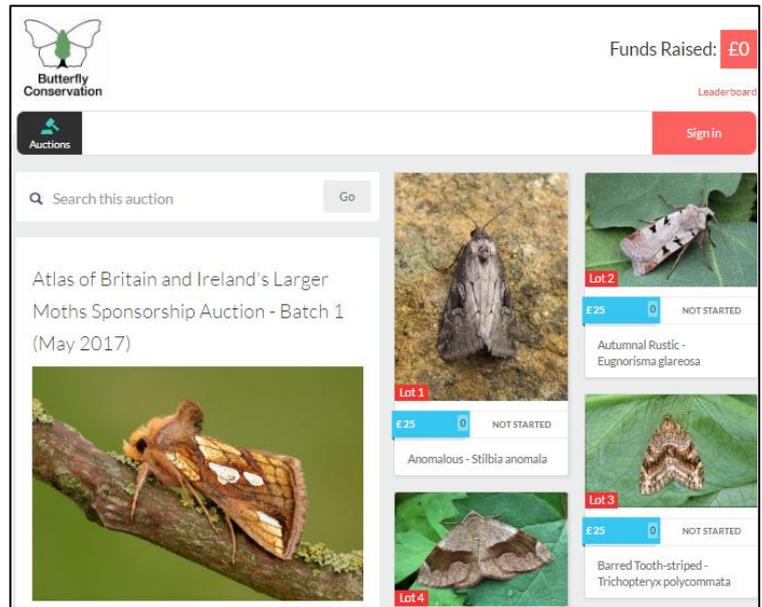


E-moth

Moths Count Update April 2017

Sponsor a moth in the new atlas

To help raise funds to produce and publish the forthcoming *Atlas of Britain and Ireland's Larger Moths* Butterfly Conservation (BC) are running a [moth auction](#). If you have a favourite moth that you would like to sponsor, either in your own name or as a dedication to another person, you will be able to make a bid for the species. There will be six auctions in total, each lasting for a calendar month, and the species featured in each has been randomly generated. Further details and the catalogue detailing the dates of each auction and the species 'up for grabs' can be found by following this [link](#). We hope you will support this worthwhile cause whilst enjoying the fun and excitement of the auction.



Alternatively, to guarantee sponsorship of your chosen species you can reserve the moth for double its initial list price. It will not be possible to reserve a species once the auction it is listed in has started. The first auction starts at 8am on **Monday 1st May 2017**; reservations for this auction will be taken via enquiries@butterfly-conservation.org up until 2pm on Friday 28th April 2017.

National Moth Recording Scheme update

With the atlas looming large on the horizon, the NMRS database currently holds 21.8 million macro-moth records, as well as an impressive 1.3 million micro-moth records. Since 1st January 2017 we have received 84 refreshed vice-county datasets, 16 of these have been imported to-date. Les Hill, Senior Data Manager, is processing the other 68 datasets for importation in to the NMRS database.

The arrival of the VC52 Anglesey dataset was very welcomed as the last update for this VC was in 2010 for the Provisional Atlas and we are particularly grateful to Andrew Graham for his hard work in sorting this out. Other datasets that we have not had data refreshes from for some time but have received recently include: VC 18 South Essex; VC 19 North Essex; VC 20 Hertfordshire; VC 21 Middlesex; VC 32 Northamptonshire; VC 56 Nottinghamshire; VC 61 South-east Yorkshire; VC 62 North-east Yorkshire; VC 63 South-west Yorkshire; VC 64 Mid-west Yorkshire; VC 65 North-west Yorkshire; VC 76 Renfrewshire; VC 85 Fifeshire; VC 81 Berwickshire; VC 90 Angus and VC109 Caithness. Many thanks to everyone concerned for their efforts in collating, verifying and submitting their datasets to the NMRS.

