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ISBN 978-1-84754-012-6

Catalogue code NE25

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Front cover image: The comma butterfly is far more widespread than it was 30 years ago. Jill Pakenham/Avico

Enjoying moths and butterflies in your garden

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Enjoying moths and butterflies in your garden

Anyone with a garden, no matter what its size, can help our butterflies and moths. In doing so, we also help ourselves. These species are among our most beautiful insects.

All butterflies – and many moths – fly by day and visit gardens in search of flower nectar, and also warmth and shelter. Some species may find suitable food plants in gardens where they can lay their eggs. Some of these plants may be wild, while others, such as honesty, act as alternative non-native host-plants.

Very few species cause damage to flowers or vegetables. On the other hand, butterflies and moths are important pollinators and good indicators of a healthy environment. Many flowers that attract butterflies and moths are also a magnet for bees and other beneficial insects. And who wouldn't enjoy the sight of the first brimstone or orange-tip of the year eagerly supping at a garden primrose, or the sleek form of a hawk-moth hovering over honeysuckle at dusk? Butterflies and moths are delightful.

Although only about 25 butterfly species regularly come to gardens, they include many of the largest and

brightest, like the peacock and the small tortoiseshell. Several hundred species of moth may visit the smallest garden, although many of them are good at keeping out of sight!

Telling moths and butterflies apart

What's the difference between a butterfly and a moth? Surprisingly little! Butterflies all fly by day (and a few also at night, when they will fly towards



The brimstone butterfly is often one of the first of the year to be seen in some gardens.
Chris Gibson/Natural England



The large yellow underwing keeps its warning colours concealed when at rest.
Rob Wolton/Natural England

light) and have distinctive clubbed antennae. Most, but not all, moths fly by night and have either wiry or feathered antennae. A very few, such as the burnets, have clubbed antennae similar to butterflies.

Most butterflies rest with their wings upright, perpendicular to their back

(the only exceptions are some of the rather moth-like skippers). Only a few moths do this.

The distinguishing feature shared by all butterflies and moths is their coloured wings. In some cases the colours are brilliant, even iridescent, while in others, especially moths, they



Moths may imitate anything from wood or leaves to bird droppings to keep out of view of predators. Top left: Buff tip. Rob Wolton/Natural England. Top right: Waved umber. Rob Wolton/Natural England. Bottom left: Beaded chestnut. Rob Wolton/Natural England. Bottom right: Chinese character moth. Rob Petley-Jones/Natural England



The muslin moth with its extraordinary antennae is on the wing in May and June. Jill Pakenham/Avico

are more subdued – but in their way no less beautiful – and designed to conceal the resting insect. The colours are formed from tiny scales which are arranged in overlapping rows rather like roof tiles. Some of the brightest-coloured butterflies have contrasting wings, brilliant when open for flight but dull beneath to disguise the insect when it has settled and so become more vulnerable. Some moths, like the large yellow underwing, have bright hindwings which they flash like a warning light when disturbed. Every wing colour and every pattern has

meaning and a message. Most moths are less colourful than butterflies. Their subtle tints of grey, pink and brown help them to blend into the background during daylight. Some disguise themselves as dead leaves, bits of wood or even bird droppings. Others, however, like the day-flying burnets and tiger-moths, are as brightly coloured as any butterfly. Moths also have a wide variety of resting postures, from outspread wings to wings folded over or around the back with the hindwings hidden from view.



Peach blossom. Rob Wolton/Natural England

How many species?

Moths and butterflies belong to the order Lepidoptera (meaning 'scaly-winged'), but less than 10 per cent of the world's Lepidoptera are butterflies, the rest are moth species. In Britain, the proportion is even smaller, with only 70



Feathered thorn. Rob Wolton/Natural England

species of butterfly compared to about 2,500 moths. British butterfly species are outnumbered by day-flying moths alone.

