

**Butterfly  
Conservation  
Scotland**

Saving butterflies, moths and our environment

# **Volunteer Handbook**



**for Butterfly and Moth Fieldworkers in Scotland**

**April 2014**



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# Introduction

If you are just a beginner to butterfly or moth recording, or if you are reviving an old passion, or even if you have been involved for some time, we hope you will find this Handbook useful.

The Handbook is primarily aimed at new volunteers in Scotland, who may not have previously carried out fieldwork, but want to get involved with recording butterflies or moths. In this way we have not assumed prior knowledge and have tried to avoid jargon where possible. However, we hope it will be of use to all volunteers as an easy source of commonly used reference material. This Handbook complements the Society's Branch Handbook, used by those engaged in Branch Committee activities.

This handbook is a compilation of existing material providing background information that a butterfly or moth fieldworker requires to get started. It is designed to be dipped into to answer common questions such as:

- What are the most important species of butterflies and moths in Scotland?
- What are the best ways of monitoring or surveying them?
- Which recording form should I use?
- Who should I send my data to, and in what form?
- Where can I seek help and advice?
- What sort of books and equipment do I need, and where can I buy them?

Good luck with your recording efforts - we look forward to hearing how you get on, and remember, if you can't find the answer here or you need more information, please get in touch.

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## Acknowledgements

This Handbook was originally compiled by Julie Stoneman helped by many colleagues from Butterfly Conservation as well as volunteers and others who provided material, help and/or advice.

This edition was updated by Shona Greig with invaluable help from Butterfly Conservation volunteers and staff.

Preparation and updating of the handbook has been supported by funding from Scottish Natural Heritage.



All of nature for all of Scotland  
Nàdair air fad airson Alba air fad

# 1. About Butterfly Conservation

Butterfly Conservation (originally the British Butterfly Conservation Society) was formed in 1968 by a group of dedicated naturalists, headed by Sir Peter Scott, to try to halt the alarming decline of many of Britain's butterflies. They aimed to conserve butterflies and moths, as well as the habitats on which they depend.

Since that time Butterfly Conservation has grown steadily: The Society was entirely managed and run by volunteers until 1990, but now Butterfly Conservation has over 50 members of staff. Our head office is based in Lulworth, Dorset, but we have offices in other parts of England, as well as Scotland, Wales and Northern Ireland. With a membership of over 20,000, including 1,500 in Scotland, we are the largest insect conservation organisation in Europe.

There are over 30 regional branches covering the whole of the UK (including three in Scotland). Branches are managed by voluntary committees and through them thousands of volunteers carry out practical conservation tasks, reserve management, recording and monitoring of butterflies and moths, as well as organising and attending field trips and social events and carrying out fundraising. New members automatically become part of their local branch. The branches are backed by the central organisation responsible for co-ordination, fund-raising, research and national policy matters.

## **Butterfly Conservation aims to:**

- prevent extinctions of butterflies and moths at international, UK, country and regional levels;
- promote their use as indicators of the health of the countryside and climate change;
- collect and analyse data to provide a sound scientific basis for our work, primarily through the UK Butterfly Monitoring Scheme, Butterflies for the New Millennium and National Moth Recording Scheme ;
- encourage enjoyment of butterflies and moths and an understanding of the threats they face;
- publicise their importance in ecosystems e.g. as food for birds and bats, and pollinators of wild flowers;
- collaborate with others, campaign on common agendas and promote nature conservation in its widest sense;
- restore habitats at a landscape scale so that future generations can experience and benefit from close contact with wildlife, and to
- encourage greener lifestyles.

## **Butterfly Conservation's Commitment to Volunteering**

Volunteers are one of our greatest assets. They are a valuable and sustainable means through which communities can take appropriate action to help conserve butterflies and moths and are so integral to Butterfly Conservation, that without them we would not be able to fulfil our objectives. Butterfly Conservation is therefore fully committed to encouraging, developing and supporting all aspects of volunteering.

## **Butterfly Conservation Scotland**

The Butterfly Conservation office in Scotland was established in 1996, and now comprises four staff:

- **Paul Kirkland, Director, Scotland** - the overall manager of our work in Scotland
- **Tom Prescott, Senior Species Conservation Officer** - co-ordinates species recording work and provides land management advice

- **Shona Greig, Office Manager** - responsible for managing the Scottish office and working with members, volunteers and partner organisations to raise the profile of butterflies and moths
- **Sara Green, Peatland Restoration Officer** – works with volunteers to carry out restoration work at a range of peatland sites across central Scotland

See last page for contact details.

We aim to implement the actions outlined in our three Regional Action Plans, which cover the whole of Scotland (see Section 3). To implement the plans we work closely with a number of organisations and individuals, including Scottish Natural Heritage, Forestry Commission Scotland, the Scottish Government, non-governmental organisations (e.g. the Royal Society for the Protection of Birds, the Scottish Wildlife Trust and the National Trust for Scotland), landowners, farmers, local communities, Local Biodiversity Officers and volunteers from our three regional branches.

### **Main priorities for action in Scotland:**

#### **1. Research, Survey & Monitoring**

- Surveys to determine the current distribution of key species in Scotland
- To identify all core colonies of priority species.
- To undertake research where necessary to determine habitat requirements, suitable survey and monitoring methodologies and determine most appropriate habitat management techniques.
- To ensure monitoring continues on established sites, and set up additional monitoring where necessary.
- To collate monitoring data and provide feedback to recorders, in co-operation with UK schemes and Local Biological Record Centres.

#### **2. Site Management**

- To encourage or undertake sympathetic site management where necessary.

#### **3. Advisory**

- To liaise with landowners and their advisers, as well as statutory and voluntary organisations, to promote the effective conservation of Lepidoptera.
- To disseminate information on the distribution and habitat requirements of key species to those who can further their conservation (e.g. Scottish Natural Heritage, the Scottish Government, Forest Enterprise etc.).

#### **4. Publicity and Raising Awareness**

- To promote the need for conserving Lepidoptera as part of the wider biodiversity message.
- To publicise the activities of Butterfly Conservation Scotland, and to recruit additional members.



## 2. Important Butterflies and Moths in Scotland

At the Earth Summit in Rio de Janeiro in 1992, the UK, along with 159 other countries, signed up to the Convention on Biological Diversity, which recognised the value of biodiversity to human life. Following this, the Government published a detailed set of recommendations on how the Convention could be implemented, known as the UK Biodiversity Action Plan (UKBAP). The plan lists those habitats and species which are considered to most urgently need conservation, and related action plans - Species Action Plans (SAPs) and Local Biodiversity Action Plans (LBAPs) - have been drawn up to fulfil these national objectives.

In the list below we have included the species in the UK Biodiversity Action Plan (BAP) priorities list as well as species targeted for conservation action in the Scottish Biodiversity List. All species listed occur in Scotland:

### Butterflies

Chequered Skipper  
Dingy Skipper  
Grayling  
Large Heath  
Marsh Fritillary  
Mountain Ringlet  
Northern Brown Argus  
Pearl-bordered Fritillary  
Small Blue  
Small Pearl-bordered Fritillary

### Moths

Argent & Sable  
Barred Tooth-striped  
Cousin German  
Dark Bordered Beauty  
Forester Moth  
Goat Moth  
Grey  
Kentish Glory  
Lunar Yellow Underwing  
Narrow-bordered Bee Hawk-moth  
Netted Mountain Moth  
New Forest Burnet  
Northern Dart  
Round-winged Muslin  
Slender Scotch Burnet  
Small Dark Yellow Underwing  
Square-spotted Clay  
Sword-grass  
Talisker Burnet Moth  
Transparent Burnet  
Welsh Clearwing

### Micros

*Aethes rutilana*  
*Apotomis infida*  
*Callisto coffeella*  
*Levipalpus hepatoriella*  
*Nematopogon magna*  
*Pyrausta sanguinalis*

*Anania funebris*  
*Archinemapogon yildizae*  
*Lampronia capitella*  
*Nemapogon picarella*  
*Periclepsis cinctana*  
*Swammerdamia passerella*

There are in addition a number of UKBAP species that are for research only. These are listed in Appendix 7.

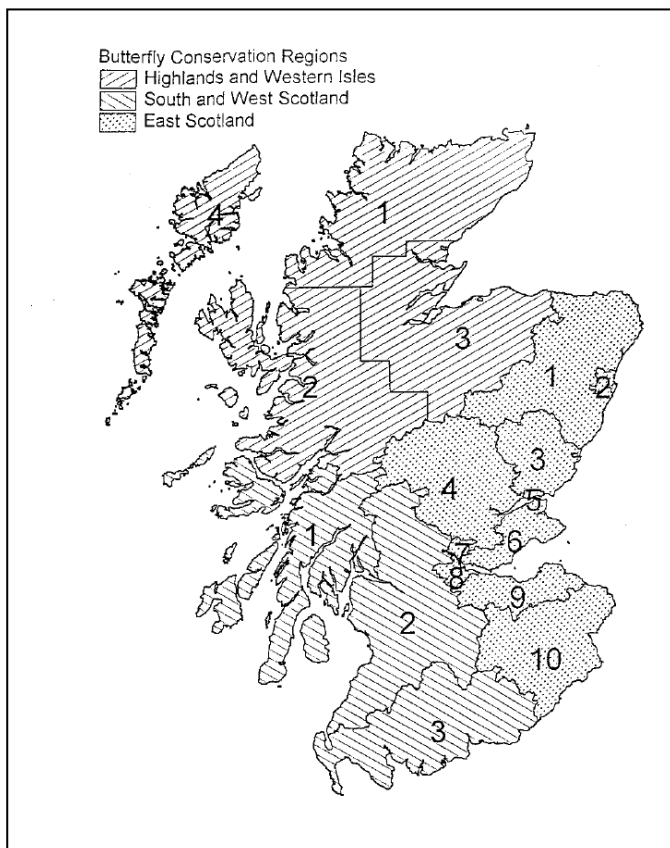




## 3. Regional Action Plans

Butterfly Conservation has produced a series of Action Plans covering the whole of the UK. In Scotland there are three Regional Action Plans corresponding to the three Branch Areas:

- **Glasgow and South West Scotland:** covering Argyll and Bute, Stirling, West Dunbartonshire, East Dunbartonshire, Inverclyde, Renfrewshire, East Renfrewshire, City of Glasgow, North Lanarkshire, South Lanarkshire, North Ayrshire, East Ayrshire, South Ayrshire and Dumfries and Galloway.
- **East Scotland:** covering Aberdeenshire, Aberdeen City, Angus, Clackmannanshire, Dundee City, East Lothian, City of Edinburgh, Falkirk, Fife, Midlothian, Perth and Kinross, Scottish Borders and West Lothian.
- **Highlands and Western Isles:** covering Highland, Moray and the Western Isles.



### Sub-divisions:

#### Glasgow and SW Scotland:

- 1 *North* : Argyll, Bute & Arran  
 2 *Central*: Ayrshire to Stirling  
 3 *South*: Dumfries and Galloway

#### East Scotland:

- North*: 1 Aberdeenshire, 2 City of Aberdeen  
*Central*: 3 Angus, 4 Perthshire & Kinross, 5 City of Dundee, 6 Fife, 7 Clackmannan.  
*South*: 8 Falkirk, 9 the Lothians and Edinburgh, 10 Borders

#### Highlands and Western Isles:

- 1 North  
 2 West  
 3 East  
 4 Western Isles

**Map 1. Butterfly Conservation Regions, showing sub-divisions**

## Priorities assigned to Butterflies and Moths in the three Branch Regions

The Regional Action Plans list the most important butterflies and moths to be targeted for action. Most of these species are already highlighted in the UK Biodiversity Action Plan (see Section 2), but Butterfly Conservation Scotland has modified the rankings of some species where they merit higher priority in a more local context (see below). Note that micro-moths have not been included but there are many species of importance in Scotland.

BUTTERFLIES		South West	Highlands & Islands	East
Chequered Skipper	<i>Carterocephalus palaemon</i>	H	H	-
Dingy Skipper	<i>Erynnis tages</i>	M	M	L
Grayling	<i>Hipparchia semele</i>	L	L	L
Large Heath	<i>Coenonympha tullia</i>	M	M	H
Marsh Fritillary	<i>Euphydryas (Eurodryas)aurinia</i>	H	H	-
Mountain Ringlet	<i>Erebia epiphron</i>	M	M	M
Northern Brown Argus	<i>Aricia artaxerxes</i>	M	M	M
Pearl-bordered Fritillary	<i>Boloria euphrosyne</i>	H	H	H
Small Blue	<i>Cupido minimus</i>	M	M	H
Small Pearl-bordered Fritillary	<i>Boloria selene</i>	L	L	M
MOTHS				
Argent & Sable	<i>Rheumaptera hastate</i>	M	M	L
Barred Tooth-striped	<i>Trichopteryx polycommata</i>	M	M	-
Belted Beauty	<i>Lycia zonaria Britannica</i>	L	L	L
Black Mountain Moth	<i>Psodos coracina</i>	L	L	L
Broad-bordered White Underwing	<i>Anarta melanopa</i>	L	L	M
Broom-tip	<i>Chesias rufata scotica</i>	L	L	L
Cousin German	<i>Protolampra (Paradiarsia) sobrina</i>	M	M	M
Dark Bordered Beauty	<i>Epione vespertaria (parallearia)</i>	-	H	H
Forester Moth	<i>Adscita statices</i>	M	M	-
Goat Moth	<i>Cossus cossus</i>	-	L	M
Great Brocade	<i>Eurois occulta</i>	L	L	L
Grey	<i>Hadena caesia mananii</i>	M	M	-
Grey Scalloped Bar	<i>Dyscia fagaria</i>	L	L	L
Heath Rivulet	<i>Perizoma minorata</i>	L	L	M
Kentish Glory	<i>Endromis versicolora</i>	-	H	H
Lunar Yellow Underwing	<i>Noctua orbona</i>	H	H	L
Mountain or (Scotch) Burnet	<i>Zygaena exulans subochracea</i>	-	-	H
Narrow-bordered Bee Hawk-moth	<i>Hemaris tityus</i>	M	M	L
Netted Mountain Moth	<i>Macraria (Semiothisa) carbonaria</i>	-	M	M
Northern Arches/Exile	<i>Apamea zeta</i>	L	L	L
Northern Dart	<i>Xestia alpicola alpina</i>	M	M	H
Rannoch Brindled Beauty	<i>Lycia lapponaria scotica</i>	L	L	M
Rannoch Sprawler	<i>Brachionychna nubeculosa</i>	-	L	M
Round-winged Muslin	<i>Thumatha senex</i>	L	L	-
Slender Scotch Burnet	<i>Zygaena loti scotica</i>	H	-	-
Slender-striped Rufous	<i>Coenocalpe lapidata</i>	M	M	M
Small Chocolate-tip	<i>Clostera pigra</i>	-	L	M
Small Dark Yellow Underwing	<i>Anarta cordigera</i>	-	H	H
Square-spotted Clay	<i>Xestia rhomboidea</i>	M	M	L
Sword-grass	<i>Xylena exsoleta</i>	M	M	M
Talisker Burnet Moth	<i>Zygaena lonicerae jocelynae</i>	-	H	-
Transparent Burnet	<i>Zygaena purpuralis caledonensis</i>	M	-	-
Welsh Clearwing	<i>Synanthedon scoliaeformis</i>	M	M	M

H = High

M = Medium

L = Low

- = not recorded recently/ever





## 4. Butterfly Recording

### 4i. Introduction

Butterfly recording is the foundation upon which conservation for butterflies is built, as it allows us to assess trends, identify priorities and measure the effectiveness of conservation action. It is also one of the areas in which Butterfly Conservation volunteers excel. Anyone can help with butterfly recording and we need to maintain a thriving community of volunteers to provide vital ongoing information.