The deadline for guaranteed inclusion of datasets for the forthcoming *Atlas of Britain and Ireland's Larger Moths* has now passed. We've been in touch with several County Moth Recorders' who are still busy collating and verifying their local datasets and we are expecting these imminently. Dr Zoë Randle,

Surveys Officer, will be contacting the remaining County Moth Recorders to check on progress in the coming weeks.

Dark Bordered Beauty in England: decline of the Strensall population and hopes for recovery.

The Dark Bordered Beauty *Epione vespertaria* is currently found at a single site near York, Strensall Common, a protected lowland heath where it has been known since the 19th Century. As part of the 1999 species action plan, the ecology of the Strensall population was researched in 2005.

The foodplant, Creeping Willow, was found to be aggregated into a small number of dense concentrations that held the majority of adults and larvae. Plants hosting larvae were also large and near trees. In 2007 a monitoring transect for adult moths through the known concentrations was established. Between 2007 and 2014, adult moth numbers dropped by about 30-40% annually. Surveys of Creeping Willow in 2013 showed that density of the plant in the hotspots had declined by 90%, and by 70% overall, and that hardly any plants were of a size that supported larvae in 2005.

In 2015 nine small grazing exclosures (to exclude sheep, the main grazing animals on the site) were established over existing Creeping Willow, and augmented with pot grown plants. More and larger exclosures were established in 2016, augmented by over 1000 pot-grown plants, and more are planned for 2017. Surveys show that the Creeping Willow in these exclosures is taller and grows by about 10cm annually, in contrast to plants outside exclosures, which are not growing significantly.

In 2016, adult moth numbers showed an improvement that, hopefully, is the start of a more general recovery. In the longer term, a more sustainable grazing strategy needs to be found so that Dark Bordered Beauty can persist at the site, and populations need to be established in new sites.



Dark Bordered Beauty (Peter Mayhew)

Dr Peter Mayhew (University of York)

Studying the moths of bird nests

Bird nests are pockets of highly concentrated resource that are easily exploited by detritivore invertebrates, including several British moth species. The British Trust for Ornithology recommends that the contents of nest boxes are cleaned out annually to help reduce parasites and disease. This represents an excellent opportunity to study the invertebrate communities within them. Obviously this must be done over the winter, once the birds have finished breeding. At this time of year, any moths living within the nest are likely to be in the larval or pupal stage and, therefore, the material should be collected and kept in an unheated outbuilding until the spring.



Storage of 250 birds' nests (Douglas Boyes)

I first reared moths from bird nests in 2013 when I cleaned out four nest boxes from my garden. Four species emerged the following May, including 19 specimens of *Niditinea striolella*, which was the first time the species had been seen in north Wales. For my undergraduate research project I went one step further, collecting over 250 nests! I sampled from seven sites in Montgomeryshire during January 2016. Most were Blue Tit and Great Tit nests, but I also had some Pied Flycatcher, Redstart and a selection of species that nest in the undergrowth. As you can probably imagine, 250 nests take up an awful lot of space - they had to have their own dedicated shed! Each nest was stored in a plastic takeaway container and was secured with a sheet of muslin instead of a lid. This prevents a build-up of condensation and the nests rotting. I certainly had a very busy summer; identifying and counting the 4,657 moths that emerged!



Tinea semifulvella in nest material (Douglas Boyes)

Three-quarters of nests contained moths, with single nests sometimes supporting over 300 individuals! When compared to nests in bird boxes, open nests had fewer individuals and species, however, they did appear to host a slightly different community. *Tinea semifulvella*, for example, showed a distinct preference for these open nests. It was interesting to note that, while moth species that had life histories specialised for living in bird nests were present, I found that the generalist detritivore species (*Endrosis sarcitrella*, *Monopis laevigella* and *Hofmannophila pseudospretella*) were the most abundant. A total of seven moth species were seen in the project, however, there were a number of species that were conspicuous by their absence. It was widely thought that the Common Clothes Moth, *Tineola bisselliella*,

occurs in bird nests. The fact that none were seen during this study adds to recent research that suggests the species does not occur naturally in Britain and is restricted to human habitations.