Names

Butterflies and the larger moths all have English names. Most butterfly names derive from their colours – white, yellow, blue, copper and tortoiseshell. The red admiral is named after a naval flag, the peacock after the eyed tail of that bird (its original name was 'peacock's eye'). Moth names are far more imaginative. We have quakers, drabs and rustics, hawk-moths and tiger moths, brocades and carpets, darts and spindles, burnets and pugs – not to mention some rather obscure species with names like 'the anomalous', 'the uncertain' and 'the confused'!

Why butterflies and moths visit gardens

Most butterflies and moths feed on nectar, which they suck from flowers using their long proboscis like a straw. The sugar-rich drink provides them with the instant energy needed for flight. But not all flowers are equally attractive. They need to draw the insect in with colour and scent, and store the nectar where a butterfly or moth – but not too many other kinds of insect – can reach it. Butterflies seem to be particularly attracted to blue or pink flowers. Many moths like pale flowers that reflect the light and are strongly scented at dusk.

Most gardens will have some food plants for moths and butterflies,



Rosy rustic. Rob Wolton/Natural England

whether they are 'weeds' such as dandelions, or trees like birch and willow – not to mention cabbages and currant bushes. The more food plants there are, the more species a garden will potentially support. Native trees and shrubs have by far the largest



Cream-spot tiger. Roger Key/Natural England



The hummingbird hawk-moth, seen here feeding on buddleja, is an increasingly common summer migrant from mainland Europe.
Andy Darrington/Avico

number of dependent species, but some garden flowers, including sweet William, delphinium and mint, are also food plants for particular moths.

Another great advantage of gardens is that they are sheltered. Often, too, they are sunny and offer a variety of small-scale habitats which butterflies and moths can use. The holly blue butterfly and many moths are drawn to old ivy-covered walls. Garden ponds are a refuge for some species, with marshy food plants like water mint and bulrush, as well as bur-reed or water-lily for the aquatic caterpillars of the china-mark moths. Species needing quiet and shady places to hibernate or sleep during the hottest part of summer can often find refuge in outhouses and garden sheds. Some gardens will have

sheltered 'hot-spots' in full sunshine where butterflies and moths will congregate. All in all, gardens are likely to have far more places like this than the equivalent area of 'wild' countryside.



The humble dandelion is a food plant for a number of species of moth.
Chris Gibson/Natural England



The lovely ruby tiger moth.
Rob Wolton/Natural England

A changing climate

Wide-ranging insects like some butterflies and moths are quick to respond to a changing climate. During the past few years, red admirals have hibernated successfully in gardens and taken to the wing on mild sunny days in the winter. The hummingbird hawkmoth, too, is now surviving the winter in warm areas and feeds on early flowers.

The increase in these attractive insects is a sign that our winters are getting milder. In addition, new species are finding a home in Britain and many of these are increasingly found in gardens. The colourful, day-flying Jersey tiger-moth, once confined to South Devon, is now found along the south coast and increasingly in the London area. Many less striking moths are also colonising gardens and

brownfield sites, especially in the London area. Among them is the tree-lichen beauty, the small ranunculus and the scarce bordered straw. The last is a mixed blessing as it has a taste for bedding plants, like antirrhinums and carnations, as well as tomatoes and other vegetables. As a result of climate change the moths and butterflies of our gardens are changing as never before. You never know what will turn up next!

Which plants are the most attractive?

In general, the flowers that butterflies and moths like are the traditional cottage kinds that most closely resemble their wild counterparts. Buddleja or 'the butterfly bush' is famous for attracting butterflies, especially when in a warm spot by a brick wall. Ideally, it should be planted within sight of a window so you can watch the butterflies while cooking a meal or washing up. Don't put it too



Brown china-mark. Rob Wolton/Natural England



Peacock butterfly on buddleja.
Chris Gibson/Natural England

near, however, as it is apt to put down deep roots that can undermine foundations! It is also highly invasive and needs cutting back. For this reason, never plant buddleja in open countryside.