Butterfly recording comprises of monitoring and surveying. **Monitoring** is used to collect information about changes to an individual population or site over time e.g. through annual butterfly transects or timed counts. **Surveying** is concerned with collecting distribution data, and requires visits to several places at the county, region or even country level. However, if surveys are repeated (e.g. five years later) this could be regarded as monitoring!

Most butterfly recording carried out by Butterfly Conservation volunteers falls into three main activities: walking transects, carrying out timed counts and general recording as part of the *Butterflies for the New Millennium* (BNM) project. All types of recording provide essential, but different, information that enables Butterfly Conservation to conserve butterflies effectively. Abundance data from transects and timed counts and distribution data from BNM recording complement each other and together provide a much clearer picture of how butterflies are faring than could be gained from either type of recording alone.

### Why is recording important?

The data generated by recording underpin almost all conservation work and can be used over and over again to benefit butterflies, both at the local scale (e.g. by improving site management) and nationally. The data are used to determine Government policy, to decide planning applications and to influence the activities of major land-owning organisations. Ultimately, butterfly data determine which species are the focus of conservation action through Biodiversity Action Plans at the national, regional and local levels. Data are also important in research and have been used to advise the Government and its conservation agencies on the state of Britain's butterflies, agricultural reform and the impacts of climate change. Butterfly Conservation has gained an excellent reputation for providing high quality information on butterfly trends.

### We need your help!

Everyone can contribute and we really do need your help. Whether you are a new recruit or a long-term member now is the time to get involved with butterfly recording (if you aren't already!). You don't need to give up lots of free time and you don't need to be an expert. Contact your Branch or the Butterfly Conservation Scotland office in Stirling if you would like to help.

# big butterfly count

19th July – 10th August

The Big Butterfly Count is a nationwide survey aimed at helping us assess the health of our environment. It was launched in 2010 when an impressive 10,000 people took part, counting 210,000 butterflies and day-flying moths across the nation. It has since gone from strength to strength with many more people, some 46,400 in fact, joining last year's Big Butterfly Count, counting more than 833,000 butterflies and moths. Follow this link for 2013's results <http://www.bigbutterflycount.org/2013mainresults> This year's Big Butterfly Count will take place from Saturday 19th July – Sunday 10th August 2014 – go to <http://www.bigbutterflycount.org/>

#### 4ii. Quick Guide to Butterfly Recording Methodologies

Name of method	Basic methodology	Advantages	Disadvantages	When to use
<b>Butterfly Transect</b>	Weekly count along set route April – Sept.	Best method for enabling comparison of site data with national and regional trends.	High commitment needed - if too many counts are missed, it is not possible to calculate an annual index and the data have limited use. Can only be used for adult butterflies, so highly weather-dependent.	Where the site can be visited weekly on sunny days throughout the season – i.e. sites should be close to recorders who are available to monitor most days of the week during the “butterfly season”.
<b>Single species transects</b>	Weekly count for particular species during their flight period (and the week either side).	Less time-consuming than a full transect.	No other butterfly species data is collected. Can only be used for adult butterflies, so highly weather-dependent.	For “high priority” species where a full transect is impractical.
<b>Timed counts</b>	Timed count over a defined area at peak flight period.	Good method to provide pop/colony estimates if backed up by a local transect. Only 1 - 2 visits are necessary. Relatively easy. Can be used for any life stage (and therefore not always weather dependent)	Requires transect data for calibration. Count must be around peak flight period in good weather. Some concerns about methodology.	For surveys for specific species. In situations where transects are not feasible e.g. for canopy species, in exposed areas, for very small sites, for not easily accessible sites. For larval and egg or adult roost counts.
<b>General Recording (Butterflies for the New Millennium)</b>	Presence and number.	Quick and easy. Best method for finding new colonies of species. No great commitment needed. All life stages can be recorded.	Data can only show distribution, not size or status of populations.	For under-recorded areas (such as much of Scotland), where the aim is to “put the species on the map”.
<b>Wider Countryside Butterfly Survey</b>	Two visits between May and Sept to 1km square site	Only 2 visits are necessary. Relatively easy.	Count must be around peak flight period in good weather.	To gauge changing abundance in widespread species in general countryside – runs in parallel with butterfly transects.

#### 4iii. Summary Information for Priority Butterfly Species in Scotland

SPECIES	BAP STATUS	FLIGHT PERIOD	FOOD PLANT	HABITAT	RECOMMENDED MONITORING METHOD (IN ORDER OF PRIORITY)
Chequered Skipper	Priority Species	Mid-May - late June	Purple moor-grass	Sheltered but sunny grassland	A, Bi
Marsh Fritillary	Priority Species	Mid-May - mid-July	Devils bit scabious	Damp, tussocky grassland where food plant grows	A, Bii, Bi
Pearl-Bordered Fritillary	Priority Species	Early/mid May - mid/late June	Violet spp. Especially common dog-violet and marsh violet	South-facing woodland edges and glades with bracken, often grazed	A, Bi
Northern Brown Argus	Priority Species	Mid-June - early August	Rock-rose	Sheltered and well-drained hillsides, usually on basic rock, where its food plant grows commonly	A, Biii, Bi
Large Heath	Priority Species	Mid-June - early August	Hare's tail cotton grass	Raised bogs, blanket bogs and acidic moorland, usually below 500m	A, Bi
Mountain Ringlet	Priority Species	Early June - early August	Mat grass	Damp mountain grassland, south-facing slopes, 250 - 900m	A, Bi
Small Blue	Priority Species	Early June - early July	Kidney vetch	Sheltered grassland where food plant grows in abundance, mixture of short turf and scrub	A, Bi, Biii
Grayling	Priority Species	Early/mid July - mid Sept	Bristle Bent, Early Hair-grass, fescues, occasionally Marram and Tufted Hair-grass.	Coastal dunes. Inland, on dry heathland. Wide range of soil types but all are dry with lots of open ground.	A, Bi
Dingy Skipper	Priority Species	Early May - End June	Birds foot trefoil (also greater bird's foot trefoil)	Open, sunny habitats including heathland, railway lines, disused quarries and waste ground	A, Bi
Small Pearl-bordered Fritillary	Priority Species	Late June - end of July	Violet spp. - especially common dog-violet and marsh violet	Sheep- or deer-grazed, open wood-pasture, usually with patches of bracken and scrub	A, Bi

#### Key to recording methods

A: Transect      Bi: Timed count - adults      Bii: Timed count - larvae      Biii: Timed count – eggs

#### **4iv. Butterfly Recording Methods and submitting records**

There are four basic ways of recording butterflies: general recording, butterfly transects, timed counts and taking part in the Wider Countryside Butterfly Survey.

##### **1. General Recording**

**Butterflies for the New Millennium (BNM)** is Butterfly Conservation's general butterfly recording scheme. It covers the whole British Isles and it assesses the distribution of each butterfly species. Anyone can submit records of sightings, whether from back gardens or mountain tops. It has been immensely successful to date - since 1995 over 10,000 volunteers have collected over 2 million butterfly sightings. This data show the locations of scarce and declining species and can be used to influence their protection. Successive surveys can be compared to show how species' distributions are changing.

Data from the first five years of BNM were used to produce *The Millennium Atlas of Butterflies in Britain and Ireland*, 2001 (see Section 10 for details), but this book was only the start. The distributions of most species are changing rapidly and it is vital that people continue to record butterflies and that more recorders are recruited. You can make a record any time you see a butterfly that you can identify, anywhere in Britain and Ireland. You don't have to be an expert and even recording in your garden, local park or nature reserve can be a big help. Standard recording forms are used to note down any butterflies that you see, together with the date and name and grid reference of the place where they were. Records are returned to Local BNM Co-ordinators.

There are two approaches that can be taken:

**a) Casual recording** - Taking a note of records wherever butterflies are seen.

**b) Site-based recording** – For repeated visits to a particular site (e.g. garden, nature reserve, local park). The site should be visited (in good weather) at least 4 times in the season (preferably in early May, mid-June, mid-July and the second half of August, to catch the flight periods of all possible species.

##### **Where to send data and in what form**

The Butterflies for the New Millennium project has developed two standard forms which should be used to record butterflies, the Casual Record Form and the Site Recording Form. Both are available from the Stirling office or can be downloaded from the website at <http://butterfly-conservation.org/2391/recording-forms-and-downloads.html>

Completed forms should be sent to your Local BNM Co-ordinator:

##### **South & West Scotland**

Scott Shanks (including Argyll & Bute, Stirling and Dumfries & Galloway):

Flat 1/2, 113 Haugh Road, Yorkhill, Glasgow, G3 8TX

Tel: 0141 357 2292 Email: [scottshanks01@msn.com](mailto:scottshanks01@msn.com)

Jim Black (Ayrshire)

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For more info about the BNM go to <http://butterfly-conservation.org/111/butterflies-for-the-new-millennium.html>

**2. Butterfly Transects** remain by far the best way to monitor butterfly populations, from a local context (showing population changes within a site) to a national level (showing overall population change at a UK level).

The United Kingdom Butterfly Monitoring Scheme (UKBMS) is a recently formed merger of the long-running Butterfly Monitoring Scheme (BMS) with Butterfly Conservation's co-ordination of 'independent' transects. The UKBMS consists of a network of sites throughout the UK, covering 71 species. The UKBMS mission is to assess the status and trends of UK butterfly populations for conservation, research and quality of life.

Data are collected annually to monitor changes in the abundance of butterflies, using well-established data collection and analysis methodologies.

In brief, a fixed-route walk (transect) is established at a site and butterflies are recorded along the route on a regular (weekly) basis under reasonable weather conditions for a number of years. Transect routes are chosen to sample evenly the habitat types and management activity on sites. Care is taken in choosing a transect route as it must then remain fixed to enable butterfly sightings to be compared from year to year. Transects are typically about 2-4km long, taking between 45 minutes and two hours to walk, and are divided into sections corresponding to different habitat or management units.

Butterflies are recorded in a fixed band width (typically 5m wide) along the transect each week from the beginning of April until the end of September yielding, ideally, 26 counts per year. Transect walks are undertaken between 10.45am and 3.45pm and only when weather conditions are suitable for butterfly activity: dry conditions, wind speed less than Beaufort scale 5, and temperature 13°C or greater if there is at least 60% sunshine, or more than 17°C if overcast. Due to the vagaries of the Scottish weather, it is rare in practice to achieve a full set of 26 weekly

counts. However, a small number of missing values can be estimated using other counts during the season.

Single species (as opposed to normal 'all species') transects have been increasingly established in recent years. Whilst such transects must follow the standard methodology and must record populations at least once a week throughout the flight period, the focus on a single (or small number of) species reduces both the time required to walk each transect and, more significantly, the number of weekly counts. With many demands on the time of site management staff and volunteer recorders, this reduced method has enabled population monitoring of particular threatened butterflies to be undertaken when otherwise it would not have been possible. By regularly recording a fixed route in standardised conditions, the number of butterflies seen on a transect can be compared from year to year.

#### **Where to send data and in what form**

Walkers can enter their own data into **Transect Walker software** (available free from Butterfly Conservation), which can calculate annual indices of abundance (measures of population size). Data should be sent in full, either as hard copies of the F2 Weekly Recording Forms or in Transect Walker format, to your local Butterfly Conservation transect co-ordinator. If your data is to be included in the annual UKBMS analyses and reports, recording forms must be in by the end of October, and Transect Walker data by the end of November at the latest.

For more information visit the UKBMS webpage at [www.ukbms.org](http://www.ukbms.org)

**Timed Counts** are useful because they require much less commitment, as only one count is required in suitable weather conditions during the species' flight period. They give a scientific assessment of abundance, giving more information than presence/absence from a casual record, and can be used for both survey and monitoring work. They can also be used to monitor eggs or larvae (e.g. Northern Brown Argus or Marsh Fritillary respectively). The method works best where the colony occupies an easily definable area. The recorder walks in a zigzag fashion evenly covering this area counting individuals over a fixed time period, usually between 5 and 60 minutes, which gives a relative density per hour e.g. 6 Pearl-bordered Fritillary per hectare per hour.

This method is most useful if there is a local butterfly transect covering the species in the area (for adult timed counts), as the data can be analysed by converting the figure into a peak count using local transect data. This can be used to compare data from year to year and site to site. Although the scientific validity of this method has been questioned, it is nevertheless a good way to ascertain the order of magnitude of the population.

#### **Where to send data and in what form**

Completed forms should be sent to Butterfly Conservation Scotland in Stirling.

#### **Timed Count forms available from Butterfly Conservation**

For **Methodology** - *Instructions for Timed Counts and Mapping Colonies*

For **Recording** - *Timed Count - General Recording Form (Survey Form 1 and 2)*

*Specific recording forms for some key species are also available*

#### **Wider Countryside Butterfly Survey**

The Wider Countryside Butterfly Survey (WCBS) is the main scheme for monitoring population changes of the UK's common and widespread butterflies. The survey is a partnership project run jointly by Butterfly Conservation, the British Trust for Ornithology (BTO) and the Centre for Ecology and Hydrology (CEH). We now have seven years of data (including the pilot years of 2007 and 2008) from the Wider Countryside Butterfly Survey (WCBS). In 2013, 857 squares were surveyed



by more than 700 recorders who counted in excess of 142,217 butterflies of 45 species. This is a fantastic recording effort and we wish to thank everyone who took part.

This method involves making a minimum of two visits to a randomly selected square between May and August to count butterflies along two 1km survey lines running roughly north-south through the square. The survey will be co-ordinated centrally by Butterfly Conservation but with the help of a WCBS Champion in each Branch. We are aiming for 20 squares per Branch.

For more details and copies of instructions and recording forms visit the WCBS webpage at <http://butterfly-conservation.org/113/Wider-CountrysideButterflySurvey.html>



# 5. Moth Recording

## 5i. Introduction

Moths are a fascinating group of insects but compared to butterflies rather over-looked. While there are only 33 regular species of butterflies in Scotland, there are approximately 1500 species of moths. Moths are just as colourful as butterflies and many of them are day-flying, in fact there are many more day-flying moth species than there are butterflies! Despite a long-history and the popularity of moth recording and study, basic information such as the habitat requirements, mobility and distribution of some of our most important moth species is still poorly understood. For this reason Butterfly Conservation and the National Moth Recording Scheme (NMRS) welcomes new moth recorders. Launched in 2007, the NMRS brings together sightings (records) of all macro-moths (larger moths) across the UK, Isle of Man and Channel Islands.

