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Front cover image: Allotments are scarce in some urban areas.
Judith Hanna/Natural England

Wildlife on allotments

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Wildlife on allotments

Although allotments will always be mainly used for growing food, they have other values that are now gaining greater recognition. They are great places for healthy exercise, provide good opportunities for socialising, and put us back in touch with the earth. We all, ultimately, depend on the soil for our foods but in this highly processed, pre-packaged age the connection is often forgotten.

Allotments are also an increasingly important resource for wildlife. Many of the plants and animals that struggle

to survive on intensively managed farmland find a refuge on allotment sites. This leaflet will help you enhance the conservation value of your allotment, while continuing to cultivate it for fruit and vegetables.

History

Allotments have been around for a long time. They were originally created for poor agricultural workers to compensate them for the loss of common land during the enclosures of the eighteenth century. Allotments



Allotments are a refuge for both people and wildlife. Peter Wakely/Natural England



Fresh food and fresh air. Peter Wilson/FLPA



Diverse, wildlife-friendly farmland is under threat from intensive agriculture. Peter Wakely/Natural England

proved a good way of alleviating rural poverty and their creation became official government policy in 1845. By 1873 there were 242,000 of them, one allotment for every three male agricultural workers in England.

Most new allotments after 1875 were created for the benefit of urban labourers. Rising wages meant that many agricultural labourers no longer had to work their own land to make ends meet and, having toiled in the fields all day, few dug plots for pleasure!

The situation was different in towns. Here, labourers welcomed the chance to be out in the fresh air, grow their



An urban oasis. Federation of City Gardens

own food and escape the noise of their factories and workshops. These days, many office workers feel the same way.

Allotments today

Despite their popularity, allotment numbers have been in decline since WWII. In 1950 there were over one million in the UK, but today that number has dropped to around 250,000.



The next generation will need allotments too. Federation of City Gardens

The majority of allotments have legal protection and cannot be sold without the permission of the Secretary of State, but despite this many sites have been swallowed up by development while some, for various reasons, have simply been abandoned.

A number of organisations are working to reverse this trend including the National Society of Allotment and Leisure Gardeners (www.nsalg.org.uk) and the Allotments Regeneration



An urban allotment. Judith Hanna/Natural England

Initiative. The latter has published a range of literature on the subject. For more information visit their website at www.farmgarden.org.uk/ari.

Finding an allotment

If you'd like to take on an allotment, contact your local council in the first instance. They will have a list of local allotments and may manage most of them. In some places the take-up of allotments is very high and you may be placed on a waiting list.

If there are insufficient allotments in your area your local authority has a legal duty to provide more. However, an authority is only obliged to consider a request where there is sufficient demand; in practice this means getting together with at least five other local people (registered on the electoral roll) and approaching the authority as a group.

Size and price

Allotments are traditionally measured in 'square poles'; a pole (also known as a 'rod' or 'perch', or even a 'lug') being 5 1/2 yards or 5.03 metres. A square pole covers just over 25 square metres and the largest allotments available are usually 'ten pole plots' of 250 square metres.

You will have to pay an annual rent for your plot, the price depending on its size and the level of local demand. On average, expect to pay between £30 and £40 for a 250 square metre plot, though this price can more than double in areas where land is scarce. Some allotment authorities vary their charges according to the availability of water and other amenities, and most have concessionary rates for pensioners and the unemployed. More details can be found in *Allotments: a plot holder's guide* available from www.communities.gov.uk



The size of your plot will vary according to local demand. Stephen Arnott/Natural England



A valuable ally, the seven-spot ladybird *Coccinella septempunctata*. Roger Key/Natural England

Allotment authorities and land use

The name of your allotment authority will be on the tenancy agreement you sign when you take on your plot. The agreement will outline your responsibilities as a plot-holder. You should always consult your allotment authority if you want to do something that changes land use (that is, doing something other than growing fruit and vegetables) for example, planting hedges, 'fedges' and trees, digging a pond etc. (see Habitats, nesting sites and refuges, page 11).

Thinking green

Some growers (but a diminishing number these days) may still regard wildlife as 'the enemy'; imagining legions of furry, feathered, slimy and

shelled pests with their beady eyes fixed on carrots, strawberries and prize-winning marrows! It's true that, left uncontrolled, many creatures can play havoc with a crop, but for every 'pest' there is at least one predator species ready to step in and tackle it on your behalf.

Attracting beneficial wildlife can be quite straightforward and this leaflet contains many tips for doing so. However, once you've encouraged some of nature's helpers to live on your plot you can't expect them to do all the work! A healthy population of predators on your allotment will help subdue a host of pests, but sometimes even they will be overwhelmed. In these cases you may have to step in to remove infested growth or even whole plants.



They all work, but they may kill friend as well as foe. Roger Key/Natural England

Cut out the chemicals

The key to getting wildlife to work with you is to look after the beneficial creatures that already live on your allotment and to encourage more – and different ones – to settle there. Perhaps the easiest way of conserving wildlife is to reduce your use of toxic chemicals, ideally cutting them out all together (see also Companion planting, page 22). Most toxins found in pesticides are non-specific and are just as likely to kill friends as foes. Spraying against pests will often kill their predators as well, meaning that the next wave of pests that blows in



Look after beneficial insects such as the green lacewing *Chrysopa carnea*. Roger Key/Natural England

has a free hand and can multiply without check, forcing you to spray again and again.

