



Anglian Lepidopterist Supplies

**Specialising in
moth traps and
related equipment**

MOTH TRAPPING ~ A BEGINNERS GUIDE

The study of moths through the use of non-lethal light traps is a fascinating and rapidly growing hobby. Putting a moth trap out in the garden at dusk, and going through the catch in the morning is an easy and enjoyable way to study the range of insects visiting your garden. We are all used to the ten or so butterflies that visit most gardens, but the diversity of other Lepidoptera which is using your garden may come as a surprise. Even urban gardens should attract well over 300 species during the year, with more favoured gardens easily achieving lists of 300-350 species per year. The peak months are July and August when nightly catches of several hundred moths can be expected, and for the beginner the range of species is at first site daunting. However, an hour or two with a copy of Bernard Skinner or Paul Waring's identification book will usually sort out the majority, and having seen the species once, things can only get easier!



In order to maximise the variety of moths occurring in your garden a variety of strategies can be adopted. One key to success is to establish as wide a range of (native) plants as possible. These will act as food plants for larval stages, and hopefully give rise to a wider variety of moths in future years. Obviously, traps situated in more mature gardens tend to do better than new gardens, since a wider range of plants are available.

It goes without saying that the use of pesticides should be discouraged! If you want to catch moths, you may have to accept that some of your plants are going to suffer some caterpillar damage. Remember that the majority of adult moths are nectar feeders and hence scented flowers will often help to increase the size of catch. Nicotinia and Night-scented Stock are both widely available from garden centres as annual bedding plants, and both release their strongest scent during the evening and night-ideal for the moths.

On a slightly larger scale, Honeysuckle is also a good attraction species, since it is also strongly scented during the early evening. In spring the catkins of willow are visited by nectar feeding moths and in autumn the same activity can be seen on ivy blossom.

In small gardens, traps should not be run every night unless the moths can be released elsewhere. Running traps on successive nights in small areas will result in re-trapping a small proportion of the moths you released that day. This prevents the moths from feeding and from mating. By running the trap every other night, moths are given a chance to 'do their own thing' every so often. In larger gardens where the moths can be released well away from the trapping site, this restriction does not apply. However, moths will respond to light traps at considerable distances, and we recommend that catches be released at least 50M away from the trapping location. When releasing catches, think about the release site. Ideally you should provide a site which is relatively overgrown, giving the moths somewhere to hide during the day.

Concentrating large numbers of moths in one area on release should also be avoided. It's good for the local bird population, but not so good for the moths! If the trap has to be left before unloading, for example because you don't have time to unload before going to work, the trap should be moved into a cool, shaded position. The addition of a small piece of damp cloth or sponge to the bottom of the trap will also help prevent casualties from dehydration. Geometrid moths should, when ever possible, be checked early in the morning. Once the temperature warms up, some will disappear as soon as the lid is removed. Consequently, emptying the trap in the shed or other convenient room is also recommended. That way, the prize specimen can be captured in a pot against the window as it makes a break for freedom. However, don't blame us if you unload a trap full of Silver Y moths (which are daylight fliers) in your living room and spend the next week trying to re-catch them!

The Effectiveness of Various Moth Trap Designs

The Robinson moth trap is the standard against which other moth traps are compared. At peak times of the year catches of 500-1000 moths of 100+ species a night are possible, and the site of up to six species of Hawk moth in a trap is spectacular. The Skinner trap uses the same electrics as the Robinson and hence will attract a similar number of moths. However, it is less efficient at holding moths than the Robinson, although the addition of things such as flaps to the bottom of the perspex sides will narrow the gap between the two types of trap. The major advantage of the Skinner is the price and the portability. In addition, Skinner Traps are easily collapsed when not in use making them ideal for trapping away from the garden, when traps, electrics, generators etc. take up more boot space in the car than you would imagine.

The actinic trap is even more portable. Actinic tubes will run off a 12V battery, and hence you do not have to transport generators around with you. They again suffer from loss of catch, and are less efficient at attracting moths as well. However, they do offer a cheap way to begin mobile moth trapping.



Robinson Moth Trap



The Skinner Trap (125w and 15w actinic)

Perhaps the easiest way to begin moth trapping is to suspend the light source over a large white sheet. This is also great fun as you can watch the moths arrive at the trap. Obviously no attempt is made to hold the catch, and hence you must stay with the trap all night, potting the moths for inspection as they arrive. On busy nights many moths will be missed, and the risk of double counting is high, and hence such methods should not be used for accurate survey work. However, they do provide a good introduction to mothing, and are usually very social traps, with people racing round like lunatics trying to catch the 'prize' specimen before it flies off never to be seen again! The rate of arrival at such traps will depend upon the light source used. If illumination is provided by an MV then arrival rates will be similar to the Robinson and Skinner traps (1000 moths a night sitting on a white sheet is a lot to catch!) while if using actinic light sources the catch will be correspondingly closer to that of a Heath trap.