Moths are divided into two main groups, 'macro-moths' - the larger ones c.900 species (c.600 in Scotland) and 'micro-moths' - the smaller ones c.1600 species (c.900 in Scotland). This is a somewhat arbitrary division that is certainly not based solely on size. The boundary between the two is somewhat blurred, but it is very convenient for beginners, because all the macro-moths are listed in three recent field guides; Skinner (1998), Waring and Townsend (2003) and Townsend and Waring (2007). There are plenty of macro-moths that are easy to identify and they can be learnt very quickly with a field guide. Others are more difficult and require time and patience. However, with experience you can easily become proficient with most garden moths. A recently published field guide, Sterling and Parsons 2012 of micro-moths has helped enormously with the study of these smaller moths. Many micro-moths require expert guidance to identify them. Most moth recorders begin with the macro-moths and some of the more obvious micro-moths and then move on to tackle more of the 'micros' once they gain experience and meet people who can help them with identification.

## How to record moths

### Getting started

- Buy, make or borrow a moth trap. The latter is a great idea when you are just getting started. Ask your County Moth Recorder, local moth group or Butterfly Conservation Branch if they have moth traps for loan.
- Buy or borrow a modern field guide to the macro-moths.
- You don't have to identify every moth you catch, start with the big, bright, distinctive ones. Difficult macro-moths and micro-moths can frustrate even experienced moth recorders.
- Make contact with your local moth recorder, they will probably be able to help you with identification from photographs etc.
- Attend local moth trapping events.
- Check your trap in the morning when the moths are still and relatively easy to observe.
- Discuss your trapping activity with your neighbours in case the light causes any annoyance, they may even get interested themselves.

There are several methods that can be used to capture moths (none of which are harmful). Which is the best to use depends on the target species in question, or whether they are day-flying or nocturnal. However, if a general survey is required (and this is often the case as moths are usually under-recorded in remote areas), a combination of several methods should be used. In this section the main methods are described. (For more detail see "*Enjoying Moths*" by Roy Leverton, 2001 - see Section 10 for details).

## 5ii. Moth recording equipment and methods

### Light traps

Many nocturnal moths are attracted to artificial light, although there is still no convincing scientific explanation as to why they do this. The easiest way to attract moths to artificial light without using expensive equipment is by leaving outside lights on and draping a white sheet over lit walls or fences. However, it is more effective and efficient to use light traps.

There are now several designs of light trap, but they are of three basic types. Which you use is a balance between using a trap which attracts high numbers of moths but is costly and bulky, against one which attracts fewer moths but is cheaper and more portable. The table below summarises the advantages and disadvantages of each.

The principles of use are the same for the three: they are put out in suitable habitat at night; the light attracts moths, of which a certain percentage will fly inside the trap. The traps are filled with cardboard egg trays, which provide a rough surface giving secure footholds, and many dark crannies where moths can hide. Most moths quickly settle down, perhaps assuming it is dawn. The egg trays can be inspected either during the night or the following morning, and the moths can then be released unharmed.

Type of trap	Advantages	Disadvantages
<b>Robinson trap</b> <i>-uses an MV (mercury vapour) bulb set on a round, plastic container</i>	Catches large numbers of moths Moths tend not to escape	Does not collapse so takes up a lot of room when not in use and to transport Requires a 240V-power supply (mains electricity or a generator) Very expensive
<b>Skinner trap</b> <i>a) MV version - same electrics as above, on a box-like body</i>  <i>b) Actinic version - horizontal fluorescent tube producing actinic light set on a box-like body</i>	MV version catches as many moths as a Robinson Actinic version can be run off a 12V car battery Can be collapsed when not in use Cheaper than a Robinson trap	Not as efficient as the Robinson trap at holding moths MV version requires a 240V-power supply (mains electricity or a generator) Actinic version attracts fewer moths
<b>Heath trap</b> <i>- based on a fluorescent tube producing actinic light, which is set vertically on a rectangular box</i>	Is light and can flat-pack for easy transport Runs off 12V battery or the mains Cheapest option	Attracts significantly fewer moths (but still a good variety) than the above models

### Top Mothing Tips:

- Actinic light sources work well in places where there are few competing light sources - in built up areas MV bulbs are best (but may annoy the neighbours!).
- Think about where you should set your trap - use habitat boundaries to get a broader mix of species, preferably in an open, but sheltered place.
- An old white sheet, spread out under your trap will help you find moths that land short and prevent you treading on them the next day.
- The highest catches are on mild, cloudy, still nights with no moon. Steady drizzle will often improve catches, but heavy rain is best avoided.

- Inform local people/land owners etc. about what you are doing to ensure good relations and ensure you get access permission where appropriate.
- Check the trap as early as possible in the morning before the sun shines directly on the trap heating and unsettling the contents. This also means you can collect moths that have landed near to, but not in the trap before they fly off or are preyed upon by birds. It is best if the site is shaded from the early morning sun if you cannot check the trap at, or soon after dawn.
- If you don't have time to unload the catch first thing, move it to a cool, shaded position, and block the entrance with crumpled tissues or rags (a tea towel is ideal).
- If you run a trap in the same place on consecutive nights, release the moths away from the line of sight of the trap so that the majority aren't re-caught immediately.
- Avoid touching the moths when you inspect them, as you may harm them. To put them in a container give the egg tray a sharp tap to dislodge them or gently lift the moth from underneath using a pencil, or part of the eggtray, as they will grip onto rough surfaces.
- Release moths at dusk, or keep them (still on egg trays) in a part-open container in a shaded place out of direct sunlight and the reach of birds etc. from which they can fly out at dusk, or place them in an overgrown site where they can hide during the day.
- Species which need to be stored for expert identification can be kept for one or two days in a fridge, and then released unharmed.
- Ensure that you know which rare or migrant species your County Moth Recorder may wish to see before accepting your record. It is a good idea to keep very interesting moths in pots which can be checked with your County Recorder (for further details see section on verification below).
- When recording moths the protocol is that the date used for any record is the night the trap was set, not the morning after.

### Power sources

All moth traps can be ran off a mains electricity supply. But when trapping away from the mains, there are two options:

**12V-car battery.** These can be used to power actinic tubes (e.g. heath trap). An actinic light source will reduce the numbers of moths caught, although there is a slightly less drastic reduction in the number of species caught as some appear to be more attracted to actinic than MV traps. For reasons not fully understood, this is particularly true of moths from the geometer family.

**A generator.** This is the more expensive and less portable option (generators are not lightweight devices), but the most effective option for catching moths as they can be used to power MV (Mercury Vapour) bulbs, and can run two or more traps together. If you want to transport generators a long distance from your car, a fishermen's trolley with wide wheels can be very useful.

It is important that in inclement weather all connections are waterproof. (Waterproof connections can be obtained from many suppliers). Large fishing umbrellas can be used to protect generators from the rain. Actinic tubes run relatively cool, and hence can normally be used unprotected on wet nights (provided the electrics are waterproof), but MV bulbs run hot, and should be covered with either a bulb guard or a pyrex mixing bowl to avoid the unlikely event of bulb fracture.

### Sugaring

Light traps will attract the greatest variety of moths, but some species do not come to light, and can be captured using sugar instead. Moths come to sugar because they feed on nectar, sap and honeydew, all of which are unrefined sources of sugar (however, some moths do not feed as adults, and therefore will never be seen at sugar sources). The success of the technique is variable - warm humid nights with a light wind are best for sugaring (as they are for most forms of mothing), but the technique will also work on far from ideal nights, and, for no apparent reason, not work on nights that seem good.

### *You will need*

454g Tin of Black Treacle, 1Kg Brown Sugar, (the darker the better), 500ml Brown Ale, Paint brush

Slowly heat the ale in a large pan and simmer for five minutes. Stir in and dissolve the sugar, followed by the treacle and then simmer for two more minutes. Allow to cool before decanting into a container. A drop of rum stirred in just before use is recommended but not essential. Paint the mixture about eye level onto 10-20 tree trunks or fence posts just before dusk and check for moths by torch-light for the first couple of hours of darkness. (NB ensure you ask landowners before sugaring posts!).

A variation of this technique is "**wine roping**". This works on a similar principle to the above, but is more economical as the ropes can be resoaked and reused another night.

### *You will need*

Bottle of cheap red wine, 1kg sugar, 1m lengths of thick cord or light rope made from absorbent material. (New rope should be boiled in water before use to remove noxious chemicals).

Heat the wine and stir in and dissolve the sugar. Allow to cool and soak the lengths of rope. Drape the "wine ropes" over low branches, bushes or fences just before dusk and check for moths by torch-light for the first couple of hours of darkness.

## **Natural attractants**

Using natural attractants is the easiest method to employ and requires the least equipment and preparation, just a knowledge of the local area and the location of good nectar sources. The method simply involves searching suitable flowering plants for an hour or two after dusk with a torch. There are certain nectar sources that are widespread and productive. The most effective are listed below:

- Sallow blossom - the first major nectar source of the year, flowering in late March to early May in Scotland
- Campions of the genus *Silene* and *Lychnis*. Have a long flowering period - best in May and June
- Rosebay willowherb - found in disturbed areas, peak flowering period is in August in Scotland
- Honeydew - produced by aphids and left as sticky deposits on leaves. Availability is unpredictable but best on a calm, clear evening after a hot day, when the honeydew dissolves in dew.
- Ragwort - follows flowering of rosebay willowherb in August and September, a characteristic plant of overgrazed pastures, roadsides, waste ground and industrial sites.
- Blackberries - best to wait until much of the fruit is over-ripe in late-September.
- Ivy blossom - the last great natural attractant of the year for moths, blooming September to November.
- Red Valerian - found in steep rocky places and banks - flowers May to September.
- Buddleia - good for butterflies and moths!

## **Pheromone Lures**

Historically, for some species, moth recorders have used female moths to attract males of the same species. Females were put in nets which were hung from tree branches, within minutes, males would appear having detected the female pheromones. More recently, synthetic pheromones have been produced, particularly for clearwing moth species. Clearwing moths are day-flying species, they are not attracted to light and are difficult to observe and record. Our current understanding of the distribution of clearwing moths is poor; however, with the advent of pheromone lures this can only be improved.

### **How to use pheromone lures**

Two types of lure are available, the rubber bung type which you should prick with a pin to release the impregnated pheromone. The other is the tube type pheromone; the lid should not be removed as the pheromone is released slowly through the plastic vial which is semi-permeable. Hang your pheromone lure in a net bag (washing powder tablet bags are quite handy) and securely fasten them to a branch in the survey area. Lures should be hung at least 10 metres apart. Sit back and relax and wait several minutes for the fooled males to arrive! For the best results, set your pheromone lures between midday to early afternoon on warm sunny days when there is little or no wind. You should not have to wait long; generally males will be attracted to a lure within 5 minutes. If you have not attracted any moths within 10 minutes, move on to then next lure or sampling area. When not in use, pheromone lures should be stored separately, to avoid cross contamination, and sealed in airtight containers in the freezer. This prolongs the life of the lures; one moth recorder reported recently that he has used the same lures for 8 years using this storage method.

### **Daytime Searches for Adults**

Daylight searching of relevant habitat with a net is required for day-flying species such as Argent & Sable, Burnets, Clearwings and many others. In addition, species that fly at dusk, especially many of the geometrids that are not effectively trapped at light will require searches with a net at dusk; this is known as “dusking”. (see Section 9 for details of using a net).

### **Larval Searches**

Larval searching is the best recording method for some species. It is also a method that confirms breeding at the site (adults may be strays or immigrants). The method used and time of day carried out may depend on the species. Simply searching for larvae on grasses and low-growing plants etc. can often be fruitful, or a beating tray (or an upturned umbrella!) can be used. This should be placed underneath a suitable branch of a tree or small shrub while the branch is given a sharp blow with a blunt object. Larvae will then be dislodged and will fall onto the tray where they can be examined and identified.

Alternatively a sweep net can be used. The net is swept backwards and forwards through the top of the vegetation dislodging larvae, which can then be removed from the net and examined. Many larvae are only active by night, so sweeping and beating is often best undertaken at night.

Some species require specialist search techniques (e.g. looking for the exit holes created by clearwing larvae in trees).

### **Rearing moths and caterpillars**

Many people start by rearing caterpillars that they find in their gardens. Rearing moths is great fun and is relatively straight forward, providing the caterpillars are fed the correct food-plant, usually this is the plant on which they are found. It is best to collect the stem that the caterpillar is on rather than trying to remove the caterpillar from the stem as caterpillars are quite delicate. In addition to this, some caterpillars have irritating hairs so it is best not to touch them. Put the food-plant stems in a small jar containing water. The top of the small jar should be blocked with cotton wool to prevent caterpillars falling in and drowning. Place the food-plants in a larger container and put the caterpillars on the stems. Frass (caterpillar droppings) should be cleared out of the containers regularly to avoid the growth of mould. Accumulation of moisture (condensation) on the inside of the container should be avoided. As the caterpillars grow they will eat more, so you should keep a close eye on the food resources and add to them when they are running out or if they begin to wilt. It is very important to feed them the same plant that you found them on, if you give them the wrong plant to eat they will starve and die. When the caterpillar is fully grown it will undergo pupation. Pupation sites should be provided for the caterpillar within the container. Many moths pupate underground so you should provide a thick layer of soil in the container. Some caterpillars spin up a cocoon, these will need leaves and tissue in which to do so. Others need bits of bark or corrugated card in which to pupate i.e. the Puss moth. Pupae that form during the spring or summer usually hatch within a few weeks. Pupae that form in autumn will overwinter and should be stored in soil in sealed containers and kept in a cool but frost free place, an unheated shed or out-

house is an ideal place for this. The soil/pupae should be lightly misted with water very occasionally over winter and spring to keep the atmosphere humid. When the adults are ready to emerge, a few twigs and stems should be placed in the container. This enables the moths to climb up and inflate their wings. If they do not have somewhere to do this their wings will be deformed and the creature will be unable to fly. You should ensure that the container is large enough for the moth to expand its wings. If the caterpillars were found in the wild the resulting adults should be released back in the same area. The moths should be released at dusk or hidden in dense vegetation to prevent them being eaten by birds. If the caterpillars you have reared are from an entomological supplier or are exotic species, you should not release these in to the wild. Indeed, it may be illegal to do so.

### **Moth Trapping Health and Safety**

Moth trapping is a safe hobby; however, there are a couple of things you should consider. You should make sure that your trap and electrical equipment is in good working order and that you use waterproof connectors. You should avoid looking directly at mercury vapour lamps, because the ultra violet light emitted can damage your eyes in the longer term. On rare occasions MV light bulbs may crack if they are damaged, or if rain falls on a hot bulb. We recommend you use a bulb guard and a rain guard to minimise the potential of this happening. It is not only moths that are attracted to light, biting and stinging insects such as mosquitoes, midges, hornets, wasps and bees can often turn up in your trap.