In some cases the use of pesticides has even created pest problems! For example, the fruit tree red spider mite only became a significant pest in the 1930s following the widespread agricultural use of tar-oil sprays – the mites could cope with spraying far better than their predators and thrived as a result.



Do you have room for a pond? Shona Turnbull/HBP

Creating habitats

The next step towards befriending wildlife is to encourage more of the 'right' kind of creature to live on your allotment by creating suitable habitats. You can do this at two levels: there are habitats you could create on your own plot, and there are larger habitats you and your fellow plot-holders could create within the wider allotment area. A good example of the latter is a pond (see Habitats, nesting sites and refuges, page 11). Many beneficial creatures will use a pond as a watering hole, and digging a wildlife pond will boost the



A tawny owl *Strix aluco*. It's not just blue tits that benefit from nesting boxes. David Hosking/FLPA

Habitats checklist

Do you have room for any of these?

- hedges and 'fedges'
- ponds and bog areas
- nest boxes for birds
- roosts for bats
- 'beetle banks'
- overgrown, undisturbed areas
- log and stone piles
- a wildflower/herb patch.



An emperor moth caterpillar *Pavonia pavonia* on bramble. Chris Gibson/Natural England

Managed wildlife areas

Empty, overgrown plots can make an allotment look unkempt and uncared for, but a solution is to 'manage' these sites as wildlife areas.

Untended plots may be taken over by bramble which is an excellent food source and refuge for many kinds of wildlife. Apart from attracting insects such as hoverflies, bees and lacewings, a tangle of brambles is a favourite nesting site for birds like robins, wrens, song thrushes and blackbirds. Some warblers and finch species may also use bramble in this way. To control bramble, cut different sections back on a three- or four-year rotation so there is always a gradation between first-year growth and mature stems; this means you can keep a plot relatively tidy but still retain much of the wildlife benefit.



Brambles will provide food and shelter for a wide variety of beneficial wildlife. Peter Roworth/Natural England

local frog population, these amphibians being some of the best slug predators there are. Unless you have a very large plot it's unlikely you'll be able to sacrifice the space for a substantial pond, but within the wider allotment area there might be a suitable patch of land that is lying unused.

The same is true of many other vigorous plants (Russian comfrey, for example) that will take over a plot if



Orchards can be superb wildlife habitats. Roger Key/Natural England

they are not controlled. You should take particular care to control pernicious weeds such as couch grass to make sure they don't cause a problem for other plot-holders.

Orchards

In some cases it might be possible to consolidate unused plots and plant them as an orchard. However, this must be done with the agreement of your allotment authority which must then follow a set legal procedure to permanently change the land use from allotment garden to orchard. In some cases the planting of trees might result in allotment land losing its legal protection.

Orchards can be superb wildlife habitats providing food and shelter for a wide range of creatures, particularly birds. Crops to consider include apples, pears, cherries, plums, quinces, damsons, gages and cobnuts. Why not plant a range of traditional varieties? Many 'old English' varieties have become very scarce and you could do your bit to help preserve them (see also Heritage seeds, page 36).

Plant two-year-old trees (older trees require a lot of staking) and for the first three years keep the ground around them clear of grass and weeds to a diameter of one metre. After this the ground can be left to grass over, or perhaps planted with wildflowers. If

there is enough space, choose 'standard' sized trees rather than those grafted onto dwarfing rootstock as these will support far more wildlife.

Some local authorities provide grants for the restoration of old orchards and the creation of new ones. Most grant schemes are designed to fund large planting projects but there's no harm in asking if your allotment could benefit.

Habitats, nesting sites and refuges

Bird boxes

Many birds are excellent predators and will eat all manner of pests. Blue tits are a good example, the average pair consuming around 15,000 caterpillars for every brood they raise.

The best ways to encourage beneficial birds onto your plot are to put up bird



Bats need boxes too! Chris Gibson/Natural England

boxes and provide drinking water. For detailed advice on building and positioning bird boxes get in touch with the British Trust for Ornithology (BTO) or the RSPB (see Contacts, page 37). Most plots should be able to accommodate a small nesting box, but perhaps the wider allotment area provides opportunities for a more ambitious housing project? For example, is there a site that could accommodate a box for owls? A family of these night-hunters on the premises



Blue tit chicks have a big appetite. B. Borrell Casals/FLPA



A single pipistrelle bat can catch over 3,000 flying insects in a night. Michael Hammett/Natural England

would certainly discomfort the local rodent population!

Bat boxes

Bats are superb insect predators. A single pipistrelle (the smallest of our bats) can catch over 3,000 flying insects in a night. Bat boxes are no harder to make than bird boxes but have to be built and positioned differently and must always be made from untreated timber. For more information, contact the Bat Conservation Trust, or read the Natural England booklet *Focus on bats* (see Contacts, page 37).