Other butterfly favourites include iceplant, lavender, wallflowers, verbena, and, as an end-of-the-season treat, Michaelmas daisy. To attract them to borders, try planting old-fashioned cottage flowers, such as red valerian, aubrietia, yellow alyssum, thyme or sweet rocket. Hebe is an attractive



Ice plant with small tortoiseshell. Susan Tindall

flowering shrub for a sunny position and, like many butterfly plants, is a magnet for bees. Butterfly Conservation has produced a Top 100 list of butterfly nectar plants from a survey of gardens around the country. The highest scoring were buddleja, ice-plant, lavender, Michaelmas daisy, marjoram, red valerian, aubrietia, field scabious and bramble. If you have room for a wild corner, many native wild flowers are attractive to butterflies and moths. Among the best (besides those



Some other garden flowers sought out by butterflies. Top: Lavender. Above: Michaelmas daisy. Facing page: Musk mallow. All Chris Gibson/Natural England



mentioned above) are fleabane, lady's smock, bugle, mint, thistles (especially marsh thistle) common valerian, knapweed, teasel and musk mallow. They must be in a sheltered position that receives bright sunshine for at least part of the day. It is also a good idea to plan your garden to produce a long season of nectar flowers.

Butterflies emerging from hibernation will head straight for early spring flowers like primrose, dandelion, sweet rocket and wallflower. Early moths home-in on the catkins of goat willow and grey willow, but be aware that both these trees have extensive root systems. In the autumn, flowering ivy growing on a sunny wall is a great favourite. Moths will feed on the blossom and also use the foliage for shelter.

Moths are lured by a good scent. Evening-scented flowers like privet, sweet rocket, night-flowering stock and evening primrose attract many species, including hawk-moths. The nectar of honeysuckle is restricted to moths with a sufficiently long tongue, like the beautiful elephant hawk-moth. If you

live near the south coast it may be worth planting scented tobacco plants on the off-chance that a convolvulus hawk-moth will drop by. This spectacular moth, which has a wingspan of around 10 cm, is a regular migrant to these shores, particularly in late summer. If you have the space, a bramble patch in a sunny place will provide both nectar and sugary fruit. Fruit trees are also good for butterflies and moths, especially if you leave a proportion of apples or plums to rot on the ground. Red admirals have a particular craving for fermenting fruits, but many moths will also feed on them by night. Try over-ripe split bananas, placed on a bird table. If you have apple trees you will almost certainly have the unusually-coloured green pug, a moth with a taste for apple blossom.



Red admiral on ivy. Chris Gibson/Natural England



Decaying fruit, such as these bananas, can attract red admirals in large numbers!
Ralph Hobbs/Natural England



The native honeysuckle may attract a number of moth species including the brimstone moth (below). Chris Gibson/Natural England



Rob Wolton/Natural England

Food for caterpillars

Butterflies and moths have a lifecycle that begins with an egg and moves on through a caterpillar (or larva) and pupa before the winged insect emerges. The full life-cycle can last a year. The adult stage is generally quite short, normally varying between a few days and several months. However, some species, like the brimstone butterfly and the chestnut moth, hibernate as adults. Nearly all the growing is done at the caterpillar stage; the adults remain the same size throughout their lives.



Green pug. Rob Wolton/Natural England



Chestnut moth. Rob Wolton/Natural England

Most caterpillars eat green leaves, though a few specialise in flowers or, like the swift moths, live underground eating the roots of grasses. A few, like the notorious clothes-moths, feed on animal fibre and organic debris. Some small ones 'mine' into leaves and stems, while the larger ones nibble leaves either by day or by night.

To attract butterflies and moths to stay and breed, you need the right food plants. In general, these need to be the ones the insects are used to finding in the wider countryside, and will usually be native species of wild flowers and trees. However, quite a few also feed on plants found mainly in gardens, like the Blair's shoulder-knot moth, which has spread with Leyland cypress (*leylandii*) planted as a fast-growing hedge plant.

If your garden has no tall trees, native grey sallow and hawthorn are good host-plants which will attract large numbers of species, including some very attractive caterpillars, like those of the puss moth, yellow-tail and vapourer moth. Garden forms of juniper attract a select group of moths, including the juniper carpet. Fuchsia is a favourite of the elephant hawk-moth.