For more information and background about moth recording visit [www.mothscount.org](http://www.mothscount.org)



### 5iii. Summary Information for Priority Moths in Scotland

SPECIES	UK BAP STATUS	FLIGHT PERIOD	FOOD PLANT	HABITAT	SURVEY METHOD
<b>HIGH PRIORITY SPP.</b>					
Argent & Sable	Priority Species	June to early-July	Bog myrtle	Open moorland & birch woodland	Searches for day-flying adults and the spun leaves made by larvae
Barred Tooth-Striped	Priority Species	Late March to late April	Wild privet and ash	Open woodland, downland, bushy places	Light trapping and searching food plants after dark for adults
Cousin German	Priority Species	July to August	Blaeberry or heather and later bBirch	Birch woodland and/or open Caledonian Pine forest	Light trapping Sweeping for larvae at night
Dark Bordered Beauty	Priority Species	Late July and August	Creeping willow, tea-leaved willow, birch, aspen	Wet and lightly wooded heathland	Disturbed during day, light trapping
Lunar Yellow Underwing	Priority Species	Late June and late August and September	Range of grasses, including cock's-foot and couch grass	Open sandy heaths and open areas of grassy woodland	Light trapping. Adults will also come to sugar and flowers Larvae can be swept at night or day
Narrow-bordered Bee Hawk-moth	Priority Species	Mid-May to mid-June	Devil's-bit scabious	Open grassland & open areas in & adjacent to woodland	Searches for day-flying adults (they often come to a sprig of lilac). Daytime larval searches
Netted Mountain Moth	Priority Species	April - early June	Bearberry	Moorland and mountain hillsides	Searches for day-flying adults
Northern Dart	Priority Species	Late June - August	Crowberry and possibly heather	Slopes and summits of mountains above 1500 feet (except Shetland)	Light trapping
Slender Scotch Burnet	Priority Species	Mid-June to early July	Birds foot trefoil	Grassy slopes and hillocks by the sea on Mull and Ulva	Searches for day-flying adults

SPECIES	UK BAP STATUS	FLIGHT PERIOD	FOOD PLANT	HABITAT	SURVEY METHOD
<b>HIGH PRIORITY SPP.</b>					
Square-spotted Clay	Priority Species	August	Has been found on nettle, dog's mercury and primrose. Undoubtedly uses other plants	Open or scrubby habitats	Light trapping. Adults also come to sugar & flowers Larval searches
Sword-grass	Priority Species	March/April and September/October	Unknown in wild	Moorland, rough pasture and open woodland	Light trapping, sugaring, searches of willow/ivy blossom at dusk for adults
Forester Moth	Priority Species	June and July	Common and sheeps sorrel	Coastal grassland with flushes	Searches for day-flying adults
Goat Moth	Priority Species	June and July	Live wood	Mature trees esp willow, oak, birch & ash	Light trapping and searches for emergence holes
Small Dark Yellow Underwing	Priority Species	Mid-May to mid-June	Bearberry	Heather moorland between 200 and 600m	Searches for day-flying adults and bearberry flowers
New Forest Burnet	Priority Species	July	Meadow Vetchling and Common Bird's-foot trefoil	Steep south-facing grassy slopes with short vegetation (c10cm)	Searches for day-flying adults

## 5iv. Submitting records

Moths are competitively under-recorded, so it is vital that your hard work contributes to information on the distribution and status of these species. Ensure that you keep an accurate account of your records, and then submit them to your County Moth Recorder (see list below) at the end of each year.

The County Moth Recorder will collate your records and make them available for wider use (although they work on an entirely voluntary basis and may or may not provide you with feedback).

For High Priority Species, please ensure that the record is forwarded to Butterfly Conservation Scotland (or Butterfly Conservation HQ).

### Recording Software

You do not have to keep your records on a computer. Recording on paper is fine, but you should also follow the format below and it is best to check with your County Moth Recorder that he or she can handle paper records. However, storing your records electronically should help your County Moth Recorder considerably and also enable you to analyse your records with ease. There is no one recommended software package for storing data, but the MapMate programme (available from Teknica Ltd or [www.mapmate.co.uk](http://www.mapmate.co.uk)) is the most widely used by moth recorders, as it is simple to use and can import and export files to other databases. It may be best to consult with your County Moth Recorder to discuss the best way of storing data. Microsoft Excel is also used by many moth recorders. If you do not use software, make sure you maintain a notebook of your records. As a guide, submit the minimum information shown below (the record will be more useful if the other useful information is also included).

	Minimum info required	Other useful information	Comments
<b>What</b>	Species name (English)	Scientific name Life stage Number (e.g. number in light trap, result of timed count - e.g. for day-flying adults) Method caught (for light traps which light source is used - e.g. MV or actinic)	<b>Must</b> be accurate! (say if any doubt or get record verified by an expert)
<b>Where</b>	6-figure grid reference Name of site Nearest town/village	Vice county	OS maps show how to calculate a grid ref, or see BNM instructions
<b>When</b>	Date	If light trapping in a particular place over a period of time, just give the date the species was first and last seen and the date of the maximum total	For light trapping, the date is the one on which the night started, even if the moth came in at dawn the next day
<b>Who</b>	Your name and contact details	The determiner of the record if relevant	
<b>Other</b>		Weather details	

### Verification of Records

There are some moth species that are commonly and easily confused. On occasion your moth records may be queried by the County Moth Recorder or the National Moth Recording Scheme. Please do not take these queries as an insult. Data verification is very important to ensure quality control for future use of the data.

## County Moth Recorders in Scotland

### **VC72, 73 & 74 Dumfries-shire, Kirkcudbrightshire & Wigtownshire**

Keith Naylor, c/o Dumfries & Galloway Environmental Resources Centre, Studio 1, Hillhead Mill, Kirkcudbright, Dumfries & Galloway, DG2 8LA  
Email: mothrecorder@dgerc.org.uk

### **VC75 Ayrshire**

#### **All species**

Gill Smart, 81 Ardrossan Road, Seamill, West Kilbride, Ayrshire, KA23 9NF  
Email: gillsmart001@btinternet.com

### **VC76 Inverclyde & Renfrewshire**

Neil Gregory, 32 Oldhall Drive, Kilmacolm, Inverclyde, PA13 4RF  
Email: [droitwich@btinternet.com](mailto:droitwich@btinternet.com) Tel: 01505 874275

### **VC77 Lanarkshire**

#### **All species**

Richard Weddle, 89 Novar Drive, Glasgow, G12 9SS  
Email: richard@canto.plus.com

### **VC78 Peebleshire**

#### **All species**

Reuben Singleton, 5 Frankscroft, Peebles, Scottish Borders, EH45 9DX  
Email: reuben@dukehaugh.free-online.co.uk

### **VC79 Selkirkshire**

#### **All species**

Malcolm Lindsay, Burn House, Mossilee Road, Galashiels, TD1 1NF  
Email: malcandles46@talktalk.net

### **VC80 Roxburghshire**

#### **All species**

Andy Fitchett, 1 The Croft, Nether Blainslie, Galashiels, TD1 2QF  
Email: [andy.fitchett@virgin.net](mailto:andy.fitchett@virgin.net) Tel: 01896 860643

And Jeff Waddell, 33 Eildon View, Melrose, Roxburghshire, TD6 9RH  
Email: [jeffwaddell11@yahoo.co.uk](mailto:jeffwaddell11@yahoo.co.uk)

### **VC81 Berwickshire**

#### **All species**

Barry Prater, Fortview, 12 Barefoots Crescent, Eyemouth, Berwickshire, TD14 5BA  
Email: [barry@prater.myzen.co.uk](mailto:barry@prater.myzen.co.uk) Tel: 01890 752037

### **VC82 East Lothian**

#### **All species**

Mark Cubitt, 12 Burgh Mills Lane, Linlithgow, EH49 7TA  
Email: [vc82moths@eastscotland-butterflies.org.uk](mailto:vc82moths@eastscotland-butterflies.org.uk) Tel: 01506 843803

### **VC83 Midlothian**

#### **All species**

Alastair Sommerville, 4 Woodbank Crofts, Westfield, Bathgate, West Lothian, EH48 3AT  
Email: [alastair@biodiversitysolutions.co.uk](mailto:alastair@biodiversitysolutions.co.uk) Tel: 01501 732715

**VC84 West Lothian****All species**

Mark Cubitt, 12 Burgh Mills Lane, Linlithgow, EH49 7TA

Email: [moths@cubes.f9.co.uk](mailto:moths@cubes.f9.co.uk) Tel: 01506 843803

**VC85 Fife****All species**

Duncan Davidson, 140 Pitcorthie Drive, Dunfermline, KY11 8BJ

Email: [duncan@dwwd.freeseve.co.uk](mailto:duncan@dwwd.freeseve.co.uk)

**VC86 & 87 Stirlingshire and West Perthshire****All species**

John Knowler, 3 Balfleurs Street, Milngavie, Glasgow, G62 8HW

Email: [john.knowler@ntlworld.com](mailto:john.knowler@ntlworld.com)

**VC88 Mid Perthshire****All species**

Julie Stoneman

Email: [jstoneman@gmail.com](mailto:jstoneman@gmail.com)

**VC89 East Perthshire**

John Thorpe, Pipers Croft, Killiecrankie, Perthshire, PH16 5LW

Email: [johnethorpe@btinternet.com](mailto:johnethorpe@btinternet.com) Tel: 01796 473886

**VC90 Angus****All species**

David Lampard, 51 Johnston Avenue, Dundee, DD3 8HA

Email: [dlampard@clara.co.uk](mailto:dlampard@clara.co.uk)

**VC91 Kincardineshire****All species**

Brian Stewart, 36 Leggart Terrace, Aberdeen, AB12 5UD

Email: [bjstewart1@btopenworld.com](mailto:bjstewart1@btopenworld.com) Tel: 01224 873345

**VC92 South Aberdeenshire****All species**

Helen Rowe, 98 Springhill Road, Aberdeen, AB16 6QL

Email: [Helen.rowe@aberdeenshire.gov.uk](mailto:Helen.rowe@aberdeenshire.gov.uk) Tel: 01224 695819

**VC93 North Aberdeenshire****All species**

Mark Young, Meiklepark, Oldmeldrum, AB51 0DL

Email: [m.young@abdn.ac.uk](mailto:m.young@abdn.ac.uk)

**VC94 Banffshire****All species**

Roy Leverton, Whitewells, Ordiquhill, Cornhill, Banffshire, AB45 2HS

Email: [roy345@btinternet.com](mailto:roy345@btinternet.com) Tel: 01466 751252

**VC95 & 96 Moray and East Inverness-shire****All species**

Mike Taylor, Allasdale, Kinchurdy Road, Boat of Garten, Inverness-shire, PH24 3BP

Email: [mst.taylor@btinternet.com](mailto:mst.taylor@btinternet.com) Tel: 01479 831060

**VC97 West Inverness-shire****All species**

Tom Prescott, Mill House, Mill Road, Kingussie, Inverness-shire, PH21 1LF

Email: [tomprescott@btconnect.com](mailto:tomprescott@btconnect.com)

**VC98 Argyll Main****All species**

Andrew Masterman, Flat 1/3, 214 Calder Street, Glasgow, G42 7PE

Email: [andrewmasterman@hotmail.com](mailto:andrewmasterman@hotmail.com)

**VC99 Dunbartonshire**

John Knowler, 3 Balfleurs Street, Milngavie, Glasgow, G62 8HW

Email: [john.knowler@ntlworld.com](mailto:john.knowler@ntlworld.com)

**VC100 Clyde Isles/Arran****All species**

Kate Sampson, National Trust for Scotland Ranger Service, Brodick Country Park, Isle of Arran, KA27 8HY

Email: [ksampson@nts.org.uk](mailto:ksampson@nts.org.uk) Tel: 01770 302462

**Bute****All species**

Glyn Collis, Seasgair, Ascog, Isle of Bute, PA20 9ET

Email: [glyn@butemuseum.org](mailto:glyn@butemuseum.org) Tel: 01700 504429

**Cumraes****All species**

Glyn Collis, Seasgair, Ascog, Isle of Bute, PA20 9ET

Email: [glyn@butemuseum.org](mailto:glyn@butemuseum.org) Tel: 01700 504429

**VC101 Kintyre****All species**

Helen Bibby, Gowanlea, Kilduskland Road, Ardrishaig, Argyll, PA30 8EH

Email: [Helen.bibby@live.co.uk](mailto:Helen.bibby@live.co.uk)

**VC102 South Ebudes****All species**

John Armitage, Airigh Sgallaidh, Portnahaven, Isle of Islay, Argyll, PA47 7SZ

Email: [jsa@ornquest.plus.com](mailto:jsa@ornquest.plus.com) Tel: 01496 860396

**VC103 Mid Ebudes****All species**

Alan Skeates, Dunellen, Craignure, Isle of Mull, Argyll, PA65 6AY

Email: [alanskeates@btinternet.com](mailto:alanskeates@btinternet.com)

**VC104 North Ebudes****Skye****All species**

Brian Neath, Culag, Carr Brae, Dornie, Kyle, Ross-shire, IV40 8HA

Email: [bandj@culag.plus.com](mailto:bandj@culag.plus.com) Tel: 01599 555341

**Small Isles****All species**

Jessie Wormell, Hallival, Letterwalton, Benderloch, Oban, Argyll, PA37 1SA

Email: [jessiewormell@yahoo.com](mailto:jessiewormell@yahoo.com) Tel: 07768 041876

**VC105 West Ross****All species**

Brian Neath, Culag, Carr Brae, Dornie, Kyle, Ross-shire, IV40 8HA

Email: [bandj@culag.plus.com](mailto:bandj@culag.plus.com)

**VC106 East Ross****All species**

Margaret Currie & Andrew Scott, 7 Balnatua, Culbokie, Dingwall, Ross-shire, IV7 8JQ

Email: [moths.vc106@btinternet.com](mailto:moths.vc106@btinternet.com) Tel: 01349 877223

**VC107 East Sutherland****All species**

Tony Mainwood, 13 Ben Bhraggie Drive, Golspie, Sutherland, KW10 6SX

Email: [tony.mainwood@btinternet.com](mailto:tony.mainwood@btinternet.com) Tel: 01408 633247

**VC108 West Sutherland****All species**

Graham Crittenden, 55 Melvich, Thurso, Sutherland, KW14 7YJ

Email: [graham5561@btinternet.com](mailto:graham5561@btinternet.com) Tel: 01641 531278

**VC109 Caithness****All species**

Neil Money, Heathfield House, Dunnet, Thurso, Caithness, KW14 8XP

Email: [neil@heathfield99.plus.com](mailto:neil@heathfield99.plus.com) Tel: 01847 851346

**VC 110 Outer Hebrides****All species**

Steve Duffield, 7 Carinish, Isle of North Uist, Western Isles, HS6 5HL

Email: [steveduffield@hebrides.net](mailto:steveduffield@hebrides.net) Tel: 01876 580619 or 07867 555971

**VC111 Orkney Islands****All species**

Sydney Gauld, Quoyberstane, Work Road, St Ola, Kirkwall, Orkney, KW15 1UF

Email: [orklander45@gmail.com](mailto:orklander45@gmail.com) Tel: 01856 872468

**VC112 Shetland Islands****All species**

Shetland Biological Recording Centre, Shetland Amenity Trust, Garthspool, Lerwick, ZE1 0NY

Email: [sbrc@shetlandamenity.org](mailto:sbrc@shetlandamenity.org)

**Fair Isle****All species**

Nick Riddiford, Schoolton, Fair Isle, Shetland, ZE2 9JU

Email: [taib@mallorcaweb.net](mailto:taib@mallorcaweb.net) Tel: 01595 760250

Contact details for County Moth Recorders change from time to time. A regularly updated list can be found at [www.mothscount.org](http://www.mothscount.org)





## 6. Volunteer Projects

### Introduction

We are always seeking help from volunteer butterfly and moth recorders, whether novice or experienced, to help us with survey and monitoring work. The size of Scotland, combined with the remoteness of some areas and the relative lack of butterfly and moth recorders, means that more survey and monitoring work is required in all parts of the country. We can provide methodologies, recording forms, training and/or advice, relevant background information and support.