Ponds

A pond is one of the most useful habitats you can create and is an ideal way of utilising an empty plot. Digging a large pond would be a community project rather than a job for an individual allotment holder, but even a small body of water on your plot would be useful to amphibians and bird life. Information on creating ponds can be found in the Natural England booklet *Garden ponds and boggy areas: havens for wildlife* (see Contacts, page 37), but bear in mind the following:

- Ponds should be in a sunny location away from trees.
- The larger the pond the better – aim for a minimum surface area of six square metres.
- Create a range of depths, from shallow sloping sides to at least 60 cm.

- Roughly half the pond's surface should be shaded by aquatic plants such as *Potamogeton sp.* (various pond weeds) and amphibious bistort.
- Do not introduce fish into your pond – they will eat many of the creatures you are trying to encourage.
- Beware of invasive pond plants – non-natives such as parrot's feather and *Crassula helmsii* will quickly take over a pond and can cause problems for others if they escape into the wild. Even some native species, such as bulrush, can run riot.
- Plant suitable species on the pond's fringes to provide shelter for visiting animals – even long grass will do.
- Try to incorporate a boggy area next to your pond – perhaps fed by a pond overflow.



A prime slug predator, the common frog *Rana temporaria*. Chris Gibson/Natural England



A pond will attract many kinds of predator, such as this southern damselfly *Coenagrion mercuriale*. Michael Hammett/Natural England

Before creating a pond you must obtain the permission of your allotment authority. Ponds can be a hazard, especially where young children are concerned.

Bug hotels

Encourage beneficial insects to overwinter on your plot by providing them with a place to hibernate. If you have a shed – and it's not already full of holes – you might consider creating a few gaps for insects to find their way inside in the autumn. If not, a wooden block or an old log bored with holes will be a valuable refuge for many useful insects. Make a number of holes 1 to 10 mm in diameter and 5 to 10 cm deep, and put the block or log somewhere dry, out of direct sunlight.

Position the wood so the holes are sloping downwards to keep out the rain.

Alternatively, cut the base off a plastic bottle and stuff it full of lengths of bamboo or rolled-up corrugated cardboard. Hung in a quiet spot these bottles will be useful refuges. Short lengths of old hosepipe – folded double and hung in a tree or bush – will also attract tenants.

'Beetle banks'

There are many different groups of beetles and although some (flea beetles, for example) can be a nuisance, many are valuable allies. Useful species include ladybirds, ground beetles, rove beetles (such as



A ready-made 'bug hotel'. Roger Key/Natural England



Broad grassy strips make excellent refuges and breeding sites for predatory beetles.
Stephen Arnott/Natural England

the devil's coach-horse) soldier beetles and carrion beetles. All these prey on common pests such as slugs, snails and caterpillars. Ground beetles are thought to be the 'number one' slug predator, better even than frogs!

The larvae of many predatory beetles overwinter in the soil, so the best way of keeping a healthy population is to minimise digging. This can be a problem on an allotment that is regularly cultivated (see Winter digging, page 25) but a compromise is to set aside strips of ground and allow them

to develop a covering of thick matted grass. These strips (known as 'beetle banks') will act as breeding sites and refuges for predatory beetles from where they can emerge in the evening to sweep over ground that has been cleared for cultivation.

Large-scale beetle banks are often seen on organic farms where field margins and mid-field strips are deliberately left unploughed. Some allotment holders subdivide their plots into separate beds using grass strips, and beetles will benefit if you broaden



Ground beetles like *Pterostichus niger* will appreciate undisturbed ground.
Roger Key/Natural England

these as far as practical and let the grass grow long.

Log and stone piles

These will create a multitude of habitats for beneficial animals. Even a small stone pile on your plot will be a home to useful beetles and centipedes. Larger piles may shelter slug-eating frogs, toads and slow-worms or, very occasionally, a family of stoats or weasels to help keep down any local rodents and rabbits. Hedgehogs can also benefit from these structures (though logs will have to be at least 10 cm apart) but if you wish to encourage them to feed on your slugs it might be



The small garden bumblebee *Bombus hortorum*.
Roger Key/Natural England

better to supply them with a purpose-built hedgehog home.

Old vegetation

In the autumn it's very tempting to completely clear an allotment of old growth and dig it over to make it tidy (see Winter digging, page 25). While digging can be beneficial, it is equally useful to leave some plant litter in place to provide winter hibernation sites for insect predators such as ladybirds, lacewings, harvestmen and spiders. Try to delay tidying up your plot until the spring, but if you have to clear old growth to dig a bed, don't burn it – add it to your compost heap or pile it in a corner and leave it for the winter. The debris will make a valuable refuge for many creatures. (See also Bonfires, page 19)

Bumblebees

There are around 20 bumblebee species in the UK and they are excellent pollinators. Unlike honey bees, bumblebee colonies die in the winter and only the young queens survive, hibernating through the cold weather to emerge in the spring and look for new nest sites. Some of the insect refuges described here will benefit hibernating queens and they will find overgrown, undisturbed areas ideal nesting places; they particularly like old mouse and vole nests in tussocks or under sheds etc.