Collecting bird nests over winter is an extremely easy way to study the micro-moths that live within them. This is especially useful as some of the species don't readily turn up in moth traps so are very overlooked. If you have any questions about my project or about giving it a go yourself, please feel free to get in touch. I'd also be very interested to hear what species people find in their bird nests, if they do give it a go (or have done in the past).

Douglas Boyes, www.douglasboyes.co.uk, douglasboyes@gmail.com

Micro Magic

At the UK Moth Recorders' Meeting in January 2017 Stella Beavan and Bob Heckford gave a talk entitled 'Micro Magic' about six species of Microlepidoptera, all designated pRDB1 by Butterfly Conservation, and their biology. They are the only people both in Britain and mainland Europe to have seen all these moths in the wild.

In order of presentation the species were: *Aethes rutilana* (Tortricidae), *Plutella haasi* (Plutellidae), *Infurcitinea albicomella* and *I. captans* (both Tineidae), *Coleophora linosyridella* (Coleophoridae) and *Ectoedemia heckfordi* (Nepticulidae). The early stages of most were illustrated as well as adults of all, together with habitat shots of all. Some of the latter were of rugged, mountainous areas in Scotland, with one image showing a sign advising people not to go beyond – but beyond turned out to be the best area in Britain for *Plutella haasi*. This is a species that was only known in Britain from one specimen found at 2,500 feet on a Scottish mountain in 1954 and not found again, despite searches there by various eminent Lepidopterists, until 2009 when Bob rediscovered it in probably the same area as the first. In mainland Europe the species is only known from six sites, all in Norway and Sweden. The larval foodplant was unknown there. In the autumn of 2009 Stella and Bob found the larva and, as a direct result, over the next couple of years recorded over 500 larvae at three new sites in two other vice-counties. This was one example of where knowledge of the biology helps increase knowledge of distribution.



Aethes rutilana (Bob Heckford)



Aethes rutilana habitat (Bob Heckford)

Illustrations of the genitalia were shown of four species: *Infurcitinea albicomella* and *I. captans* and *Coleophora linosyridella* and *C. trochilella*. Although the adults of each pair are almost indistinguishable externally, the genitalia are quite different. These are examples of the importance of voucher specimens in certain circumstances. In the case of *Coleophora linosyridella*, Bob and Stella found larval cases feeding on *Aster linosyris* for the first time in Britain, on a cliff in Devon. Until then the species was only known in Britain from certain salt marshes bordering the Thames estuary, where the larva feeds on *Aster tripolium*. *Aster linosyris* is a rare plant in Britain known only from about half a dozen sites. As a direct result of finding the larvae in Devon, a site meeting

took place with various conservation bodies with the aim of preventing scrub encroachment smothering the plant.

None of the species was found using light traps; indeed getting such to some of the localities would have been impossible, unless lowered by helicopter. So a further message was that fieldwork often paid off!

Stella Beavan and Bob Heckford

Insect migration and isotopes

Many insects in the UK are migratory, but our knowledge of insect migration is limited as their small size often impedes their study. Technological advances have allowed us to attach transmitters to insects as small as 0.2 g, but they are still too large for the vast majority of British insects. However, we can use stable isotopes as natural tracers of migration or dispersal. The principal biologically important elements (e.g. hydrogen, carbon, nitrogen and sulphur) each have at least two stable (i.e. non-radioactive) isotopes. The ratio of each pair of stable isotopes change during chemical and physical processes, and these differences can be utilised by ecologists to trace specific processes. The first step in using isotopes to trace migration is to understand how they change with different environmental processes. For example, hydrogen isotope ratios in animals faithfully reflect those in rainwater, which in turn varies according to latitude. The second step is to create an isoscape – a map of varying isotope ratio based on either a rough “baseline” such as hydrogen isotopes in rainwater, or collected animal tissues from specific locations. These isoscapes can be used to predict where a particular animal comes from, or at the very least, distinguish a resident from a migrant.