Fuchsia. Chris Gibson/Natural England



Blair's shoulder-knot. This moth first appeared in the UK only in 1951 but has colonised new territory rapidly. Chris Gibson/Natural England



Stinging nettle supports a variety of butterflies and moths such as this mother of pearl moth and the burnished brass moth (above).
Rob Wolton/Natural England.

While many moth caterpillars have a large number of food plants – knotgrass and dandelion leaves are always popular – others need exactly the right kind of plant. One wild flower worth planting in a sunny garden is bird's-foot-trefoil, which is used by many species and might attract the common blue butterfly if it occurs nearby.

It was once an article of faith among wildlife gardeners to leave a patch of nettles for the butterflies. However, recent research in which nettles were planted in a large number of town gardens produced hardly any caterpillars. Butterflies like peacocks and small tortoiseshells do lay eggs on nettles in gardens from time to time, but probably only on large nettle patches, or in unusually favourable conditions – such as nettles growing against a sunny wall. There is no shortage of nettles on brownfield sites in towns or in the countryside. So you don't really need to grow them. These butterflies will visit your garden buddleja and other flowers in any case.

Pond margins are places of high natural biodiversity used by a large number of moths. You can attract some of these into your garden by planting yellow iris. Bulrushes, bur reeds and tall grasses, such as reed sweet-grass, will also attract moths but need to be carefully controlled or will take over your pond completely. A sunny, marshy hollow, full of wild flowers, will become one of the best butterfly and moth-watching spots in the garden.

Unwanted visitors

Very few butterflies and moths are a real nuisance in today's gardens. The main ones are the two 'cabbage white' butterflies – large white and small white – and the less well known cabbage moth, whose caterpillar bores into the heart of the vegetable. Their numbers can be kept down by inter-planting nasturtiums or marigolds among the cabbages. Nasturtium acts as a decoy, marigold as a repellent. If you have to control 'cabbage white' caterpillars, try to do so by physically removing them without resorting to chemicals: not only is it much more environment-friendly, it is, of course, much cheaper!



Nasturtium is so attractive to large and small white butterflies that it may keep them from laying eggs elsewhere in your garden.
Chris Gibson/Natural England



Magpie moth. Chris Gibson/Natural England

Currant bushes have a select community of moths, including the butterfly-like magpie moth, but owing to insecticides these are not as common as they were. Try growing some organic blackcurrants or gooseberries to help declining currant moths like the phoenix and currant clearwing. Toxic chemicals are the enemy of all insects, not just pests, and butterfly gardens should ideally be maintained organically, avoiding chemically-based herbicides and insecticides. The vast majority of moths and butterflies do no harm at all while

performing a useful service as pollinators and maintaining biodiversity.

Finding butterflies and moths

Butterflies are easy to watch. You quickly get to know which species are around and their favourite spots – knowledge which comes in useful when planning where to plant butterfly flowers. Day-flying moths can be watched in the same way, but many, like the carpet moths, spend most of the time resting and will fly up only

when disturbed. Some small moths seldom fly very far. If you have buttercups, look out for the tiny greenish *Micropterix* moth inside the flower. It is a primitive moth with functioning jaws and feeds on pollen rather than nectar. Another way of finding out which moths are around is to inspect your local spiders' webs, or even the front of your car!

Most moths are active after the sun has gone down. A good way to find them is to go out with a torch on a warm, windless night an hour or so after

sunset. Use a torch with a red filter which doesn't disturb the moth, whose eyes are less red-sensitive than ours. You can spotlight moths feeding on flowers and also on honeydew produced by aphids. Flat, pale blossoms like those on *Senecio* sp. (ragwort and others), stock, wallflowers and umbellifers, and any over-ripe, liquidising fruit are particularly worth examining, as are buddleja, ivy blossom and sallow catkins. Early risers may find it worth looking for moths on tree trunks, fences and walls shortly after dawn.