How you become involved depends on how much time and commitment you have to give, and also where you live or the distance you can travel. The best idea is to get in touch with us with some idea of what you would like to do (e.g. from the choice below), and we will match you to a task either ourselves, or through our Branches or partners.

We would welcome targeted recording of the butterfly species listed in section 4 of this Handbook and the moth species listed in section 5. Appendix 6 also shows the priority species for Scotland.

Please refer to Sections 4 and 5 for more information about the methodologies.

### 1. General butterfly recording

Butterfly Conservation's general recording scheme Butterflies for the New Millennium (BNM) is an ideal way to get started without having to make any great commitment. All you need to do is send in records of butterflies whenever you see them, according to the methodology. The data go into a database which is used for many purposes, one of which is to map any changes in range of species.

We can provide information about species in the area you would like to cover, so you can visit specific sites to reconfirm important colonies, or to see how much recording has been carried out there before.

Information about the BNM, recording forms and the list of local Butterfly Recorders to whom data should be sent are available from our office in Stirling.

### 2. Targeted survey work – butterflies and moths

Every year we co-ordinate surveys of specific species throughout Scotland (e.g. in 2009 our target species were the Mountain Ringlet and Northern Dart). A list of sites which we would like people to visit is drawn up for each species, and volunteers sign up to visit one or more of these sites during the flight period. Sometimes free training workshops are held at the beginning of the flight period.

We welcome surveys of all important species, and can provide a task list of locations of colonies of other important butterflies and moths which need to be visited, according to where you would like to survey.

Surveyors can use the BNM methodology to confirm the presence of the colony, but timed counts are preferable, as more and higher quality information is collected.

### **3. Moth Night**

Moth Night is Britain's annual celebration of moths and moth recording organised jointly by Atropos magazine and Butterfly Conservation. The date varies each year to focus recording on different species. To get involved in Moth Night you can look for the target species or just record the moths in your garden or perhaps go along to a local event. More information is available at [www.mothnight.info](http://www.mothnight.info)

### **4. Butterfly monitoring – transects**

Butterfly transects are the best way of monitoring butterflies, but they require a lot of commitment, as the transect should be walked once a week in good weather. If you are flexible and have lots of time available, a transect would be ideal. Alternatively, you may be able to help with an existing transect, to cover weeks that the usual transect recorder is not able to (e.g. through illness or holidays), or you could do a "single-species transect", when you only record during the flight period, and a week either side, of a particular target species.

### **5. Butterfly monitoring – timed counts**

An easier alternative to transect recording is a timed count, which only has to be carried out once or twice at the peak of the flight period for target species. The data are not as reliable as transect data, but they do give a good indication of the health of that colony over time.

### **6. Events and field trips**

Our Branches run lots of butterfly and moth field trips, moth nights, talks, conservation workparties, workshops and events and are always keen for people to help out with these.

### **How to get involved**

Just contact Butterfly Conservation Scotland (see Contacts – last page) if you would like to get involved.



## 7. Support, Training and Events

### 1. Advice on Recording

Volunteers are welcome to contact Butterfly Conservation Scotland staff for help and advice about butterfly and moth recording, or any other queries.

### 2. Training

There are often free training workshops available for volunteers in areas where projects are active. Contact Butterfly Conservation Scotland for details or visit the Scotland pages of our website at [www.butterfly-conservation.org/scotland](http://www.butterfly-conservation.org/scotland)

### 3. Training - workshops at Kindrogan Field Centre, near Pitlochry

There are sometimes moth and butterfly training courses held at Kindrogan Field Centre. Contact Kindrogan Field Centre directly for details ([enquiries.kd@field-studies-council.org](mailto:enquiries.kd@field-studies-council.org) or Tel 01250 870150).

### 4. Butterfly Conservation Scotland Branch Events

We have 3 branches of Butterfly Conservation in Scotland. You can meet members of your local branch and learn more about butterflies and moths at the same time by attending one of their events. These events are free and are listed in the Events section of their respective websites (see Contacts – last page, for details).

### 5. Further Information

Butterfly Conservation Scotland has produced a number of leaflets including identification charts and fact sheets on important species. These are packed full of information that you may find useful and interesting. They can be obtained from the Stirling office (see Contacts – last page) or download them online at [www.butterfly-conservation.org/scotland](http://www.butterfly-conservation.org/scotland)

#### Our leaflets:

Butterflies of Argyll – an identification guide  
Butterflies of the Cairngorms – an identification guide  
Butterflies of Lomond & rural Stirling – an identification guide  
Butterflies and day-flying moths of the Lothians & the Scottish Borders - an identification guide  
Butterflies and day-flying moths of Glasgow – an identification guide  
Butterflies and day-flying moths of Dumfries & Galloway and Ayrshire – an identification guide  
Butterflies and moths of Falkirk and Lanarkshire – an identification guide  
Butterflies and day-flying moths of the Lothians & the Scottish Borders – an identification guide  
Butterflies and day-flying moths of Tayside & Fife – an identification guide  
Butterflies of the Highlands – an identification guide  
Important moths and butterflies of the Argyll islands  
Moths and butterflies of the Scottish uplands  
Learn about Scotland's Burnet and Forester Moths  
Learn about the Narrow-bordered Bee Hawkmoth  
Learn about the Argent & Sable  
Learn about the Marsh Fritillary  
Learn about the Pearl-bordered Fritillary  
Learn about the Netted Mountain Moth  
Learn about the Chequered Skipper  
Learn about Scotland's Common Moths



## 8. Health & Safety

### Risk Assessments

Health and safety legislation requires that a risk assessment is carried out for every work activity. The basic principle of risk assessment underpins the whole approach to health and safety management, so it is important that it is understood and put into practice by both staff and volunteers.

Risk assessments ensure that adequate precautions are taken to avoid or minimise any risks. While much of this may be common sense, if there is a serious accident we have to provide proof that an assessment has been carried out to the Health and Safety Executive. Risk assessments are also required in the event of any insurance claim for third party public liability insurance or personal accident insurance. It is your responsibility to carry out risk assessments for your own fieldwork, as follows:

The following Standard Risk Assessment forms have been produced to help you identify specific risks:

Risk Assessment 1	Public Events
Risk Assessment 2	Working at Home
Risk Assessment 3	Workstations
Risk Assessment 4	Practical Conservation
Risk Assessment 5	Fieldtrips and guided walks
Risk Assessment 6	Bonfires on site
Risk Assessment 7	Chainsaws
Risk Assessment 8	Moth trapping at Public events
Risk Assessment 9	Moth Trapping
Risk Assessment 10	Driving Vehicles
Risk Assessment 11	Monitoring and Recording
Risk Assessment 12	General Office Activities

For copies of these please contact the Stirling office. Alternatively, they can be found on the Branch pages of the BC website. If you have any questions about risk assessments or how to use them, please contact us.

### Lone Working

In more hazardous environments lone working is not recommended because of the significant level of risk associated with the activity, for example, near cliffs, quarries, marshes, mountains etc. In such situations you should think carefully about whether you are able to carry out the work without putting yourself at risk. If this is not the case, then you should find someone to accompany you.

If you work alone, you must ensure that it is planned for with the appropriate risk assessment, and you should follow the following principles:

1. Never put yourself at risk – if you are not capable of undertaking the work without assistance or if you do not feel confident in a particular situation, then do not proceed.
2. Carry out a risk assessment, as described above.

1. Use a 'Buddy system' i.e. advise someone else (partner/spouse/friend) of your movements. Give your Buddy an approximate time when you will be back from the field and contact them on your return. Ensure that person knows what action to take if you do not return on time or in the event of an emergency. If you do not possess a mobile phone, find out where the nearest working telephone is located. Communicate any change of plan to your 'buddy'.

### **Codes of Practice**

Please note that there are also Codes of Practice for:

Health & Safety  
Safeguarding Children Policy  
Ticks & Lyme Disease

These are all available on the Branch pages of the BC website.

Running Field trips – A Practical Guide (see Appendix 1 or the Branch pages of the BC website).



# 9. Equipment and Suppliers

## 1. Equipment

The following is recommended for a beginner to get started:

### *Minimum butterfly equipment:*

- Butterfly net (recommend dark netting approx 16' diameter and 1 or 2 foot handle)
- Notebook
- Butterfly ID guide (recommend British butterfly book which shows habitat, flight periods, distribution in the UK and habitat e.g. Tomlinson and Still, 2002 or Lewington, 2003)
- Collecting pots (the pot should always be larger than the butterfly)

### *Minimum mothing equipment:*

- Moth trap (see Section 9) - however, even this is not necessary to start - you can use alternative methods to conventional light traps (e.g. sugar, blossom, outdoor lights - see Section 5) before you decide to spend money on a trap.
- Moth ID guide (Skinner, 1998 and/or Waring and Townsend, 2003 recommended)
- Collecting pots (the pot should always be larger than the moth)

### **Butterfly Nets - how to use them**

Butterfly nets are an essential part of butterfly and day-flying moth recording, especially for beginners who are learning how to identify species on the wing, and for similar species which cannot be separated without close observation - e.g. Pearl-bordered Fritillary and small Pearl-bordered Fritillary. However, it is important that no harm comes to butterflies and moths when using nets, so the following procedures should be followed:

1. While you are surveying, always have your net in your hand ready to use.
2. **Only attempt to net butterflies and moths that are free-flying.** If you try netting them when they are perched, or flying low to the ground, you could end up trapping them between the net and vegetation, causing them damage.
3. To net a butterfly or moth, keep your eye on the flying insect whilst swinging the net sideways to catch it at the bottom of the bag, and then **immediately twist your wrist** downwards so that the entrance of the net is blocked by the bag itself - otherwise your butterfly or moth will fly straight out again!!
4. Lower the net to the ground, and then gently manoeuvre a collecting pot inside the net and over the insect, with the net acting as the "lid", taking care not to touch the insect with the pot. Then, keeping the net tight over the top of the pot, ensure that the insect is well inside the box before putting the pot's lid in position. You can then take the pot out to identify the butterfly or moth.
5. Don't keep the butterfly or moth longer than you have to - let it go once you have made your identification.

If you are new to using nets give yourself time to practice before you carry out serious surveying as it can take time to get the hang of it.

## 2. Suppliers

### **Alana Ecology Ltd.** (wide variety of field equipment)

New Street, Bishop's Castle, Shropshire, SY9 5DQ

Tel: 01588 630173 Fax: 01588 630176

email: [sales@alanaecology.com](mailto:sales@alanaecology.com)

[www.alanaecology.com](http://www.alanaecology.com)

### **Anglian Lepidopterist Supplies** (Specialists in entomological equipment especially moth traps, generators and microscopes) - offer a 10% discount on a beginner's moth trap to BC members.

Jon Clifton is a BC member and is helpful in providing advice.

Jon Clifton, ALS, Station Road, Hindoleveston, Norfolk, NR20 5DE

Tel/Fax: 01263 862068

email: [Jon.Clifton@btinternet.com](mailto:Jon.Clifton@btinternet.com)

[www.angleps.com](http://www.angleps.com)

### **B&S Entomological Services**

37 Derrycarne Road, Portadown, Co. Armagh, N. Ireland, BT62 1PT

Tel: 077 6738 6751 or 028 3833 6922 Fax: 028 3833 6922

email: [enquiries@entomology.org.uk](mailto:enquiries@entomology.org.uk)

[www.entomology.org.uk](http://www.entomology.org.uk)

### **Watkins & Doncaster**

PO Box 5, Cranbrook, Kent, TN18 5EZ

Tel: 0845 833 3133 Fax: 01580 754054

email: [sales@watdon.co.uk](mailto:sales@watdon.co.uk)

[www.watdon.com](http://www.watdon.com)





## 10. Books and Suppliers

### 1. Key Identification Books for beginners

**Britain's Butterflies**, David Tomlinson and Rob Still (2010). A comprehensive photographic guide to the butterflies of Britain and Ireland, covering the 60 regularly occurring species. Available from Butterfly Conservation Head Office (Tel: 01929 400209) for £12.50 plus p&p. **WILDGuides**

**Pocket Guide to the Butterflies of Britain and Ireland**, Richard Lewington (2003). A handy, lightweight book with excellent illustrations and clear descriptions. British Wildlife Publishing

**Field guide to the moths of Great Britain and Ireland**, Paul Waring & Martin Townsend, (2003). Illustrated by Richard Lewington - shows all macromoths in natural resting postures as well as detailed field notes. British Wildlife Publishing

**Concise Guide to the moths of Great Britain and Ireland**, Martin Townsend and Paul Waring, (2007). (As above but in condensed form with plastic sleeve cover for taking out and about) Illustrated by Richard Lewington - shows all macro-moths in natural resting postures as well as concise field notes. British Wildlife Publishing

**A Colour Identification Guide to the Moths of the British Isles**, Bernard Skinner (1998). A comprehensive photographic guide to all macromoths of the British Isles, giving distribution, flight-times, habitats and foodplants for each species. Apollo (3<sup>rd</sup> edition)

**Collins Gem Butterflies and Moths**, Michael Chinery (2000). This guide covers almost 400 species of butterflies and moths found in Europe. Its pocket-size makes it the most handy book to carry around, and is useful for identifying day-flying moths. Harper Collins

**2. Specialist Identification Books** (*This is not a complete guide to identification guides for moths. This is a necessarily brief selection, but there are many further volumes, particularly European works, that will aid with the identification of moths.*)

**Field Guide to the Micro-moths of Great Britain and Ireland**, Phil Sterling and Mark Parsons, (2012). Illustrated by Richard Lewington – A comprehensive field guide to the micro-moths of Great Britain and Ireland. British Wildlife Publishing.

**British and Irish Pug Moths**. A. M. Riley & G. Prior (2003). A well-researched book which gives a comprehensive account of British and Irish pug moths. Harley Books

**British Pyralid Moths**, Barry Goater (1986). A comprehensive photographic guide to pyralid moths of the British Isles, giving distribution, flight-times and habitats and foodplants for each species. Harley Books

**British Tortricoid Moths – Vols I & II**. J.D. Bradley, W.G. Tremewan, A. Smith. (1973). Ray Society. London. (*Out of print but CD available from Atropos Books*)

**Caterpillars of the British Isles**, Jim Porter (1997). A photographic guide to macro-moth and butterfly caterpillars of the British Isles, giving distribution, flight-times and habitats and foodplants for each species. Viking

**The Moths and butterflies of Great Britain and Ireland.** Eds. John Heath & A. Maitland Emmet (1976 onwards). Harley. Great Horkeley. (A multi-volume series, not yet complete. The only work covering all the microlepidoptera in detail)

### 3. Reference books

**Enjoying Moths**, Roy Leverton (2001). This book is the only one of its kind about “mothing” - including sections on finding and trapping moths, rearing caterpillars, photography and presenting scientific data. The text is liberally illustrated with line drawings and the author’s own superb photographs. The author is an active Butterfly Conservation member based in Scotland. T&AD Poyser Ltd.

**The Millennium Atlas of Butterflies in Britain and Ireland**, Asher *et al* (2001). Presents the findings of the “Butterflies for the New Millennium” project, the most comprehensive survey of butterflies ever undertaken in Britain and Ireland giving information on each species. Oxford University Press

The State of Butterflies in Britain and Ireland. Fox *et al* (2006). A 5 year update of the above. Pisces Publications.