I'm about to embark on a project to create a British insect isoscape that researchers can use to study insect migration through the UK. I will analyse wing membrane for stable isotope composition from an abundant, resident species, the Brimstone Moth, with help from volunteers from widely-scattered areas of the UK. It's an ideal species from which to construct a tissue isoscape, since it is captured in mercury vapour light-traps in sufficient numbers throughout the breadth of the UK, and is very easy to identify. The resulting isoscape will allow captured individual insects of any species to be assigned to natal location within the UK. In addition, individuals falling outside the UK isotopic range can be assigned to non-UK origins and are thus immigrants. The map will provide future studies with a predictive tool for distinguishing resident from immigrant insects, pushing forward our knowledge of migration in Lepidoptera and other insects, and helping scientists and managers to work out the best strategies for conserving our insect biodiversity.



Brimstone Moth (Dave Green)

Dr Jason Newton, Scottish Universities Environmental Research Centre

Conservation updates

Monitoring of the Black-veined Moth *Siona lineata*, Bright Wave *Idaea ochrata* and Marsh Mallow Moth *Hydraecia osseola hucherardi* populations in Kent continued in 2016 with this work undertaken for Butterfly Conservation by Sean Clancy.

In 2016 the Black-veined Moth was found in slightly lower numbers than average when comparing the established transect and timed count totals. At the end of 2016, it was considered to be resident at seven localities that are sufficiently separated from one another to be described as discrete colonies. This has been the situation for several years, although an increase on the number of sites from the turn of the century (circa five). However, this obscures the fact that new sites have been discovered and two colonies lost, with a further one lost but subsequently recolonized as a result of appropriate management. One of the lost sites may have been a temporary colonization that died out, but the other suffered a combination of low spring rainfall following the introduction of grazing the previous winter, and high levels of rabbits, resulting in a low and unsuitable sward over the site. This unfortunate combination of events helps to demonstrate the fine balancing act required to maintain this species on the longer turfed grassland sites. Grazing is needed, otherwise sites rapidly become scrubbed up, but overgrazing can result in colonies being lost. Caution is needed when providing management advice for this moth and it is more tolerant of under-grazing than over-grazing. Where feasible, the most appropriate approach is to adopt rotational compartmentalized grazing with cattle at a very low stocking density, but increasing this in subsequent seasons until an appropriate level is reached to ensure suitable sward conditions are retained throughout and outside the grazing period. Like so many of our endangered moths it is important that all populations/sites are visited at least once in any given year and that liaison is maintained with the site owners/managers on a regular basis. In the case of the Black-veined Moth a report is compiled annually and circulated by BC, followed up by the occasional site meeting to discuss management. Currently all the sites are managed under an agri-environment scheme or are under conservation management, i.e. the localities are on a National Nature Reserve.



Black-veined Moth (Mark Parsons)

This unfortunate combination of events helps to demonstrate the fine balancing act required to maintain this species on the longer turfed grassland sites. Grazing is needed, otherwise sites rapidly become scrubbed up, but overgrazing can result in colonies being lost. Caution is needed when providing management advice for this moth and it is more tolerant of under-grazing than over-grazing. Where feasible, the most appropriate approach is to adopt rotational compartmentalized grazing with cattle at a very low stocking density, but increasing this in subsequent seasons until an appropriate level is reached to ensure suitable sward conditions are retained throughout and outside the grazing period. Like so many of our endangered moths it is important that all populations/sites are visited at least once in any given year and that liaison is maintained with the site owners/managers on a regular basis. In the case of the Black-veined Moth a report is compiled annually and circulated by BC, followed up by the occasional site meeting to discuss management. Currently all the sites are managed under an agri-environment scheme or are under conservation management, i.e. the localities are on a National Nature Reserve.