Old growth can make a valuable refuge for over-wintering wildlife. Stephen Arnott/Natural England

Flowers

The benefits of attracting pollinating insects, such as bees, to your plot are obvious, but other beneficial insects and animals will also be drawn by the right display. Hoverflies and bees are attracted by open flowers such as wild carrot, lovage, caraway and yarrow, and dill, ragwort and parsnip are also popular. Bees will also appreciate tubular flowers such as sage, clovers, peas, beans and comfrey. Comfrey is a good choice as, apart from having attractive flowers, its leaves can be used to make manures and mulches (see Green manures, page 33). Late- and early-flowering plants such as aster, hellebores, ivy and spring bulbs provide nectar when little else is available (bumblebees will particularly appreciate these) and planting night-scented flowers will draw out the moths and insects that will attract bats. A sunny patch of native flowers or

herbs on your plot will make an attractive feature and be an invaluable resource for many beneficial creatures.

Some plot holders grow non-native ornamental flowers as a crop in their own right. Non-natives can be a valuable nectar source but you should avoid highly-bred plants with 'double' flowers. These are hard for insects to penetrate and often contain little nectar. As a rule, simple open-faced flowers will have the most wildlife benefit.

Hedges

If your plot has a hedge or fence as a boundary there might be an opportunity to increase its attractiveness to wildlife. Planting native hedging plants and trees such as hazel, elder, blackthorn, hawthorn, dog rose, field maple, beech, yew and the like will create nesting places for birds, shelter beneficial insects and provide



A display of flowers will draw many beneficial creatures to your plot. Judith Hanna/Natural England



Plants such as dill *Anethum graveolens* have open umbelliferous flowers that are popular with many insects. Chris Gibson/Natural England

berries for food. Plot holders can also benefit from this natural harvest; the berries and flowers of elder, rosehips, and blackthorn sloes all having a use in

the kitchen. The leaf litter and dense growth at the base of a hedge will also provide a home for hedgehogs and create a sheltered corridor for small mammals to travel along.

Of all the hedge plants the most valuable must be hawthorn: it is fast growing, tolerates most soils, responds well to pruning and supports a huge range of wildlife. However, it must be allowed to flower to reach its best so time any pruning accordingly.

If there is a hedge on your allotment, prune it in late winter after the berries have gone, but before the start of the nesting season as it is illegal to disturb nesting birds. The end of January is a good time. To lessen the impact of pruning, cut back only a third of your



Hawthorn is one of the most valuable hedging plants. Mike Henschman/Natural England



Time hedge pruning to avoid the nesting season. Roger Wilmshurst/FLPA

hedge in rotation each year. This leaves one third undisturbed for at least two years. Remember to consult your allotment authority if you plan to replant an old hedge or start a new one.

'Fedges'

If you don't have the opportunity to create or improve a hedge you might be able to grow plants through a man-made fence to create a 'fedge'. Ivy is a particularly good fedge plant as its dense growth is a refuge for insects and small birds, and its nectar and berries are a valuable food source for wildlife. You could even turn a chain-link fence

into a wildlife resource by growing flowering climbers such as bryony, sweet pea and honeysuckle through it (but make sure you have the permission of the fence's owner).

Dead hedges

A dead hedge is essentially a line of brash (bushy cuttings) pushed into the soil to form a barrier. Alternatively, layers of brash can be piled between two parallel lines of stakes stuck in the ground. A dead hedge is one way of utilising woody cuttings that are unsuitable for composting and they can form useful windbreaks as well as valuable wildlife refuges.

Compost heaps

Heaps and compost bins are the ideal way to dispose of organic allotment waste and the compost they produce is an excellent soil improver. Under the right conditions organic waste can be composted in as little as two weeks,

Security

If your allotment suffers the unwelcome attention of human pests why not bolster your security with a prickly wild hedge? Holly, blackthorn, buckthorn, gorse, hawthorn, pyracantha and berberis can all be planted to create a prickly barrier; while bramble, dog rose and sweet briar can be grown through existing man-made fences to make climbing them a thorny problem!



A bonfire pile can be a valuable winter refuge. Stephen Arnott/Natural England

but most compost heaps take much longer to do their work and these can become valuable resources for wildlife. Many of the invertebrate species that live in your heap will be actively contributing to the compost process while others, such as ground beetles and centipedes, will use it as a temporary refuge.

Bonfires

Some allotments allow bonfires but it is often more useful to compost waste than burn it. If you do have a bonfire try to leave burning until March, and move or turn-over a pile before you set it alight. Many creatures will find a pile of dry

These invertebrates will, in turn, attract useful predators such as birds, frogs, toads and slow-worms. The latter will find the heat generated by an actively composting heap particularly attractive. For more information on composting consult the Natural England booklet *Composting and peat-free gardening*. (See Contacts, page 37)

garden leaves an ideal hibernation site for the winter. By postponing your fire you will be preserving a valuable wildlife resource. To avoid incinerating any 'tenants' toss the pile a few times to wake them up and give them a chance to escape.