Currant clearwing. Roger Key/Natural England

Sugaring and wine ropes

Another way of spotting moths is to use the old collectors' trick of sugaring. Prepare a suitably aromatic bait by boiling together black treacle and soft brown sugar and lacing the resulting sticky goo with beer or rum (over-ripe fruit, such as mashed banana, also works). Paint the stuff on tree trunks, fences or even bunches of grass just before sunset, and return with a torch a few hours later to see what has turned up. A less messy bait is a 'wine rope', a length of cord, like a washing line, dipped into a mixture of wine and sugar. 'Sugaring' can be hit-and miss, but on a good night there can be swarms of moths, jostling one another to get at the treat. Some moths, like the aptly-named copper and red underwings – and the spectacular old lady moth – are more attracted to 'mothing sugar' than by any other method.

Light traps

The easiest way to watch moths is to take advantage of their helpless attraction to light. Moths will come to lighted windows, especially early and late in the year. They arrive in larger numbers if you shine a bright light, such as a hurricane lamp, on to a white sheet. But the best results are obtained by using a light trap, and these are particularly useful if you are making a list of moths for a recording scheme. There are several kinds on the market, a portable one – powered by a car-battery – and a more powerful one that needs mains electricity or a generator. These traps use a mercury-vapour bulb that emits ultra-violet light. This light is invisible to us, but to a moth it is the brightest part of the spectrum. Once in the trap, the moths settle down. Egg cartons placed in the trap make ideal places for them to hide in, away from



Silver ground carpet.
Rob Wolton/Natural England



Top: Red underwing.
Roger Key/Natural England
Bottom: Copper underwing.
Chris Gibson/Natural England



The mullein moth caterpillar advertises its presence. Chris Gibson/Natural England



The caterpillar of the puss moth employs disruptive colouring to conceal the shape of its body. Rob Wolton/Natural England

the light. When you've finished with them, release the moths in the morning in tall, shady vegetation, or keep the trap in a cool and shady place until evening and then remove the cover. On a warm summer night these traps can catch incredible numbers of moths: you may find yourself wondering where they all manage to hide during the day.

Finding eggs and caterpillars

Finding the early stages of butterflies and moths is a nice trick if you can do

it! You need sharp eyes to spot a green caterpillar feeding on a leaf, but fortunately they leave clues like droppings or nibbled leaves. Full grown hawk-moth caterpillars leave droppings that can be the size of peppercorns. These caterpillars can be identified by the sharp spike on their rear. Contrary to appearances, this does not sting. If you have sensitive skin, however, avoid picking up hairy caterpillars: a small number of them can give you a rash.

The best places to look for caterpillars are sheltered bushes, especially of



Caterpillars can sometimes be weird and wonderful. Top: Sycamore moth caterpillar. Bottom: Garden tiger moth caterpillar. Roger Key/Natural England



Sycamore moth cocoon. Roger Key/Natural England



The eggs of the golden plusia moth may be laid on delphiniums or monkshood.
Roger Key/Natural England

hawthorn or blackthorn, or small willow or birch trees. May and June, when the leaves are still tender, are the best times. Some caterpillars, like the mullein moth, make no pretence of hiding, relying on their bright warning colours to relay a message that they taste nasty. Normally, if you see a caterpillar out in the open it may be full grown and looking for somewhere to pupate. Alternatively, it may have been attacked by a parasite and be disorientated.

The variety of caterpillars is amazing: some have colourful bristles and tufts, others bright spots, or have long, thin bodies and walk in a looping fashion. Some caterpillars spin leaves together to form a little tent. Searching at night by torch or lamp can be more productive than by day. Many caterpillars can be identified with the help of a book, although this is easier in their later stages of growth. The food-plant is often a good clue.

Finding the tiny eggs might seem impossible, but for a few species it is easy once you know where to look. The bright orange, bottle-shaped eggs of the orange-tip butterfly, for example, are usually laid on the flower stalks of honesty, lady's smock or sweet rocket and near the top of the plant. The small tortoiseshell lays its eggs in batches and they are reasonably easy to spot on the underside of a nettle leaf near the top of the plant. Of course, you can avoid a lot of searching by simply watching a female closely and checking the plant after the insect has flown away.