The same principle that attracts moths to moth traps will often also attract other insects. Typically this will be large number of lacewings, shield bugs and ichneumon flies. None of these presents particular problems, although they can be annoying if you are emptying the trap indoors.

Occasionally dragonflies and butterflies will also be found in the trap. More serious are three pests that show up in regular numbers. Firstly, MV traps seem to attract numbers of large beetles. Giant Diving Beetles can bite, but the more regular burrowing beetles, which are either black or black with orange stripes, should be avoided. They are carrion feeders, and consequently smell terribly! If you get the smell on your clothes it can take a long time to get rid of, so such beetles should be removed from the trap with care.

The most serious pests are wasps and in old deciduous woodland Hornets and can occur in autumn time. First thing in the morning, both wasps and Hornets are generally docile and can be removed from the trap with little trouble. However, on warm mornings the insects will be more active and greater care should be exercised. In addition, wasps and hornets will occasionally kill moths within the trap, and Hornets will eat large numbers of moths leaving you with nothing but bits of wing in the bottom of the trap. Since the MV trap is concentrating moths from the surrounding area into the trap, such loss can be serious and should be avoided if possible. If you know you are near a Hornet's nest trap elsewhere. Trapping near such nets have resulted in traps becoming laden with them. At Foxley Wood in Norfolk over 65 were recorded from just two traps and at Epping Forest in Essex one trap had to be turned off and left for over an hour before it was safe to go back to, despite this one recorded was stung with the comment being "it was one of the most painful experiences of my life", be warned!!

Finally, when trapping regularly (particularly in your garden) be aware that birds will quickly learn to exploit the moth trap as a source of food. When operating a moth trap, you will usually find a number of moths on surrounding vegetation, fences and walls, as well as inside the trap. Moths that are outside the trap can become a target for Blue Tits, Wrens and Blackbirds. You should therefore try and check the locality as early as possible in the morning to prevent loss of potentially interesting species. After all, Merville du Jour, the prize of the autumn, is more regularly found outside than inside the trap.

Moving Further Afield

For most recorders the garden list is the most important list of moths we keep. However, although most gardens will yield a list of 500+ species (including the micro moths), that still leaves another 2000 odd species to see. The key to finding new species is to venture further afield and try some new habitats. NEVER trap on a site without first obtaining permission. The majority of local nature reserves maintain a bird list, a butterfly list and a dragonfly list, but know very little about the moths that occur on the site. Consequently a chat with the warden will usually yield permission to trap on a regular basis. If you manage to obtain permission to visit a site, please remember to send in all records both for individual sessions and for the year if visiting regularly.

If the site is overlooked from public areas, or overlooks the coast, a call to the police and/or the coast guard is also advisable. Members of the public seeing bright lights in unfamiliar circumstances will sometimes notify the police, and if you have forewarned them, they will not have to visit, and can reassure the concerned person who places the call. Similarly boats may report bright lights on the coast, and a call to the coast guard can prevent any problems arising.

Trapping at home is straightforward. The trap is run off the house mains with the cable going through the window. When trapping away from home base, the question of power supplies arises. If you're very lucky, the warden will allow you to use on site power, although usually you will be expected to 'bring your own'. Even if using on site power, some form of portable power source is always useful enabling you to visit different habitats in remote corners of the reserve. Two options are available. The use of actinic tubes as opposed to MV bulbs allows the trap to be powered from a 12V-car battery. Actinic tubes are low current devices, although they do require a high voltage to initially strike. Consequently, the electrics are slightly more complex. Our design of a portable moth trap uses a removable central light board. Hence, it is straightforward to build two light boards for a given trap; an MV board for use in the garden, and an actinic board for use in remote sites.

Such an arrangement has the advantage of being lightweight (and hence easily portable), and relatively cheap. However, an actinic light source will reduce the numbers of moths caught. Typically, such a trap will catch about 40%-50% of the number of moths of an MV trap, with a slightly less drastic reduction in the number of species since some species appear to be more attracted to actinic than MV traps.

The second possibility is to buy a generator. This is the more expensive option, but the most effective option for catching moths. Generators have been regularly run with upwards of a 30% overload with no apparent ill effects. However, we strongly recommend staying within the manufacturers specifications when designing a mobile trapping system. Tank capacities vary, and the petrol consumption of the generator will also vary with load. If the traps are to run all night, the tank on the generator will need topping up from time to time. If the tank becomes empty, and the generator turns itself off during the hours of darkness virtually all your catch will escape. In addition remember that since the resistance of MV bulbs varies with temperature, a hot MV bulb will not re-light. In the event of a generator or power failure to a trap, it will usually take a few minutes for the bulb to cool down and re-strike. Small portable generators are also desirable items. The noise of a generator together with the presence of strange blue lights may well attract people to the site, and unattended generators could have a habit of going missing.