Lacewing larvae are voracious feeders!
Roger Key/Natural England



The two-spot ladybird *Adalia bipunctata*.
Roger Key/Natural England

Best of the bugs

Many insects are valuable pest predators but the following are some of the best:

Lacewings

Both the adults and larvae eat aphids and other soft-bodied insects.

Ladybirds

A single ladybird can eat 100 aphids a day and they will also consume whitefly, potato beetle, bean beetle and mealy bugs, amongst others.



A hoverfly *Metasyrphus luniger*.
Roger Key/Natural England

Hoverflies

The adults are not carnivorous but most hoverfly larvae are ravenous hunters: each consumes around 900



A tachinid fly. Their larvae are parasitic on many pest species. Roger Key/Natural England



The French wasp *Dolichovespula media* is now common in many gardens.
Roger Key/Natural England

aphids in its short life, together with scale insects and young caterpillars. The larvae look like small, flattened, green maggots.

Tachinid flies

These look like bristly versions of the common houseflies but their larvae are parasites on butterfly and moth caterpillars, sawflies and sucking bugs.

Wasps

Both solitary and social wasp species collect insect larvae, such as caterpillars, for food. Close relatives are the parasitic wasps. These are often



Less than 3 mm long, this gall wasp is parasitic on other insects. Roger Key/Natural England

tiny, some as small as 0.25mm, and nearly every insect species has a wasp species as a parasite.

Centipedes

These feed on many ground-living and soil-dwelling insects and will also eat slugs and their eggs.

Earwigs

Often regarded as pests, earwigs actually prey on aphids, codling moth caterpillars and vine weevil eggs. Although they can destroy flowers they do little other damage – if you find an earwig living in a cavity in a fruit or tuber, it didn't make the hole, it's just a squatter.

Ground beetles

These are often shiny black or metallic in colour with obvious grooves down the wing-cases. They are voracious predators of slugs and other pests. (See Beetle banks, page 13.)

Companion planting

One way of controlling pests without resorting to chemicals is to try companion planting – a system where different plant species are grown



A ground beetle *Pterostichus madidus*. Roger Key/Natural England

Composting toilets

If your allotment lacks toilet facilities, installing a composting toilet might be a solution. Composting toilets range from basic stand-up urinals that use a straw bale to soak up fluid, to sophisticated sit-down electronic models that incorporate a fan and heater. In all cases the end product is said to be surprisingly inoffensive! For more information on composting and waterless toilets contact the Centre for Alternative Technology and the Allotments Regeneration Initiative (see Contacts, page 37).

together so that one, or both, benefits the other in some way. Although there is little scientific evidence that it works, the technique has been used by gardeners around the world for centuries. The following are a few of the better known examples.

Carrots and onions

A field trial by Garden Organic (formerly the Henry Doubleday Research Association) found that, where onions and carrots are grown together (and onions outnumber carrots four to one), attacks of carrot fly are far less severe. It is believed that the smell of the onions masks that of the carrots, literally throwing the carrot flies 'off the scent'. Onions and carrots make good companions for another reason – carrots are long-rooted and



Cabbages and beans seem to make good planting partners. Mr Fothergill's

onions short-rooted, so there is less competition for nutrients and water.

Cabbages and beans

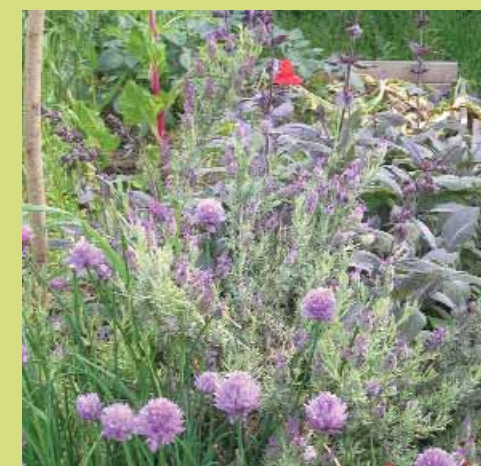
There is anecdotal evidence that where cabbages are grown with unrelated plants like runner beans, there's a reduced incidence of cabbage aphid and cabbage root fly. It's thought these insects will land on a selection of plants to make sure there is a sufficient density of cabbages to support their offspring. The theory is that, after landing on one or two cabbages, they will get discouraged and fly away if the second or third plant they land on is a bean, or some other non-cabbage.

Other combinations

Some companion planting might be as simple as cultivating shade-loving, low-growing crops alongside taller, sun-loving varieties (a technique sometimes known as 'nurse cropping'). Other aspects of companion planting are more complex. For example, some plants are known to exude chemicals that suppress pests, which is why some gardeners swear by planting rows of

strong-smelling garlic and chives between other crops. Similarly, marigold roots are known to release a nematode repellent so, in theory, they could help repel potato cyst eelworms. An added advantage of planting flowers like marigolds is their bright blooms which help attract beneficial insects such as hoverflies and bees. Strong-smelling French marigolds are also said to repel whitefly.