**Moths**, Michael Majerus (2002). A comprehensive account of the diverse natural history of these fascinating and popular insects. An examination of all aspects of moths, from their life histories to their role as pests to humans. He covers their reproduction, feeding, evolution, habitats and conservation. The book also discusses the enemies of moths, and the ways they have evolved to avoid detection, including camouflage, warning coloration, and mimicry. Harper Collins Publishers Ltd.

**The Natural History of Moths**, Mark Young (1997). A broad picture of moth biology and ecology, including breeding, feeding, distribution and life-history, is brought together in this book, using results of amateur study and scientific research. The author is an active Butterfly Conservation member based in Scotland. T&AD Poyser Ltd.

**Tortricidae of Europe.** Volumes 1 & 2. J. Razowski. (2002/2004). Slamka, Bratislava. A useful identification guide to all Europe’s Tortricidae, Text in English.

### 4. Book Suppliers:

**Amazon:** An on-line general book store which stocks a wide range of nature books including most of the ones on this list. [www.amazon.co.uk](http://www.amazon.co.uk)

**Atropos books:** The Boat House, Church Cove, Lizard, near Helston, Cornwall, TR12 7PH  
Tel: 01326 290287 Email: [books@atropos.info](mailto:books@atropos.info) [www.atroposbooks.co.uk](http://www.atroposbooks.co.uk)

**British Wildlife Publishing**, Kemp House, Chawley Park, Cumnor Hill, Oxford, OX2 9PH  
Tel: 01865 811316 [www.britishwildlife.com](http://www.britishwildlife.com)

**Natural History Book Service**, NHBS Environment Bookstore, 2-3 Wills Road, Totnes, Devon, TQ9 5XN Tel 01803 865913 email: [customer.services@nhbs.com](mailto:customer.services@nhbs.com) [www.nhbs.com](http://www.nhbs.com)

**Pemberley Natural History Books**, 18 Bathurst Walk, Iver, Bucks. SL0 9AZ  
Tel: 01753 631114 email: [orders@pemberleybooks.com](mailto:orders@pemberleybooks.com) [www.pemberleybooks.com](http://www.pemberleybooks.com)

**Pendleside Books:** (new, out of print and antiquarian books) 359 Wheatley Lane Road, Burnley, Lancs, BB12 9QA Tel: 01282 615617



# 11. Societies, Journals and Websites

## 1. National Societies (other than Butterfly Conservation)

### Amateur Entomologists' Society (AES)

The AES is an organisation for people interested in insects. The AES produce three publications for its members; the AES bulletin, Bug Club Magazine and Invertebrate Conservation News.

[www.amentsoc.org](http://www.amentsoc.org)

### British Entomological & Natural History Society (BENHS)

The BENHS is an entomological society that runs open days, field meetings and exhibitions. Its journal, the British Journal for Entomology and Natural History, is published four times a year and is free to members. [www.benhs.org.uk](http://www.benhs.org.uk)

### Royal Entomological Society (RES)

The Royal Entomological Society plays a role both nationally and internationally in disseminating information about insects and improving communication between entomologists. Antenna is the free publication available to members of the RES. Along with publicising the activities of the RES, this journal also contains entomological news and reports. The RES publish other journals which are available through subscription. [www.royensoc.co.uk](http://www.royensoc.co.uk)

## 2. Journals

### Atropos

This journal is published three times a year. The central theme of the journal is insect migrations, covers all aspects of British Lepidoptera and Odonata are covered including, conservation, identification, biology and field observation. [www.atropos.info](http://www.atropos.info)

### British Wildlife

Six issues of British Wildlife are published each year. This is the “*magazine for the modern naturalist*”. Each edition features among other things a wildlife report on moths written by Dr Paul Waring. [www.britishwildlife.com](http://www.britishwildlife.com)

### Entomologist's Gazette

This journal contains articles and notes on the biology, ecology, distribution, taxonomy and systematics of all orders of insects, but with a bias towards butterflies and moths. It is published quarterly. [www.pemberleybooks.co.uk](http://www.pemberleybooks.co.uk)

### Entomologist's Record & Journal of Variation

This journal carries peer-reviewed papers and shorter notes and communications mostly about moths. Journal content ranges widely from descriptions of species new to science or taxa new to Britain, through to short notes on interesting observations that ought to be placed on record for others to access, or accounts of entomological trips. The journal is published six times a year.

[www.entrecord.com](http://www.entrecord.com)

## 3. Websites

The following is a list to get you started and use the “Links” section to direct you to other related web sites:

### **Butterfly Conservation**

Our very own website packed with butterfly and moth news and information about all our projects and activities [www.butterfly-conservation.org](http://www.butterfly-conservation.org) To go straight to the Scotland pages visit [www.butterfly-conservation.org/scotland](http://www.butterfly-conservation.org/scotland)

### **Butterfly Monitoring Scheme**

[www.ukbms.org](http://www.ukbms.org)

### **Moths Count**

Moths Count aims to encourage interest in moths throughout the UK, Channel Islands and Isle of Man and to run an ongoing National Moth Recording Scheme to improve knowledge and conservation of the 900+ species of larger moths.

[www.mothscount.org](http://www.mothscount.org)

### **National Biodiversity Network**

The National Biodiversity Network (NBN) is the UK's web based route to wildlife information. The NBN Gateway enables people to access biological records and share data.

[www.nbn.org.uk](http://www.nbn.org.uk)

### **Moth Night**

Moth Night is the UK's annual celebration of moths and moth recording. Originally launched in 1999, the date varies each year to focus recording effort on different parts of the season. [Atropos](#) founded the event and it is now run jointly with [Butterfly Conservation](#).

[www.mothnight.info](http://www.mothnight.info)

### **Ordnance Survey Get-a-map**

Great Britain's national mapping agency provides accurate and up-to date geographical data. By entering a place name, postcode or National Grid reference you can Get-a-map (up to 1:25 000 scale) for anywhere in the UK.

[www.ordnancesurvey.co.uk/oswebsite/getamap](http://www.ordnancesurvey.co.uk/oswebsite/getamap)

### **UK Moths**

UK Moths is an online guide to moth identification. The aim of the site is to illustrate as many species of British moths as possible and to provide this information in an accessible format.

[www.ukmoths.org.uk](http://www.ukmoths.org.uk)

### **Dissection Group**

This site contains images of British and European moth genitalia preparations. The content augments information given in text books.

[www.dissectiongroup.co.uk](http://www.dissectiongroup.co.uk)

### **4. e-groups**

The following groups are web based forums for moth enthusiasts to share moth related information and anecdotes:

#### **British Butterflies**

To join the group, register at [www.britishbutterflies.co.uk/bbforum/forum/default.asp](http://www.britishbutterflies.co.uk/bbforum/forum/default.asp)

#### **Migrant Recorders Network**

To join the group, send a blank email to: [MigrantRecordersNetworksubscribe@yahoogroups.com](mailto:MigrantRecordersNetworksubscribe@yahoogroups.com)

#### **Scottish Moths**

To join the group, send a blank email to: [ScottishMoths-subscribe@yahoogroups.com](mailto:ScottishMoths-subscribe@yahoogroups.com)

#### **Transect Walkers**

To join the group, send a blank email to: [UKTransect-subscribe@yahoogroups.com](mailto:UKTransect-subscribe@yahoogroups.com)

**UK Lepidoptera**

To join the group, send a blank email to: [uk-leps-subscribe@yahoogleroups.com](mailto:uk-leps-subscribe@yahoogleroups.com)

**UK Moths Yahoo Group**

To join the group, send a blank email to: [ukmoths-subscribe@yahoogleroups.com](mailto:ukmoths-subscribe@yahoogleroups.com)

Please remember that moth records posted to such website and e-groups will not necessarily be accessible to your County Moth Recorder and therefore will not reach the National Moth Recording Scheme for use in conservation, education and research. Please ensure that you send all of your moth records to your County Moth Recorder, even if you have also posted them on the internet.



# 12. Expenses, Timesheets and Insurance

## 1. Expenses

Travel expenses (within a limited budget) may be reimbursed for the work you do for Butterfly Conservation at the following rates, dependent on funding:

Own car	23p/mile
Cycle/Motorbike	10p/mile
Public transport	second-class fare (but must keep tickets)

Expenses can be claimed through the **Volunteer Travel Expenses Claim Form** (available from the Stirling office. Note that expenses can only be paid for work agreed **in advance** by Butterfly Conservation Scotland and only **if funds are available**. Please ensure that you fill in the column "Approx. time spent in hours (including travel)" (see below). Note that this form must be signed and must be sent by post to the Butterfly Conservation Scotland office at the end of each month. This form can also serve as a time sheet.

## 2. Time sheets

We would ask all volunteers who work on behalf of butterflies and moths to complete a **Volunteer Timesheet** (available from the Stirling office). These timesheets are important not only so we know what work is being done where, and by whom, but because we often need to be able to quantify volunteer input to show funders how cost effective we are.

Most of the work volunteers undertake on behalf of butterflies and moths can count towards your volunteer hours. This can include butterfly and moth recording, surveying and monitoring, butterfly transects, running or attending fieldtrips, walks and talks, workshops etc. Branch activities, report writing, events, school visits, as well as data input and verifying records all count.

This form need not be signed and can be emailed or posted to the Stirling office at the end of every quarter (ideally at the end of March, June, September and December). If you carry out work regularly you can sum the hours for each month for a particular task.

Timesheets are normally sent out to all volunteers on our Volunteer Register at the end of every quarter – if you do not receive one and would like to be added to the list please contact our Stirling office.

## 3. Insurance

Volunteers are covered for personal accident insurance and third party public liability insurance in the same way as staff, which covers incidents where the individual or Butterfly Conservation is found to be legally liable. For queries about insurance contact our Head Office (see Contacts – last page).



# Appendices

- 1. Running Field Trips – A Practical Guide**
- 2. Moth Trapping – A Practical Guide**
- 3. Work Party Leader’s Guidance Note and Register**
- 4. Safety Tips to Volunteers in a Work Party**
- 5. Policy on Collecting, Breeding and Photography**
- 6. Nationally Scarce Moths and UKBAP Species (Scotland)**
- 7. UKBAP Common and Widespread, but Rapidly Declining Moths, Research Only**
- 8. Lepidoptera Species Protected by Law in the UK**

## Appendix 1: Running Field Trips – A Practical Guide

Planning your first field trip and are feeling a bit nervous? Well don't be. You will be surprised at how much you know.

Here are some top tips to making your day both enjoyable for those attending and for yourself.

### Preparation for the Big Day

Most people who are asked to run a guided walk know their sites really well, but just in case it's a new site, seek advice and information from someone who does know the site well. Visit the site, find out where the best places for seeing butterflies are and, of course, which areas are best avoided because they are full of thorns, rabbit holes or other hazards. It is always best to give people a quick briefing at the start of the walk. This should cover what management is being carried out for the benefit of the butterfly and moth species that are present. It should also cover any health and safety issues of the trip. Use check list below.

- Length of walk and/or arduous conditions?
- Mud, boggy ground or open water?
- Any steep slopes?
- Does walk go over any difficult gates, barbed wire fences?
- Any poisonous or irritant plants?
- Insects? Warn of ticks
- Adders? Warn if present
- Any other animals eg cows?
- Check participants are suitably clad and any dogs under control.
- Weather? Advise on sunstroke/dehydration or fatigue/exhaustion/hypothermia

**Tip 1** - Tell people what butterflies and moths they are likely to see (whet their appetites!) and point out those areas to avoid.

Despite your best efforts not everyone in your party will manage to see every butterfly seen on the day. One will always fly over a hedge and out of sight. Therefore it's good to have a picture to show, especially to new members or members of the public.

**Tip 2** - Have a robust butterfly and day flying moth field guide or identification charts with you.

Though nets are usually frowned upon, it may be necessary to catch certain butterflies e.g. Essex Skipper and moths seen on the field trip so that the features that distinguish them from other similar species can be shown to those present. Some canopy species such as Purple Emperor and Purple Hairstreak are also difficult to see so have a pair of binoculars with you and encourage other people to bring their own pair (close focusing binoculars are also very useful).

Many people attending have a range of naturalist interests and will appreciate other field guides e.g. wildflowers, dragonflies and birds.

**Tip 3** - Take one or two clear insect collection containers with you.

Many of those attending will be keen on photography. Others will want to see every species, have a good long look and watch their behaviour. Parents may bring children not able to move quickly or travel long distances. Other people attending may not be in the first flushes of youth.

**Tip 4** - Not only explain how far the walk is and how long it will take, but also ensure that all those on the walk are happy with the arrangement. If people want to have a shorter walk then rearrange



your walk to allow them to return to the start whilst the rest of the party continue (a 'figure of 8' type walk is a good idea).

For many this will be their first guided walk. They or their children will turn up in inappropriate footwear or inappropriate clothing. Unfortunately we always have to expect poor weather on our walks.

**Tip 5** - Whilst carrying out your briefing have a glance around your party. Those wearing footwear such as flip flops will stand out. If people have obviously turned up unprepared then advise them that they or their children could injure themselves if they insist on following your party as it goes on the walk.

Despite the best preparation and briefing mishaps will occasionally occur. Fortunately most mishaps will be minor cuts, bruises and bites.

**Tip 6** - Advise people not to mess with any minor injuries. However, if the discomfort persists or is too great for them or their children they should leave the walk early to go home, clean any wound and apply non-prescription self medication. If the symptoms persist then they should seek professional medical advice.

The chances of a serious accident happening are extremely rare. Occasionally first aid will be needed.

**Tip 7** - Carry a field dressing in your bag (saves carrying a big first aid box), this will stem any major bleeding until professional medical treatment can be sought. If someone has first aid training on the field trip then they should apply this dressing.

Even rarer medical problems could occur. It is always possible, if very unlikely, that someone someday may collapse and need urgent medical attention.

**Tip 8** - Have a mobile phone with you and ensure it is fully charged and you know the number. Make sure you know where you can get a signal. If all else fails just go to the nearest home or commercial premises and ask to use their telephone landline. (NB Don't forget that BC Head Office will need to know the name and address of any injured person for insurance purposes.)

You might know where you are but even with modern technology the emergency services probably won't.

**Tip 9** - Know the grid reference for the start of your walk and/or carry the local Ordnance Survey map with you. You can then talk the emergency services to where you or the injured person is.

To encourage people to attend further field trips most branches like to have a report on the field trip. Numbers attending, species and numbers seen etc. (NB don't forget to submit your records to the relevant recorder.)

**Tip 10** - Take a note book with you and record all these details. It is good to supplement your notes with photographs. Ask those photographers on the field trip if they are willing and have the facility to email them to yourself or your branch newsletter editor. Have membership leaflets for those non-members attending.

### **Finally**

Remember to thank everyone for attending and get feedback about the trip by asking if anyone would have liked to have done something differently or if any problems had been encountered. Also, it is useful to find out how people heard about the event.

For further details on First Aid, specific Health and Safety hazards etc. please see the Branch area of the Butterfly Conservation web site.