A total of 235 Bright Wave were recorded from the established transects and timed counts in 2016 (four of each). This is a reduction in numbers from previous years and below the average when compared to survey figures since 2007 (down from 284 in 2015, the high being 443 in 2011). However, it may have been that the generally mild, wet and early spring conditions, which led to an advanced sward by the time of the survey, could have had a negative impact on larval survival earlier in the year. This is perhaps borne out by the fact that the three sites on shingle, which would be more free-draining, were relatively unaffected with two of them showing increased counts. On the third shingle site, due to prior planning permission, two properties were built on its coastal edge resulting in the loss of some habitat. Mowing (to prevent scrub encroachment) at a recently discovered brownfield site for the species led to a reduced count of adults. It is hoped that the latter issue can be resolved in due course to ensure the continued survival of the moth at this site. On the golf course sites, sward diversity appears to have reduced and ranker conditions increased in 2016. It is also hoped that in 2017 a meeting will be held at one of the golf course sites to discuss management for this species. Following its discovery at an inland site in 2010 the moth was recorded for the seventh consecutive year, although with the lowest timed count total over those years. The reason for this is uncertain, but there did appear to be an increase in scrub and several areas held surface moisture which had not been in evidence in previous years. In summary, this species is now known to be restricted to several sites along an 18km stretch of coast in east Kent, with one inland population. It is associated with early successional vegetated sand and/or shingle; early succession habitat or reverted links golf-course rough/dry grassland; and sparsely vegetated, free draining brownfield sites, including former colliery sites.

Marsh Mallow Moth populations were monitored on Romney Marsh through the use of torchlight transects (i.e. surveying for adults using a torch along a fixed route). Four sites were monitored, with access to a fifth site not possible in 2016. Counts were carried out at each site on three separate dates.

Two additional sites were surveyed where the moth has been recorded in recent years, with three further sites the focus of speculative searches. The monitoring resulted in an increased count of the species compared to the previous year, with 80 being recorded (2015s total including the fifth site being 68). Of the four transect sites the moth was recorded at all but one. The species was also found at the two additional sites surveyed (not part of the formal monitoring programme), but none were found during the three speculative searches. Much of the year's increase was accounted for by one site, where the frequency and distribution of the foodplant (Marsh Mallow *Althaea officinalis*) was at its best for at least five seasons. This was also the highest count at the site since this transect was implemented in 2003. At one of the sites there had been an increase in invasive species within the main foodplant bed, and with the foodplant being overgrown by other plants elsewhere. However, there was encouraging news at one of the additional sites surveyed, where planting of the foodplant specifically for this species has been taking place over several years (c.800 plants planted), with two adults recorded (along with a further non-survey individual also recorded here in 2016). This follows on from a single record in 2014 and these combined sightings perhaps hint at the early stages of colonisation. A daytime count of the plant at this site resulted in a total of 3750+ flowering spikes found over five distinct areas. In addition, planting of the foodplant has been undertaken in recent years on the Dungeness RSPB reserve. Although survey results were negative this year, this should be viewed as a longer term project as it would seem likely, given sufficient stands of the foodplant, that the moth could colonise this area in the future.

Below are three plots derived from data collected from the monitoring programmes for each of these species. Figure 1 is for Black-veined Moth (2002-2016), Figure 2 for Bright Wave (2002-2016) and Figure 3 Marsh Mallow Moth (2001-2016). The blue line is the annual collated index from the various monitoring sites, the vertical grey line is the margin of error. The red line is the smoothed population trend; the grey shading is the margin of error (confidence interval) for the smoothed population trend.