Other useful companions are legumes, such as lupins, that fix nitrogen with their roots for the benefit of adjacent crops. It seems that companion plants can even be from the same species. Research has shown that non-resistant cultivars can benefit when inter-planted with disease-resistant varieties of the same crop. The theory is that resistant rows act as barriers, blocking the path of pests and diseases that might otherwise pass easily from plant to plant.



Strong-smelling herbs may distract or repel pest species. Judith Hanna/Natural England

The table below is a list of traditional planting companions. But be warned, few authorities agree absolutely on what are good or bad companions. An exception is the combination of beans and peas with onions which is widely acknowledged as being a bad mix!

Companion planting, traditional friends and foes

Crop	Good companions	Bad companions
Asparagus	Tomato, parsley	Onion
Beans	Celery, corn, cucumber, potato	Chive, garlic, leek
Cabbage	Celery, onion	
Carrots	Pea, rosemary, onion, sage, tomato	Dill
Celery	Onion, cabbage, tomato, beans	
Corn	Beans, pea, squash	
Cucumber	Beans, pea, radish	
Lettuce	Radish, strawberry	
Onion family	Beets, carrot, celery, lettuce, cabbage	Beans, peas
Pea	Carrots, radish, turnip, cucumber, corn	Onion
Potato	Beans, cabbage	Pumpkin, tomato
Pumpkins		Potato
Radish	Pea, lettuce, cucumber	Hyssop
Spinach	Strawberry	
Squash	Nasturtium, corn	
Tomato	Asparagus, onion, carrot, celery, cucumber	Potato, cabbage
Turnip	Pea	



Netting will exclude a wide variety of pests. Garden Organic

Netting

Netting is a good way of keeping birds and larger flying insects away from your crops. However, after the growing season, netting should be taken down and put into storage. Netting is dangerous to many animals, trapping and killing creatures such as frogs, slow-worms and hedgehogs. Nearly all these

animals feed on pest species and are to be encouraged. Removing netting will also allow birds and hedgehogs to get in amongst fruit bushes and hunt out the pest larvae that often overwinter in leaf-litter and the topsoil.

Winter digging

Some people recommend a technique known as 'no dig' gardening where the soil is only lightly forked (if at all) and never turned over. The theory is that naturally-layered, undisturbed soil is healthier than disturbed soil. It is also less likely to dry out and, as buried seeds are not brought to the surface, it needs less weeding. However, digging does have advantages. It allows you to quickly improve the soil with additives such as rotted manure, improves the drainage of heavy soils and exposes invertebrate pests, their eggs and larvae to predators.

The latter is important as a number of notorious pests survive the winter as ground-dwelling grubs, including



Winter digging exposes pest larvae to predators and the cold. Stephen Arnott/Natural England

carrot fly, chafer beetles, cutworms, gooseberry sawfly, Solomon's seal sawfly, onion fly and the pea moth – not to mention slugs! By turning the soil in winter these creatures are exposed to the cold and made available to predators such as birds, ground beetles, centipedes and hedgehogs.

However, there is a down-side; the grubs of many beneficial beetles will also be unearthed by digging so try to limit cultivation to a single session and leave some areas undisturbed. (See Beetle banks, page 13.)

Less welcome visitors

Aphids

Commonly known as greenfly and blackfly, aphids will often spend the summer on one host before moving to a different one in the winter. The honeydew they exude can encourage



The dreaded greenfly (top) and the equally dreaded blackfly. Roger Key/Natural England



The small white cabbage butterfly *Pieris rapae*. Roger Key/Natural England

sooty mould fungi and they also transmit diseases such as cucumber mosaic virus. Overfeeding plants with nitrogen often encourages aphids as this results in the soft sappy growth they love.

Where an aphid infestation is small it's often best to simply squash them with your fingers. For more serious

infestations, pinch-out the affected growth or remove the whole plant. In the case of broad beans, early sowing can make them less susceptible to black bean aphids.

Cabbage white butterflies

Two species of butterfly, large whites and small whites, are often lumped together as 'cabbage whites' (the



Caterpillar of the small white cabbage butterfly. Roger Key/Natural England



A large white cabbage butterfly caterpillar *Pieris brassicae*. Roger Key/Natural England



The potato capsid *Calocoris norvegicus*. Roger Key/Natural England

closely related green-veined white is not a pest species). Squash their oval, yellow eggs when you find them and exclude the adults with a fine mesh netting.

Cabbage root fly

This fly lays its eggs in the soil or occasionally on the plant itself. Cover the ground with fleece or a fine mesh straight after sowing or planting, or protect individual plants with special root fly mats. You can buy these or make your own from 12 cm squares of any soft woven material. A traditional remedy is to plant young brassicas in holes lined with rhubarb leaves. Apparently the smell puts them off.



Small but pesky; the carrot fly *Psila rosae*. Nigel Cattlin/FLPA

Capsid bugs

These feed on the growing tips of many plants such as currants and runner beans causing distorted growth. Birds find the bugs tasty so encourage them with bird feeders placed near infested plants.

