

4. 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 local moth recorders, 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 and you can help spread the moth-ing gospel!

4.1 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, 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.

5. Submitting records

Moths are an under-recorded group of insects, so your sightings (records) can contribute important information on the distribution and status of these species. Additionally it is exciting because you may turn up unusual or rare species. Try to keep an accurate account of your records, and please submit them to your County Moth Recorder at the end of each year. The County Moth Recorder will collate your records and make them available for wider use for conservation, education and other public benefits (although they work on an entirely voluntary basis and may or may not be able to provide you with feedback). This is also the route by which your records contribute to the National Moth Recording Scheme. Many Counties have a Moth Group; your County Moth Recorder will be able to let you know if such a group exists in your area.

There is no particular recording form used to submit information. It is best if you contact your local County Moth Recorder to ask what format he/she would prefer information to be submitted in. As a guide, submit the minimum information shown below (the record will be more useful if the other useful information is also included).

5.1 What is a record?

The minimum information required for a moth record is the following:

What - Species' name (English and Latin). This must be accurate, if in any doubt about an identification, it is best not to submit the record.

Where – A six figure grid reference is most useful, combined with the name of the nearest town / village as stated on an Ordnance Survey map (see below for instructions on how to calculate a grid reference)

When – Date. For light-trapping records, the convention is that the date should be the one on which the trap was switched on, even if the moth arrived after midnight, or if you check the trap the next day.

Who – Your name and contact details. If the identification was verified by someone else, record their name too.

Number – Ideally you should count the number (abundance) of each species of moth recorded. This provides valuable abundance data that can be used to assess species population trends, particularly when the trap is run regularly in a back garden.

Additional desirable information that adds value to your moth records includes the following:

- Vice-county number
- Trapping method
- Life-cycle stage
- Habitat type

Note: Your County Moth Recorder may request additional information, or for the records to be presented in a particular way to make their job easier.

5.2 Mapping and grid references

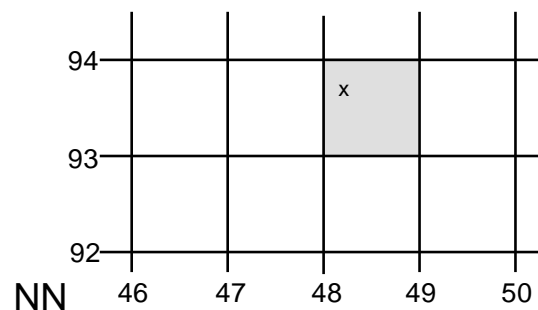
For recording to provide effective data for local purposes, such as planning and conservation work or national analysis of how particular species are faring, records have to be related to sites. Therefore, the grid reference for any moth record should be to at least 1km square accuracy (four-figure grid reference), and preferably six-figure references which pinpoint a sighting to a 100m x 100m square.

When it comes to mapping moth records data are often plotted in a summary form on distribution maps e.g. as tetrads (2km x 2km squares) for local maps, or hectads (10km x 10km squares) for the national scale.

5.3 How to work out a grid reference

Please use only the National Grid references from Ordnance Survey maps - not road maps, which may have non-standard grids.

1km squares are marked by a grid of light blue lines on 1:50,000 series (Landranger) OS maps. The grid reference of a 1km square consists of the 100km square code (e.g. NN), which will be marked somewhere on the map, followed by four numbers, which mark the bottom left-hand corner of the square (see example below). The first two numbers refer to the horizontal (West-East) scale and the second two the vertical (South-North). It is very important to put these in the right order.



100 km square code: NN
Shaded 1km square: NN4893

A six-figure (100m square) grid reference is derived by dividing the 1km square into tenths, from the left (west) and the bottom (south). For example, the map reference of

the cross in the shaded square above is given by combining the east-west reference, 482, with the north-south reference, 937, giving a full reference of: NN482937.

When you move into another 1km square, record sightings separately, this enables correct identification of important sites.

If you do not have access to suitable maps or are not familiar with grid references, please do not be put off from recording the moths that you see. Contact your local County Moth Recorder and they may be able to help. OS maps and grid references can be viewed online at sites such as www.streetmap.co.uk. For further details on how to calculate a grid reference see;

www.ordnancesurvey.co.uk/oswebsite/qi/nationalgrid/nationalgrid.pdf

5.4 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) is the most widely used by moth recorders, as it is simple to use and can import and export files to other databases. Alternatively, online recording is an option, Butterfly Conservation is currently developing an online recording system; this will be available in due course at www.mothscount.org. 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; a suggested template to use is as follows:

Code	Taxon	Vernacular	Site	Gridref	VC	Recorder	Determiner	Date	Quantity	Method	Sex	Stage	Status	Comment

If your County Moth Recorders uses MapMate to collate local moth records then you must fill in the columns with the bold headings. This information is required to import data into MapMate. However, if you did not record the quantity of moths, for example, it is possible to enter *not recorded* in the cells.