## Appendix 2: Moth Trapping – A Practical Guide

This guide is a simple check-list to help you plan and manage a moth trapping event safely. However, it cannot take account of the actual level of each risk at particular sites, or of which hazards are present at specific locations. You should make adjustments and additions to incorporate those circumstances and needs at the site.

### Before the evening

- Check weather reports & change/cancel itinerary if appropriate.
- Get the permission of the owner/agent to access the site.
- Check with the owner/agent for details of any site hazards.
- Check cabling for any evidence of damage to insulation e.g. from abrasion, burns, or gnawing.
- Ensure equipment has been serviced.
- Invite other moth recorders, rather than survey alone.
- Make a note of the grid reference.
- If working alone, notify your nominated 'Buddy' (partner/spouse/friend) of your movements, survey location and expected return time. Ensure that person knows what to do in the event of an emergency.

### Recommended Equipment

- Moth trap!
- Torch (plus spare batteries)
- Mobile Phone
- Appropriate clothing
- Trolley
- Camera
- A drink
- Barrier cream/insect repellent
- Rain covers
- Protective equipment (gloves)

### Upon Arrival (before it gets dark)

- Notify the owner/agent if they are nearby.
- Check conditions are suitable.
- Identify any site hazards (pits, slopes, livestock, etc.)
- Take account of site hazards and conditions and adapt plans accordingly.
- If you do not have a mobile phone, give a thought to where the nearest telephone is located.

### Setting Up

- Ensure proper/safe lifting. Plan before any heavy/awkward item is moved. Do not overload.
- Ensure cabling is safe and wiring is correct before use.
- Prevent rain from contact with electricity supply and ensure that connections are waterproof.
- Place lamps in safe and appropriate situation. Keep cables off paths.
- Ensure that the bulb coating/glass filter is not cracked or removed; replace bulb if damaged.
- Check all bulbs for hairline fractures, before use.
- Use a rain shield in wet conditions.
- Ensure you are wearing clothing appropriate to the conditions.

### In case of Visitors

- Advise visitors not to touch any equipment.
- Advise visitors of all potential hazards (eg tripping on cables; wasps/hornets, generator, bulbs etc).
- Advise visitors to avoid looking directly at bulb; and to allow eyes to adjust to darkness when moving away from lamp.

### During survey

- Do not look directly at bulb and allow time for eyes to adjust to darkness before moving around site.

- Check traps/ropes for wasps/hornets before collecting moths.
- Drink and eat.
- In the event of rain switch off the equipment at the most safe point.
- Stay with the survey equipment at all times.

### **Packing Up**

- Pack up slowly and carefully.
- Do not overload.
- Drive away carefully, noting where other people and hazards might be.

### **Back at home**

- Check for ticks
- Notify your 'Buddy' that the survey is over.

### **Follow Up**

- Contact owner/agent to thank them. Offer information about results (be positive).
- Submit results to your County Recorder

### **Further information**

- [http://moths.butterfly-conservation.org/downloads/80/moth\\_recorders\\_handbook.html](http://moths.butterfly-conservation.org/downloads/80/moth_recorders_handbook.html)

### **Appendix 3: Work Party Leader's Guidance Note and Register**

Thank you for volunteering to lead work parties. Please ensure you have read and understand the Code of Practice on Practical Conservation and Safety and the associated Standard Risk Assessment. Below is a summary of your responsibilities.

1. The Work Party Leader is responsible for ensuring the Codes of Practice are followed at all times by all people on the work party.
2. Welcome the volunteers. Introduce the task on hand and explain the responsibilities of yourself, the first aider if different, and any other supervisors on the task.
3. Distribute the Safety Tips leaflets to the volunteers if this is their first time. Ensure every volunteer is aware of their responsibilities and signs the register of attendance.
4. Ask if anyone has any medical problems of which you need to be made aware. If so speak to them confidentially – and arrange tasks for them suitable to their level of fitness. Ensure the first aider is informed of any other health issues (eg risk of anaphylactic shock).
5. Ensure that sufficient and appropriate personal protective equipment (PPE) (such as gloves, goggles, hard hats etc) and first aid are provided and that workers are using the appropriate PPE for the task in hand. Carry a mobile phone.
6. Ensure workers are appropriately trained for any task or tools they are using. Identify any hazards and ensure they have been understood by the workers. This is best done by instruction and demonstration at the start of the work party. The instruction on tools must include their correct use, maintenance, storage and carrying.
7. Ensure all tools and equipment have been checked prior to use, they receive the correct maintenance and are correctly stored after use.
8. Stop anyone acting in a manner likely to endanger themselves or others and give them appropriate advice. As a last resort ask them to leave the work party.
9. Put out warning signs as appropriate and tape off high risk areas if required. If anyone strays into the high risk area stop the work until the person leaves.
10. Put out signs to direct late comers.
11. Ensure sufficient rest breaks are taken to prevent tiredness.
12. You may delegate certain task to responsible people as appropriate eg bonfire.
13. In the event of an accident, ensure first aid is administered and/or emergency services called as appropriate. Record details of the incident in the accident book.
14. At the conclusion of the work party thank the volunteers. Ensure all the tools and signs have been accounted for, the site has been cleared and in a safe condition, and that all people have vacated the work area.
15. Complete the Work Party Register sheet.

## Butterfly Conservation Work Party Register

Place:		Date:	
Site management objectives and activities:			
Leader (WPL):		Mobile:	
Deputy (optional)		Mobile:	
First Aider (DFA):		Mobile:	
Start time on site :		Finish time off site	
Total hours (from registration sheet)		Total persons (from registration sheet)	
Survey	Y/N	Management event	Y/N
Bonfire:	Y / N	Herbicide:	Y / N
Chainsaw operators	Y / N	Brushcutter operators	Y/N
Notes including any incidents (reportable & not):			

**Register of volunteers participating in the work party.  
This ensures BC's insurance provisions apply to all volunteers**

	Name	Address	Member?	Start	End	Hrs*
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
*Hours should include volunteer travelling times to & from the site.			Total hours*			
Exclude persons attending as part of their paid employment, whether staff or contractors			Total persons			
			Total person/hours			

This record of names and addresses is solely for the purpose of registration for insurance cover on this task and will not be used or stored for any other purpose.  
Records to be retained by Work Party Leader for 3 years.

## Appendix 4: Safety Tips for Volunteers in a Work Party

Thank you for coming to assist today in our conservation work. Please follow the guidelines below:-

- Stay as long or as short as you wish but do let the work party leader know if you decide to leave early. Everyone's contribution is appreciated.
- Register your name, and those of any children or young persons under your care, in the Attendance log supplied by the Leader.
- As a registered volunteer you have the benefit of Butterfly Conservation's Personal Accident insurance.
- Work within your own capabilities. Do not exhaust yourself. If you have any personal health concerns (eg bad back, heart problems, allergies) have a word with the leader who will find you a suitable task.
- Listen to and understand all instructions. If you are unsure of anything please ask.
- Comply with all safety instructions including the wearing of safety equipment eg hats, gloves and maintaining a safe working distance from others.
- The tools are sharp and heavy and could cause injury to yourself and others. Ensure you follow the safety instructions in their use. Return them to the equipment dump when not in use.
- Report all accidents however minor to the Leader so that appropriate action can be taken. Ensure the accident is entered in the Accident Book.
- You are reminded of your duty of care to yourself and others. Please point out immediately anything you consider unsafe.
- Full Codes of Practice and Standard Risk assessments are available from Head Office on request.
- Lastly – enjoy yourself and thank you for your help today.

Work Party Leader contact details

## **Appendix 5: Policy on Collecting, Breeding and Photography**

### **First Principles**

Butterfly Conservation's prime purpose is the conservation of wild populations of butterflies and moths and their habitats in the United Kingdom. This entails encouraging people to observe, appreciate and understand the needs of living insects. The issue of collecting butterflies and moths is controversial and it is unlikely that any code will be completely acceptable to everybody. This policy is based on the principle that no Lepidoptera should be killed or collected casually, unthinkingly and without good reason, and that collecting, breeding or photography should never be carried out in a way that would endanger, or have any long-term adverse effect on any population of non-pest Lepidoptera.

### **Collecting: codes and legislation**

The main threats affecting Lepidoptera populations relate to habitat loss or inappropriate management. Many species, however, are becoming so rare or localised that uncontrolled collecting, particularly if targeted at vulnerable sites and species, might adversely affect populations and lead to local extinctions. In these circumstances, Butterfly Conservation believes that care, consideration and restraint need to be exercised at all times, even when collecting is carried out for legitimate and acceptable purposes such as scientific research or the identification of difficult species. In some situations specific byelaws prohibit the removal of specimens of flora and fauna from sites (eg. on National Trust and Forestry Commission land), while many nature reserves, including those managed by Butterfly Conservation, have a no collecting policy without prior permission. Legislation is also in place, which prohibits the collection of certain species (see Appendix 7). Butterfly Conservation members are encouraged to report any obvious transgressions relating to unauthorised or illegal collecting to the appropriate authorities.

### **Private and public collections**

Unrestrained collecting of Lepidoptera from the wild for recreational purposes, for example to assemble a comprehensive personal collection, is strongly discouraged. With the advent of macro and digital photography, good identification guides and the accessibility of extensive museum collections for study and research, the need to collect butterflies and many moths is difficult to justify other than for bona fide scientific purposes. However, for some moth families and critical species, along with many other insect groups, responsible collecting is still an important way of gaining taxonomic expertise and increasing vital scientific knowledge of conservation value.

### **Commercial collecting and trade**

Collecting for commercial purposes is not in the best interests of Lepidoptera conservation in the United Kingdom and Butterfly Conservation supports all measures to regulate trading of butterflies and moths. Members should be aware of the legislation covering the sale of particular species (see Appendix 7) and be prepared to assist the authorities in monitoring and upholding the law. Members are strongly urged not to support the trade in protected species through the purchase of stock from commercial breeders.

### **Species identification**

Collecting for identification purposes cannot be justified in the case of the UK's butterflies, which can all (with the exception of the two Wood White species) be readily identified in the field without recourse to killing. In the case of moths, identification is not always straightforward and where the exact identification of a particular species is required for a legitimate purpose, then the taking of a minimal number of voucher specimens or the rearing through of a small number of eggs or larvae for subsequent identification is acceptable, provided that any subsequent release is on the original



site with the landowners permission. Full use should always be made of photography and of existing Lepidoptera collections.

Care should also be taken when releasing moths from unattended light traps after their identification as birds may quickly learn where they can take advantage of an easy meal. If possible, moths should be released at dusk and not released in the same locations each time. You should also ensure that the trap is covered during the day, for example by a sheet, and kept out of direct sunlight and away from areas that get hot. If moths have to be released during the day, captured moths should be released into an area with considerable vegetation cover to give them somewhere to hide.

### **Collecting for Research**

Practical conservation requires a considerable depth of understanding that can usually be obtained only from painstaking, long-term scientific research, which may entail collecting or sampling. Such work should be carried out only after prior consultation and agreement with landowners and the relevant conservation bodies. Additionally, Butterfly Conservation recognises that scientific research can have legitimate reasons for collecting and killing insects, for example in developing environmentally-friendly methods of controlling agricultural pests or vectors of disease, and in taxonomic studies. However, we expect all such work to be carried out responsibly and with due regard to conservation considerations. Simple collection of genetic and morphological variations cannot be regarded as a valid scientific justification in itself. Again, wherever possible, existing collections should be accessed for source material.

### **Taking for rearing and release**

Taking for captive rearing purposes can have a legitimate educational objective and can be a useful way of understanding some of the details of the life history of butterflies and moths. However, scarce species should not be taken at all, unless as an integral part of a conservation programme approved by Butterfly Conservation or other leading conservation bodies. For such purposes it is preferable to take the earlier life cycle stages of a species rather than the adult form and to take from the healthiest populations. Taking any species, whatever life stage, from a Site of Special Scientific Interest (SSSI) without relevant consents can be an offence. Taking without consent from other sites such as Open Access land or land covered by by-laws (National Trust, Forestry Commission) could also result in enforcement action. Any releases should be onto the sites from which they were originally taken. Releases onto other sites should be reported to the appropriate local conservation bodies or Lepidoptera recorders where it involves uncommon species, or species at all outside of their normal, known range. The deliberate release of butterflies and moths from captive breeding as a means of reinforcing existing populations should not normally be undertaken, as it is difficult to ensure it does not have a negative effect on the receptor population. A Butterfly Conservation Policy covering Lepidoptera Introductions and Re-introductions is available from BC's Head Office. Releases of non-native Lepidoptera are likely to be illegal under the Wildlife and Countryside Act.

### **Photography**

Taking photographs or film rather than specimens can be a captivating hobby but the priority must always be the welfare of insect populations and their habitat. Photographers should take care to minimise disturbance or damage to habitats. The removal of insects from the wild for photographic purposes should be avoided but, if essential, the subsequent release in the place of capture should occur promptly. In the case of the various species given full legal protection in each part of the United Kingdom, activities such as netting, handling, temporary boxing or other forms of taking from the wild, even for photography and subsequent release, are illegal unless a licence has been obtained from the appropriate Government Agency (see Appendix 7).

## Appendix 6: Nationally Scarce Moths and UKBAP Species (Scotland)

This table shows nationally scarce moth species which occur in 100 or less 10km squares in the UK - only those which occur in Scotland are listed below. Species in bold are UKBAP Priority Species.