Consequently, you should take every precaution to secure generators when in operation. Heavy-duty chain and padlocks are available from most hardware stores, and the generator should be secured to a large immovable object. While this will deter the casual thief, be warned that the determined thief will return with heavy duty bolt cutters. Regardless of how you secure your generator, if someone REALLY wants to steal it they will. It is therefore advisable to remain on site with your equipment whenever possible, particularly in more public places.



Although a 1000W generator will power five 125W MV traps, thought should be given to the placement of traps. A single trap may attract moths at distances of 50M or more, and hence in open sites where traps are in line of sight with each other a separation of at least 100M should be maintained. Two traps placed close to each other will usually attract a combined catch smaller than a single trap run at the same site. If you watch the reaction of moths around a trap, one possible reason

for this suggests itself. The larger moths tend to power past an MV trap, before turning and repeating the procedure. Often they will land on the ground or surrounding fences and walls. After repeated passes they will eventually fly straight into the bottom of the trap. Presumably the presence of two traps close together results in the moths flying backwards and forwards between the traps. Moths that land in between the two traps would then tend to stay put rather than being attracted back to a single lamp. Even when well spaced, a number of moths will be found outside the trap.

You should therefore develop the habit of checking surrounding vegetation, walls, fences etc. for roosting moths when checking a trap. Although on open sites a minimum distance of 100M between traps is advised, on more heavily overgrown sites a smaller spacing can be used with good effect. When considering the placement of traps, you should try to establish them in areas where the bulbs can shine into as much habitat as possible. However, some moths rarely stray far from their food plant in which case traps will need to be established closer to relevant vegetation. When sitting traps, remember that traps placed close to water sources will usually be less productive due to the cold air and mist that may arise from the surface of the water overnight. However, this should not put you off since many moths will be found associated with waterside plants, sedges and reeds.

Remember that a generator is producing a 240V AC output, and a 1000W generator is therefore capable of delivering about 2.7A. In inclement weather it is therefore very important to waterproof all connections. Plastic washing up bowls, plastic buckets and particularly Tupperware sandwich boxes all play important roles in the mobile moth trappers kit and should be used to cover all connections, sockets and plugs. Chokes will run hot, and hence should not be placed in enclosed plastic boxes. Allow space for air to circulate. The majority of generators are waterproof, but usually only provide standard three pin wall sockets for output. Water seepage into these sockets can again create dangerous conditions. The use of large fishing umbrellas to protect generators from the rain is therefore a sensible precaution. In general, if you are in any doubt as to the safety of your electrics DONT use it, and consult a professional electrician. One final word of warning: Actinic tubes run relatively cool, and hence can normally be used unprotected on wet nights (provide your electrics are waterproof), but MV bulbs run hot, and being made of glass are not suitable for use on wet nights unprotected. Heavy prolonged rain hitting the hot glass will often cause the bulbs to crack. Usually MV bulbs will still operate when the outer glass envelope is cracked. However, it is dangerous to use bulbs in such a condition. The outer glass envelope filters out harmful UV radiation. Using a bulb with a damaged outer cover can seriously damage your eyes. Damaged bulbs should therefore be thrown away immediately and replaced with fresh bulbs. MV bulbs should therefore be protected with rain guards.

Moth Trapping and the Weather

A variety of factors effect the size of catch that may be expected in a night's moth trapping. The principle factors are temperature, degree of cloud cover, wind and rain. In general cold conditions will greatly decrease the size of catch you obtain. Particularly bad are sudden cold nights after a prolonged mild spell. In such circumstances, both the number of moths and the variety of species will seriously decline. On a similar vein, clear nights will also tend to decrease the catch size. In part this is linked to temperature. Cloud cover at night leads to milder conditions, while clear nights are usually colder. In addition, cloudy nights are also darker, removing light pollution from the stars and particularly the moon. The presence of a full moon will interfere with the catch due to the presence of a secondary light source.

Wind and rain also effect catch size. Strong winds discourage moths from flying, and will lead to lower total catch sizes. When trapping on windy nights other problems also arise. Be sure to secure the trap, and the covers of bulbs etc. A strong gust can turn a moth trap over, with potentially disastrous results for the bulb and electrics.

If trapping away from home, care should also be taken to secure covers of electrical connections, and guys ropes should be used on umbrellas (or other devices) used to



cover generators. On windy nights try to position traps out of the wind in sheltered corners of whatever habitat you may be surveying. Rain can have a variety of effects. Steady drizzle will often improve catches. The cloud cover helps to maintain the temperature, which increases moth activity. In addition, the presence of rain tends to suppress scents, and hence moth activity tends to

be concentrated closer to the ground, and therefore closer to your trap! However, very heavy rain is usually disastrous, suppressing moth activity, and soaking equipment and mother trappers alike. Finally, keep an eye on the pressure charts. Movement of air masses from the south will often bring continental migrants to the British coast. On occasions when the conditions look really good, recorders will often load up the car and head to the south coast for the night. The presence of large numbers of migrants, and different types of Hawk moth in the trap is well worth the effort. See you there next time the weather looks good!

Jon Clifton

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www.angleps.com

jon.clifton@btinternet.com