Whilst the trend for Bright Wave is stable, and possible increasing slightly, that for the Black-veined Moth shows a decrease of 65% and that for Marsh Mallow Moth is a decrease of 64%. However, for the Black-veined Moth it should be borne in mind that additional sites, not part of the monitoring programme, have been discovered in recent years, and also that the moth has been lost from two of the monitoring sites (as mentioned above). The Marsh Mallow plot is based on data from five sites, and one of those appears to have been lost in recent years. These plots were calculated using TRIM software (Statistics Netherlands) thanks to colleagues Tom Brereton and Ian Middlebrook. These three species also, along with data from a further 11 moths, also contribute to the UK Biodiversity Indicator, see <http://jncc.defra.gov.uk/page-4238>

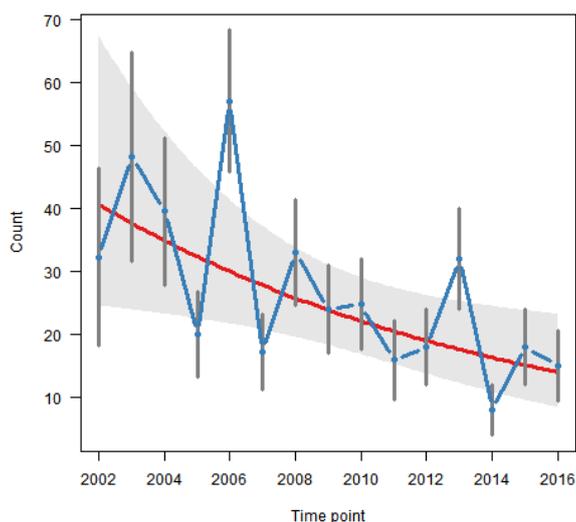


Figure 1: Population trend for Black-veined Moth.

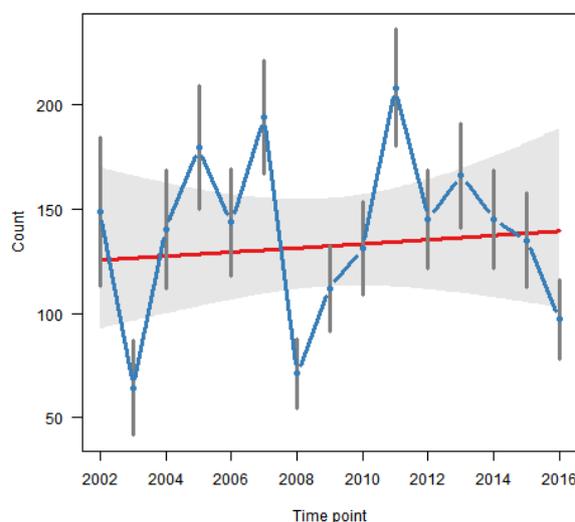


Figure 2: Population trend for Bright Wave

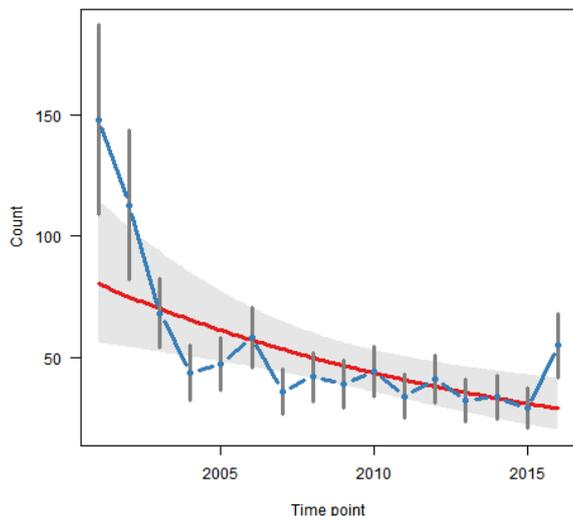
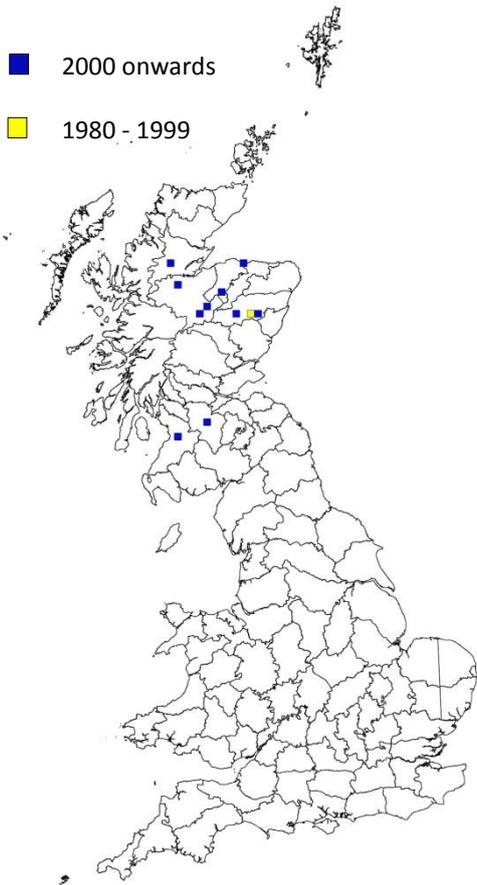