Carrot fly

These also attack parsnips, celery, chervil and parsley. The adults are weak flyers so planting on a windy exposed site will make their lives difficult. They will be unable to fly over an enclosure of fine netting that is at least 50 cm high, and fleece is also effective. A number of generations of fly will attack your carrots throughout the year. The first is the most damaging but will have died off by June so avoid planting before then. The smell of bruised carrot leaves will attract adults so sow seeds sparingly to reduce the need for thinning. (See also Companion planting, page 22 and Winter digging, page 25.)

Celery fly

This also attacks plants such as celeriac, parsley and lovage. Cover your crop with a fleece or fine mesh netting.

Codling moths

These attack fruit trees. Sticky pheromone traps are successful against adult moths, and earwigs eat the caterpillars. Encourage earwigs with artificial refuges such as short lengths of hosepipe bent double and hung in the branches.



Expose pests by growing gooseberry plants as a cordon or fan. Mr Fothergill's

Cutworm

This is a generic name for a variety of nocturnal moth caterpillars that attack crops such as lettuce, brassicas, carrots, celery, beetroot, potatoes and strawberries. Protect young transplants by pushing a collar (a cardboard tube or open-ended tin can) into the soil around the plant. (See also Winter digging, page 25.)

Flea beetles

These can be a problem on brassicas and potatoes. Grow affected plants under a fine mesh or fleece. The damage these beetles do is made more severe by dry weather so don't let plants go short of water. Japanese radish may divert these beetles away from other brassicas but if you want to take more direct action, run a greased board over infested plants – the beetles should jump off and stick to it.

Gooseberry sawfly

Try to grow the plants as a cordon or fan. This makes infestations more obvious enabling you to remove affected leaves. Remove mulches in the

autumn as these will harbour grubs. (See also Winter digging, page 25.)

Leatherjackets

These are the larvae of crane-flies and will attack the roots of brassicas, strawberries and lettuce. Try watering the ground thoroughly, then covering it with a thin layer of grass clipping and black plastic. The leatherjackets should rise to the surface over a few days and hide in the grass where you can pick them up. A similar technique can be used for cutworms in greenhouse soil. (See also Winter digging, page 25.)

Millipedes

Most of the millipedes you see in your garden will be harmless but a few burrowing species are troublesome. The worst villain is the spotted-snake millipede that can damage root crops and potatoes. There's little that can be done about them but as they often exploit damage caused by pests such as slugs, action against these will often limit the damage millipedes can do.



The pea moth caterpillar *Cydia nigricana*. Roger Key/Natural England



The pea and bean weevil *Sitona lineatus*. Roger Key/Natural England

Onion fly

These also attack shallots and leeks. Try growing onions under fleece or fine netting and make sure you grow the crop on rotation. (See also Winter digging, page 25.)

Pea and bean weevil

Avoid using vetch or winter tares (both legumes) as green manures as these will attract the weevils (see Green manures, page 33). Protect the crop with a fine mesh or fleece.

Pea moth

This lays its eggs inside pea flowers so early and late sowings may avoid the times the moth is in flight. Alternatively, cover the flowers in a fine mesh. (See also Winter digging, page 25.)

Pea thrips

These also attack broad beans. Early sowing will help avoid the peak infestations of midsummer. (See also Winter digging, page 25.)

Pollen beetles

While largely harmless they may occasionally damage cauliflower or calabrese so protect these crops with fleece. They often migrate to allotments from nearby agricultural crops, especially fields of oil-seed rape.

Potato cyst eelworm

This can be a real problem for allotment growers as they thrive in cultivated soils and can survive as dormant cysts for up to 10 years. There are two eelworm varieties: golden and white. Some potato varieties are resistant to one or the other, but few to both. Bulky organic soil improvers can encourage predators, and early planting can sometimes secure a crop before an eelworm attack reaches its peak. (See also Companion planting, page 22.)

Raspberry beetles

These also attack tayberry, blackberry and loganberry. Remove mulches in the



Potatoes damaged by slugs. Nigel Cattlin/FLPA

autumn to expose the grubs to predators and gently dig the soil to do the same. After fruiting, remove netting to allow birds to hunt down adults and larvae. Cutting the canes to the base at the end of the year can also help.

Slugs

Many slug species are harmless and do little damage in the garden but a few cause huge problems. The following will help keep them at bay:

- Slugs dislike dry ground so water your plants early in the morning rather than the evening when they will be most active. Damp foliage left overnight is also a breeding ground for fungi – another good reason for morning watering. When planting, water seeds when they're at the bottom of the drill, then cover them with dry earth.
- Plant only sturdy seedlings and protect them with cloches or tall collars (at least 15 cm high) made from old plastic bottles. Do not mulch young plants.
- Hoe the ground between your crops to disturb existing slime trails – there's evidence that other slugs use these tracks as guides to food.
- Dig over the ground in the winter to expose adult slugs and their eggs. (See also Winter digging, page 25.)
- Set baited traps. Use old plastic containers buried in the soil and partly filled with beer, milk or grape

juice. Slugs will be attracted by the smell, crawl into the containers and drown. Ensure that the lip of the trap is raised 2 to 3 cm above the ground surface to avoid trapping beetles and other useful insects. A stick placed in the trap will help trapped beetles escape.