English Name	Scientific Name	Status
<b>Goat Moth</b>	<b><i>Cossus cossus</i></b>	Nb
<b>Forester Moth</b>	<i>Adscita statices</i>	
Scotch Burnet	<i>Zygaena exulans subochracea</i>	RDB
<b>Slender Scotch Burnet</b>	<b><i>Zygaena loti scotica</i></b>	RDB
<b>New Forest Burnet</b>	<b><i>Zygaena viciae argyllensis</i></b>	RDB
Narrow-bordered Five-spot Burnet	<i>Zygaena lonicerae jocelynae</i>	RDB
Transparent Burnet	<i>Zygaena purpuralis caledonensis</i>	Na
Currant Clearwing	<i>Synanthedon tipuliformis</i>	Nb
Welsh Clearwing	<i>Synanthedon scoliaeformis</i>	RDB
Large Red-belted Clearwing	<i>Synanthedon culiciformis</i>	Nb
Thrift Clearwing	<i>Synansphecchia muscaeformis</i>	Nb
Kentish Glory	<i>Endromis versicolora</i>	Na
Yellow-ringed Carpet	<i>Entephria flavicinctata flavicinctata</i>	Nb
Arran Carpet	<i>Chloroclysta concinnata</i>	Na
Chestnut-coloured Carpet	<i>Thera cognata</i>	Nb
Juniper Carpet	<i>Thera juniperata orcadensis</i>	Extinct
Slender-striped Rufous	<i>Coenocalpe lapidata</i>	RDB
<b>Argent &amp; Sable</b>	<b><i>Rheumaptera hastata</i></b>	Nb
Barred Carpet	<i>Perizoma taeniata</i>	Na
Heath Rivulet	<i>Perizoma minorata ericetata</i>	Nb
Pretty Pinion	<i>Perizoma blandiata blandiata</i>	Nb
Valerian Pug	<i>Eupithecia valerianata</i>	Nb
Bleached Pug	<i>Eupithecia expallidata</i>	Nb
Thyme Pug	<i>Eupithecia distinctaria constricta</i>	Nb
Broom-tip	<i>Chesias rufata scotica</i>	Nb
Manchester Treble-bar	<i>Carsia sororiata anglica</i>	Nb
<b>Barred Tooth-striped</b>	<b><i>Trichopteryx polycommata</i></b>	Na
<b>Netted Mountain Moth</b>	<b><i>Macaria carbonaria</i></b>	RDB
Rannoch Looper	<i>Itame brunneata</i>	Na
<b>Dark Bordered Beauty</b>	<b><i>Epione vespertaria</i></b>	RDB
Belted Beauty	<i>Lycia zonaria britannica</i>	RDB
Belted Beauty	<i>Lycia zonaria atlantica</i>	Na
Rannoch Brindled Beauty	<i>Lycia lapponaria scotica</i>	Na
Bordered Grey	<i>Selidosema brunnearia scandinaviaria</i>	Na
Ringed Carpet	<i>Cleora cinctaria bowesi</i>	Na
Scottish Annulet	<i>Gnophos obfusata</i>	Nb
Black Mountain Moth	<i>Glacies coracina</i>	Na
<b>Narrow-bordered Bee Hawk-moth</b>	<b><i>Hemaris tityus</i></b>	Nb
Small Chocolate-tip	<i>Clostera pigra</i>	Nb
Dew Moth	<i>Setina irrorella</i>	Na
Square-spot Dart	<i>Euxoa obelisca grisea</i>	Nb
Coast Dart	<i>Euxoa cursoria</i>	Nb
Portland Moth	<i>Actebia praecox</i>	Nb
Plain Clay	<i>Eugnorisma depuncta</i>	Nb
<b>Lunar Yellow Underwing</b>	<b><i>Noctua orbona</i></b>	Nb
<b>Cousin German</b>	<b><i>Protolampra sobrina</i></b>	RDB
<b>Northern Dart</b>	<b><i>Xestia alpicola alpina</i></b>	Na

English Name	Scientific Name	Status
<b>Square-spotted Clay</b>	<b><i>Xestia rhomboidea</i></b>	Nb
Great Brocade	<i>Eurois occulta</i>	Na
<b>Small Dark Yellow Underwing</b>	<b><i>Anarta cordigera</i></b>	Na
Broad-bordered White Underwing	<i>Anarta melanopa</i>	RDB
Silvery Arches	<i>Polia trimaculosa</i>	Nb
White Colon	<i>Sideridis albicolon</i>	Nb
Grey	<i>Hadena caesia mananii</i>	RDB
Shore Wainscot	<i>Mythimna litoralis</i>	Nb
Rannoch Sprawler	<i>Brachionycha nubeculosa</i>	RDB
<b>Sword-grass</b>	<b><i>Xylena exsoleta</i></b>	Nb
Sweet Gale Moth	<i>Acronicta euphorbiae myricae</i>	Na
Angle-striped Sallow	<i>Enargia paleacea</i>	Nb
Saxon	<i>Hyppa rectilinea</i>	Nb
Northern Arches	<i>Apamea zeta assimilis</i>	Na
Exile	<i>Apamea zeta marmorata</i>	Na
Lyme Grass	<i>Chortodes elymi</i>	Nb

#### Codes to Status:

RDB: Species included in the Red Data Book of Insects (Shirt, 1987) or meeting Red Data Book criteria

Na: Nationally Scarce A - recorded from 16 - 30 10km squares in Great Britain since January 1960

Nb: Nationally Scarce B - recorded from 31 - 100 10km squares in Great Britain since January 1960

Species in bold are Priority Species listed in the UK Biodiversity Action Plan.

## Appendix 7: UKBAP Widespread but declining species – Research only

Many species are still relatively common and widespread (particularly in Scotland) but are rapidly declining in large parts of the UK. The aim of this list is to encourage study by research bodies, such as universities to look at the wider changes in our countryside that may be affecting these species.

This list is provided to encourage recording of these species but individually they do not warrant the same status as the UKBAP species listed elsewhere in the handbook.

English Name	Scientific Name
Wall Brown	<i>Lasiommata megera</i>
Small Heath	<i>Coenonympha pamphilus</i>
Flounced Chestnut	<i>Acronicta psi</i>
Brown-spot Pinion	<i>Acronicta rumicis</i>
Beaded Chestnut	<i>Agrochola helvola</i>
Green-brindled Crescent	<i>Agrochola litura</i>
Ear Moth	<i>Agrochola lychnidis</i>
Mouse Moth	<i>Allophyes oxyacanthae</i>
Dusky Brocade	<i>Amphipoea oculea</i>
Garden Tiger	<i>Amphipyra tragopoginis</i>
Centre-barred Sallow	<i>Apamea remissa</i>
Dark Brocade	<i>Arctia caja</i>
Minor Shoulder-Knot	<i>Atethmia centrago</i>
Mottled Rustic	<i>Blepharita adusta</i>
Haworth's Minor	<i>Brachylomia viminalis</i>
The Crescent	<i>Caradrina morpheus</i>
The Streak	<i>Celaena haworthii</i>
Broom-tip	<i>Celaena leucostigma</i>
Latticed Heath	<i>Chesias legatella</i>
Oak Lutestring	<i>Chesias rufata</i>
Brindled Ochre	<i>Chiasmia clathrata</i>
Small Square Spot	<i>Cymatophorima diluta</i>
Small Pheonix	<i>Dasypolia templi</i>
September Thorn	<i>Diarsia rubi</i>
August Thorn	<i>Ecliptopera silaceata</i>
Grey Mountain Carpet	<i>Ennomos erosaria</i>
Galium Carpet	<i>Ennomos quercinaria</i>
Autumnal Rustic	<i>Entephria caesiata</i>
The Spinach	<i>Epirrhoe galiata</i>
Garden Dart	<i>Eugnorisma glareosa</i>
Double Dart	<i>Eulithis mellinata</i>
Ghost Swift	<i>Euxoa nigricans</i>
The Rustic	<i>Graphiphora augur</i>
Rosy Rustic	<i>Hepialus humuli</i>
Brindled Beauty	<i>Hoplodrina blanda</i>
The V-Moth	<i>Hydraecia micacea</i>
The Lacky	<i>Lycia hirtaria</i>
Dot Moth	<i>Macaria wauaria</i>
Broom Moth	<i>Malacosoma neustria</i>
Rosy Minor	<i>Melanchnra persicariae</i>

Shoulder-striped Wainscot	<i>Melanchra pisi</i>
Oblique Carpet	<i>Mesoligia literosa</i>
Powdered Quaker	<i>Mythimna comma</i>
Dark Spinach	<i>Orthonama vittata</i>
Grass Rivulet	<i>Orthosia gracilis</i>
Mullein Wave	<i>Pelurga comitata</i>
Shaded Broad-bar	<i>Perizoma albulata albulata</i>
White Ermine	<i>Scopula marginepunctata</i>
Buff Ermine	<i>Scotopteryx chenopodiata</i>
The Anomalous	<i>Spilosoma lubricipeda</i>
Hedge Rustic	<i>Spilosoma luteum</i>
Feathered Gothic	<i>Stilbia anomala</i>
Blood-vein	<i>Tholera cespitis</i>
Pale Eggar	<i>Tholera decimalis</i>
Cinnabar	<i>Timandra comae</i>
Oak Hook-tip	<i>Trichiura crataegi</i>
Dusky-lemon Sallow	<i>Tyria jacobaeae</i>
The Sallow	<i>Watsonalla binaria</i>
Red Carpet	<i>Xanthia gilvago</i>
Dark-barred Twin-spot Carpet	<i>Xanthia ictertia</i>
Heath Rustic	<i>Xanthorhoe decoloraria</i>
Neglected Rustic	<i>Xanthorhoe ferrugata</i>
Flounced Chestnut	<i>Xestia agathina</i>
Brown-spot Pinion	<i>Xestia castanea</i>

## Appendix 8: Lepidoptera species protected by law in the UK

### Great Britain

The **WILDLIFE and COUNTRYSIDE ACT 1981 (as amended)** protects a number of Lepidoptera species in England, Wales and Scotland, but does not apply in the Channel Islands, the Isle of Man or Northern Ireland (separate legislation see below).

Protection is afforded at different levels under Section 9 of the Act, the species concerned being listed on **SCHEDULE 5**. Schedule 5 can be varied by the Secretary of State and since the Act came into force many butterfly and moth species have been added to it.

#### FULLY PROTECTED SPECIES;

Large Blue	<i>Maculinea arion</i>	Barberry Carpet	<i>Pareulype berberata</i>
Large Copper	<i>Lycaena dispar</i>	Black-Veined	<i>Siona lineata</i>
Heath Fritillary	<i>Melitaea athalia</i>	Essex Emerald	<i>Thetidia smaragdaria</i>
High Brown Fritillary	<i>Argynnis adippe</i>	Fiery Clearwing	<i>Pyropteron chrysidiformis</i>
Swallowtail	<i>Papilio machaon</i>	Fisher's Estuarine	<i>Gortyna borellii</i>
Marsh Fritillary	<i>Euphydryas aurinia</i>	New Forest Burnet	<i>Zygaena viciae</i>
		Reddish Buff	<i>Acosmetia caliginosa</i>
		Sussex Emerald	<i>Thalera fimbrialis</i>

**These species are afforded full protection at all stages of their life cycle (egg, caterpillar, pupa and adult) and it is a criminal offence to do the following without a licence:**

- intentionally kill, injure or take them from the wild\*;
- possess any live or dead wild\* specimen, or any part of, or anything derived from them, or to be in 'control' of such specimens, parts or derivatives;
- sell, offer or expose for sale, or possess or transport for the purposes of sale, whether alive or dead any wild\* specimen and parts or derivatives of them; or for anyone to publish or cause to be published any advertisement indicating or suggesting that they buy or sell such things.

Exceptions in the Act to the first two types of prohibition cover:

- i) the humane destruction of injured animals or taking them to tend injuries with the purpose of releasing back into the wild (and those injuries were not caused unlawfully)
- ii) actions that are the incidental result of an otherwise lawful activity and could not have reasonably been avoided.
- iii) actions carried out in accordance with specific licences or requirements under agricultural and animal health legislation or by authorised persons to protect certain things including crops, fruit, vegetables or foodstuffs under 'emergency' circumstances.

#### PARTIALLY PROTECTED SPECIES (covering sale only)

Northern Brown Argus	<i>Aricia artaxerxes</i>	Duke of Burgundy	<i>Hamearis lucina</i>
Adonis Blue	<i>Lysandra bellargus</i>	Glanville Fritillary	<i>Melitaea cinxia</i>
Chalkhill Blue	<i>Lysandra coridon</i>	Pearl-Bordered Fritillary	<i>Boloria euphrosyne</i>
Silver-studded Blue	<i>Plebejus argus</i>	Black Hairstreak	<i>Strymonidia pruni</i>
Small Blue	<i>Cupido minimus</i>	Brown Hairstreak	<i>Thecla betulae</i>
White-letter Hairstreak	<i>Strymonidia w-album</i>	Wood White	<i>Leptidea sinapis</i>
Purple Emperor	<i>Apatura iris</i>	Chequered Skipper	<i>Carterocephalus palaemon</i>

Large Heath	<i>Coenonympha tullia</i>	Lulworth Skipper	<i>Thymelicus acteon</i>
Mountain Ringlet	<i>Erebia ephron</i>	Silver-spotted Skipper	<i>Hesperia comma</i>
Large Tortoiseshell	<i>Nymphalis polychloros</i>		

**In respect of these species it is a criminal offence to do the following without a licence:**

- sell, offer or expose for sale, or possess or transport for the purposes of sale, whether alive or dead, any wild\* specimen and parts or derivatives of them; or for anyone to publish or cause to be published any advertisement indicating or suggesting that they buy or sell such things.

*\*As far as the law is concerned any specimen of these protected animals is considered to be a wild one unless the contrary can be shown by the person in control or possession of it.*

**LICENCES**

Licensing and enforcement regarding sale, trade and transport of all protected species is regulated by the Department for Environment Food and Rural Affairs. Appropriate licences relating to all other types of activity affecting the fully protected species are issued by Natural England, Countryside Council for Wales, National Assembly for Wales or Scottish Natural Heritage. Individuals who are concerned that the legislation is being breached should in the first instance contact these licensing authorities.

**Northern Ireland and the Isle of Man**

The **Wildlife (Northern Ireland) Order 1985** affords similar protection to the full provisions of Section 9 of the Wildlife and Countryside Act 1981 (ie. taking, killing, possession, selling and advertising) for the following species:

Brimstone	<i>Gonepteryx rhamni</i>	Dingy Skipper	<i>Erynnis tages</i>
Large Heath	<i>Coenonympha tullia</i>	Marsh Fritillary	<i>Eurodryas aurinia</i>
Small Blue	<i>Cupido minimus</i>	Purple Hairstreak	<i>Quercusia quercus</i>
Holly Blue	<i>Celastrina argiolus</i>		

The **Wildlife (Isle of Man) Act 1990** also affords full protection from taking, killing, possession, selling and advertising for sale, for the following species:

The Grey	<i>Hadena caesia mananii</i>	The Pod Lover	<i>Hadena perplexa capsophila</i>
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**THE CONSERVATION (NATURAL HABITATS &c) REGULATIONS 1994**

These Regulations implement the requirements of the Council Directive on the Conservation of Natural Habitats and Wild Fauna and Flora (92/43/EEC) in Britain. This European Directive, known as the 'Habitats and Species Directive', lists species considered to be of 'Community Interest' for nature conservation. Annex IV of the Directive identifies those species in need of strict protection and Large Blue *Maculinea arion* is the only species of Lepidoptera native to the UK listed.

Further to the protection of the Wildlife and Countryside Act 1981 the Regulations make it a separate and additional offence to take, injure, or kill this species, as well as making it an offence to deliberately disturb the butterfly or damage or disturb its breeding sites or resting places.

**[NOTE: This summary can only act as a guide to the law and should not be taken as a complete and precise representation.]**



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### **Join Butterfly Conservation!**

Butterfly Conservation is Europe's largest insect conservation body. We take action to protect butterflies, moths and our environment. We advise landowners, managers and other organisations on conserving and restoring important habitats in the countryside, towns and cities. We carry out surveys, monitoring and research, manage nature reserves and promote wildlife friendly gardening.

You can directly support us in this vital work by joining Butterfly Conservation <http://butterfly-conservation.org/90/join.html> You'll receive our wonderful 'Butterfly' magazine 3 times a year, which is packed full of fascinating articles and stunning photographs and will automatically become a member of your regional Branch who will provide a warm welcome if you would like to join the fieldtrips, talks and events they organise.

### **Butterfly Conservation Scotland is very grateful to the following organisations that have together made our work in Scotland possible:**

Scottish Natural Heritage, Forestry Commission Scotland, The Craignish Trust, The Gordon Fraser Charitable Trust, The Hugh Fraser Foundation, The Mrs M.A. Lascelles Charitable Trust, The Patsy Wood Trust, The Robert O'Curle Charitable Trust, The Spear Charitable Trust, the RSPB and The Weatherall Foundation Trust.

**Photograph on front cover: Small Copper - courtesy of Fiona Govan.** This pretty little butterfly is reasonably widespread in Scotland reflecting its use of a variety of habitats, ranging from heathland and unimproved grassland to woodland clearings.

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