Explanation of column headings:

Code – The reference number devised by Bradley and Fletcher for the checklist of Lepidoptera.

Taxon – Scientific name or Latin name

Vernacular – Common or English name

Site – Site name / location name

Gridref – 6, 8 or even 10 figure Ordnance Survey map grid reference

VC – Vice-county number

Recorder – Name of person who recorded the moth

Determiner – Name of person who identified the moth species - if different to the recorder

Date – Date when moth was recorded, the preferred format is *dd/mm/yyyy*.

Quantity – Number of moths recorded

Method – Trapping/ survey method (i.e. visual search, type of light trap, wine-ropes etc)

Sex – Male / female moth or not recorded

Stage – Adult, egg, larva, pupa

Status – Not used for moths – you can enter *not recorded* in this column.

Comment – Any other information relating to the record

Please **do not** forward datasets to County Recorders in a 'Crosstab' format (similar to the example below). Crosstabs cannot be easily reformatted to a "one record per row" format required to import to a database.

	A local NR	A Wood	A local NR	A Wood
	125W MV	125W MV	125W MV	125W MV
	13/6/2007	15/7/2007	17/7/2007	21/10/2007
2089 Heart and Dart	12	45	16	-
2107 Large Yellow Underwing	9	-	17	13
2125 Setaceous Hebrew Character	-	9	23	14

5.5 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.

5.6 Critical Species or Difficult Species

Some moth species are very difficult to tell apart. These are called 'critical species' and include some common macro-moths that are found in gardens. Such species need special attention. Some can be identified by careful examination of wing patterns, antennae etc. but others can only be identified reliably by examining their genitalia, e.g. Grey Dagger and Dark Dagger, Common Rustic and Lesser Common Rustic. Sometimes this can be done on a live moth, but in some cases this is not possible. Modern field guides provide some information about critical species and you will gradually learn which species are involved. The Moths Count project has produced *British and Irish moths: an illustrated guide to selected difficult species (covering the use of genitalia characteristics and other features)*. This guide provides the next step for people wishing to make definitive identifications of difficult macro-moths such as dark and grey daggers, ear moths, copper underwings and the November moth group. This guide focuses mainly, but not exclusively on genitalia characteristics and aims to help raise awareness and increase recorders' ability to identify these species correctly.

It is important not to misidentify species in your records. It is perfectly acceptable to record groups of species (often referred to as aggregates or agg.), for example Marbled Minor agg. if you have not definitively identified the moth in question as either Marbled Minor, Rufous Minor or Tawny Marbled Minor.

5.7 Moth Grading Systems

Many County Moth Recorders have developed grading systems to assist with the verification of difficult to identify species within their counties. Moths are placed in different categories depending on how difficult or easy they are to identify. For more tricky species, additional evidence may be required about the record. In a few cases this will include showing the moth to the County Moth Recorder. The County moth list will be accompanied by a lettered or numbered code, for example:

A = accepted without supporting evidence, easily identified, common locally and already on county list

P = photo, easily confused species photo required

S = specimen, specimen required for species that are not included on existing county lists and where dissection is the only definitive method of identification.

Please check with your local County Moth Recorder to find out if such a system is in place. Sometimes this information is available on the website of the County Moth Group, if one exists for your county.

6. Moth surveys

Knowledge of a species' current distribution is fundamental before effective and targeted conservation action can be implemented. Surveys of rare and threatened species are required to determine their distribution and status both regionally and nationally. Many targeted moth surveys are run locally and nationally. To find out about surveys in your local area contact your County Moth Recorder. National surveys of many nationally threatened species e.g. UK Biodiversity Action Plan (BAP) species are coordinated by Butterfly Conservation.



Such survey work is required in many parts of the UK, Isle of Man and Channel Islands on a variety of species. Techniques and time of year will vary with species but would probably include daytime fieldwork for adults, light-trapping at night, "sugaring" and searches for larvae, eggs or even characteristic signs of feeding damage.



The distribution of several priority species needs to be clarified in the UK, for example the Goat Moth, Forester, False Mocha, Sloe Carpet, Scarce Vapourer, Small Dark Yellow Underwing and Scarce Pug.

We have only limited knowledge of the national distribution of even some of our commonest moths in the UK, so any moth recording in any part of the country is beneficial. It may be worth approaching wildlife trusts and local National Trust offices etc.

to find out if they want moth surveys carried out on their sites. Many nature reserves do not have comprehensive moth lists.



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www.mothscount.org