Figure 3: Population trend for Marsh Mallow Moth

BC has recently been awarded a grant by Biffa Award to help colonies of Drab Looper *Minoa murinata* and Duke of Burgundy *Hamearis lucina* on the South Downs in West Sussex. The main aim of the project is to link two isolated and weak colonies of the Drab Looper by creating new rides and glades through the intervening woods. It is also hoped that the work will allow an isolated Duke of Burgundy colony to spread out and colonise new sites, and will also benefit a very rare beetle called Cosnard's Net-winged Beetle (*Erotides cosnardi*), which occurs in just this area and one other in the UK.

Over the last few years we have been encouraging and undertaking survey of several of the Priority micro-moth species in order to gain a better understanding of their status. In the last two newsletters we have included maps of eight species. Four further distribution maps of Priority micro-moths are given below; three are listed as Section 41 (England) with *Nemapogon picarella* listed as Section 42 (Wales) (NERC Act) and on the Scottish Biodiversity List. The three other maps cover: *Eudarcia richardsoni*, *Aplota palpella* and *Celypha woodiana*. Please let us know if you are aware of any additional sites for these species and ensure all records are forwarded to the relevant county recorder, as these will be incorporated into the National Moth Recording Scheme in due course.



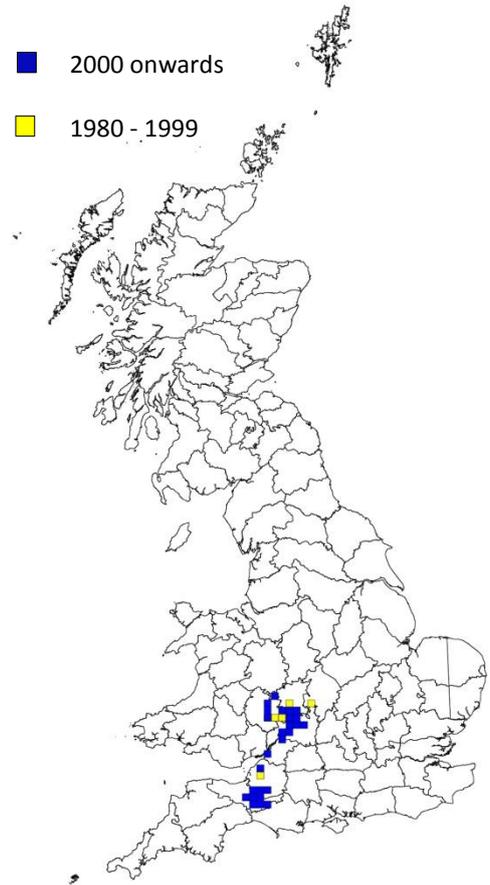
NMRS provisional distribution map for *Nemapogon picarella* at 10km resolution