Photography

Butterflies and moths are good subjects to photograph. The day-flying species need to be stalked but become oblivious of your presence when busy on a flower. Nocturnal moths normally sit still and allow you to take your time or even move them to a better spot. In the past, only a single-lens reflex (SLR) camera with close-up lens or extension



Orange tip butterflies are attracted to lady's smock.
Paul Keene /Avico



Scarce silver-lines.
Jill Pakenham/Avico

tubes would be able to take a good photo, but now there are many non-SLR 'compact' cameras with good close-up capabilities that can produce excellent results. To avoid camera shake, a good tripod is essential. Flash is an alternative, but many users dislike the harsh shadows it produces. For the same reason, a bright but overcast day produces better results than brilliant sunshine. As ever, practice makes perfect but there are many helpful guides on the market.



The caterpillars of *Pyrausta aurata*, sometimes called the mint moth, may sometimes be found in herb gardens on mints, thyme or marjoram.
Roger Key/Natural England



The lackey moth flies in July and August. Its larval food plants include many trees and shrubs such as *Potentilla*.
Roger Key/Natural England

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Holly blue larva. The holly blue butterfly is regularly seen in gardens, even in city centres in the south. In spring, it lays its eggs mainly on holly. In summer, ivy is usually preferred.
Roger Key/Natural England

Butterfly Conservation is the largest insect conservation charity in Europe, with over 11,000 members in the UK. Its aim is the conservation of butterflies and moths, and their habitats. The charity runs conservation programmes for more than 60 threatened species of butterfly and moth, organises national butterfly and moth recording and monitoring schemes, and manages more than 25 nature reserves.

National Moth Night

For at least one day each year, Butterfly Conservation and the magazine *Atropos* run a National Moth Night in which as many people as possible are invited to take part (visit www.nationalmothnight.info). Such projects help to reveal how our moths are faring in a fast-changing world.

Many local wildlife trusts and nature study centres also organise butterfly and moth events.

Further information

This is one of a range of wildlife gardening booklets published by Natural England. For more details, contact the Natural England Enquiry Service on 0845 600 3078 or e-mail enquiries@naturalengland.org.uk

Natural England also produces *Gardening with wildlife in mind*, an illustrated wildlife reference. Originally on CD but now also available online, *Gardening with wildlife in mind* has detailed information on 800 plants and animal species often found in our gardens, and shows how they are ecologically linked. See www.plantpress.com

Other titles

There are many good guides to help identify butterflies and the larger moths. Particularly recommended are:

Lewington, R. *How to identify butterflies*. Collins. 1999.

Porter, J. *The colour identification guide to caterpillars of the British Isles*. Viking Books. 1997 (The best book for identifying caterpillars.)

Skinner, B. *Colour identification guide to moths*. Viking Books. 1998.

Tomlinson, D & Still, R. *Britain's butterflies*. Wildguides Ltd. 2002 (Illustrated with set specimens.)

Waring, P. & Townsend, M. *Field guide to the moths of Great Britain and*

Ireland. British Wildlife Publishing. 2003. (This book shows moths in their natural resting postures.)

For more on gardening for butterflies and moths, see:

Baines, C. *How to make a wildlife garden*. Frances Lincoln Ltd. 1985.

Steel, J. *Butterfly gardening – how to encourage butterflies to visit and breed in your garden*. Webbs Barn Designs. 2003.

For photography, rearing and general enjoyment, see:

Leverton, R. *Enjoying moths*. Poyser Natural History, Christopher Helm. 2001.



Pale tussock moth caterpillars are frequently found in gardens, on cultivated fruit trees, crab apple and other species. Roger Key/Natural England



The adult privet hawk-moth is even more spectacular than its curiously marked caterpillar. It is common in gardens. Roger Key/Natural England