NMRS provisional distribution map for *Eudarcia richardsoni* at 10km resolution



NMRS provisional distribution map for *Aplota palpella* at 10km resolution



NMRS provisional distribution map for *Celypha woodiana* at 10km resolution

Coptotriche marginea

Tributellidae
Euphyllinae
Bramble (Rubus) spp.
Larvae: September to March, July, Adults: May to June, August.
Life cycle
Distribution
Common in VC58, 59, less so in VC60.
Feeding signs from Chorlton, Manchester VC59, 04.01.15 (B).
Photo details

Moths of this species are found on bramble throughout the year. The larvae within feed over much of the winter period, although stop feeding in the coldest weather. The mine begins as a white gallery, leading to a broader, pale brown funnel-shaped blotch. A hole is made in the lower epidermis of the leaf to allow frass to be ejected. The larva creates a silk-lined tunnel within the mine. Contraction of the silk may cause the leaf to fold around the mine as it develops. First generation larvae pupate within the mine in April; the second generation in July. It is preferable to try to probably best to defer collecting the mine until later in the season, to prevent the leaf drying out before the completion of larval feeding. Once mines are brought inside into warmer conditions, the adults may emerge somewhat early.

Where present, the mine is easy to detect, and to separate from the more common *Diaperis auraria* (p.202), which forms a long, gallery mine. If there is any doubt, hold the mine up to the light and the relatively large, black-headed larva of *marginea* can be seen within the mine.
A similar species and fellow bramble feeder, *Coptotriche besenensis*, is much more localised, being found at just a few sites in southern England. The mine of *besenensis* is much less contracted than that of *marginea*. The adult differs too, having plain brown forewings.



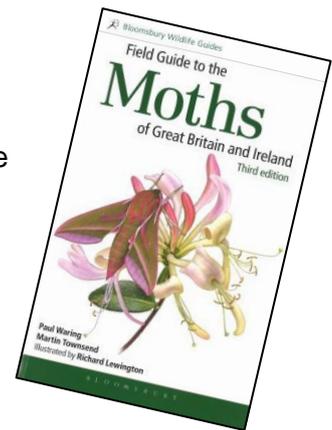
Micro-moth Field Tips – pre-publication offer

Micro-moth Field Tips by Ben Smart provides an introduction to finding the early signs of micro-moth larvae throughout the year. Detailed text has been provided for 174 species, along with photographs of 314 species. The publication has been co-funded by Lancashire & Cheshire Fauna Society and Lancashire Branch of Butterfly Conservation. It will be available in summer 2017 for £16 (plus P&P). However, there is a 25% pre-publication discount and if you order your copy by **15th May 2017** you can get it for £12 plus £2 P&P.

To take advantage of this offer please contact Rob Yates via MMFieldTips@butterfly-conservation.org or 07542 942052. Alternatively you can send a cheque for £14 made payable to “L&CFS” to Rob Yates, 68 Shore Road, Hesketh Bank, Preston PR4 6RD.

Field Guide to the Moths of Great Britain and Ireland

The third edition of the *Field Guide to the Moths of Great Britain and Ireland* was published recently. This version has been updated, revised and reordered to bring it into line with the new “ABH” Checklist. Species that have been added to the British Checklist since the second edition are included. Distribution information has been updated and this third edition features distribution maps for all species. As with previous editions the moths are illustrated in their natural resting postures which are a great aid to identification.



Moths Count Contacts

General enquiries info@butterfly-conservation.org 01929 400209

Richard Fox Head of Recording rfox@butterfly-conservation.org 01626 368385 [@RichardFoxBC](https://twitter.com/RichardFoxBC)

Les Hill Data Manager lhill@butterfly-conservation.org 020 8946 7806 [@LesHillBC](https://twitter.com/LesHillBC)

Zoë Randle Surveys Officer zrandle@butterfly-conservation.org 01929 406006 [@Moth_Lady](https://twitter.com/Moth_Lady)



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