- Leave decoy foods such as comfrey and lettuce leaves near young crops. Put the leaves under a slate or piece of wood to keep them moist. Any slugs that gather to feed on the leaves can then be collected by hand. Plant tasty sacrificial plants such as French marigolds near vulnerable plants, and provide pinhead oatmeal as another sacrificial food. An added advantage of the latter is that birds are equally fond of oatmeal and may polish off your slugs for dessert!
- Create barriers. Many materials have been suggested as slug barriers, including gravel and broken egg shells. Unfortunately this method



Arion rufus, the red slug. Roger Key/Natural England



Snails like artichokes too. Nigel Cattlin/FLPA

relies on the barrier being dry and, even when it is, many slugs can burrow underneath. Laying copper strips or old copper pipes around raised beds can help as these generate a weak electric current that slugs find unpleasant.

- Encourage slug predators, such as frogs, hedgehogs, beetles, centipedes and birds. (See Habitats, page 11.)
- If all else fails – grow plants that slugs don't like! Never use slug pellets – birds and hedgehogs may die if they feed on poisoned slugs.

Snails

What goes for slugs generally goes for their shelled cousins. However, having a bulky shell means that snails have fewer hiding places than slugs. Try creating tempting refuges by leaving

upturned flower-pots lying around. Leave a gap for snails to squeeze in and they will soon find their way inside. When it's convenient these lodgers can be collected and disposed of.

Wireworms

These are the larvae of click beetles. They live in the soil and will attack many crops including potatoes, strawberries, brassicas, beans, beetroot, carrot, lettuce, onion and tomatoes. They dislike disturbance so are usually found on newly cleared ground that was previously under grass. Try cultivating the soil in winter to expose the larvae (see Winter digging, page 25). Lifting root crops in early autumn can also minimise the damage they do.

Woodlice

These are rarely a problem, but they may gnaw the stems of young or weak seedlings at ground level. Avoid mulching very young plants as this gives woodlice cover. Woodlice have very weak jaws and are unable to attack older transplants.



A wire worm *Athous haemorrhoidalis*. Roger Key/Natural England



A pygmy shrew *Sorex minutus* on the look out for its next meal. Roger Key/Natural England

Mammals

You can exclude rabbits with mesh fencing, but there is little defence against moles and these are best tolerated. The most common 'nuisance' mammal is the wood mouse which is notorious for sniffing out buried pea and bean seeds. You can catch mice with humane traps baited with chunks of carrot, apple or potato, then release them at least 2 km away; but it's probably easier to protect seed beds with wire mesh laid on the soil. Alternatively, avoid autumn or early spring sowings (when mice will be at their hungriest) or raise pea and bean seedlings in pots.

Far from all small mammals are pests! Shrews are extremely efficient predators of insects and slugs. They

will particularly appreciate hedges, leaf piles and undisturbed, overgrown areas that give them cover while they hunt.

For more advice on mammals on your plot contact The Mammal Society or Mammals Trust UK, or consult the Natural England booklet *Mammals in your garden*. (See Contacts, page 37.)

Mulches

A mulch is a protective layer of matter spread over the soil to help suppress weeds and reduce the need for watering. Popular mulches include garden compost, mushroom compost, well-rotted manure, bark chippings and grass cuttings (though a thick layer of clippings often congeals into an unpleasant slime!) You can use plastic

for the same purpose but some say that the prolonged use of sheet plastic (as opposed to woven plastic) will sour the soil by depriving it of air.

As well as suppressing weeds some organic mulches will also raise fertility – leaching nutrients into the soil as they decompose. In fact, mulching is the main way in which 'no dig' gardeners improve their soils (see Winter digging, page 25). A mulch will also provide predatory beetles with cover, though a few species prefer more open ground. On the downside, many pests – slugs in particular – will welcome the moist, sheltered conditions that mulching creates. For this reason it's best to avoid mulching young plants.

Green manures

These are sacrificial crops planted on fallow ground, their main purpose being to trap nutrients that might otherwise be leached away by the rain. Like mulches they help to suppress weeds as well as attracting and providing cover for many beneficial insects. Some green manures are legumes and these will also increase soil fertility by fixing nitrogen.

Popular manures include winter tares *Vicia sativa*, a good nitrogen fixer and weed suppressor, and grazing rye *Secale cereale*, reputedly the best manure for over-wintering. Crimson clover *Trifolium incarnatum* is also a good nitrogen fixer and, if left to

flower, is an excellent nectar source for bumblebees. Poached egg plant *Limnanthes douglasii* and phacelia are sometimes grown as weed suppressors that will also attract bees and other beneficial insects.

If you let green manures flower, it is important to cut them down before they set seed. The cut plants can be left on the soil as a mulch, dug into the ground, or added to the compost heap.

Liquid manure

Comfrey is another plant that can be used to increase fertility. It has long roots that tap into stores of nutrients that have leached deep into the soil, the result being that comfrey leaves contain nearly as much nitrogen as farmyard manure and twice as much



A fallow bed sown with Italian rye-grass *Lolium multiflorum*. Vicky Morgan/Natural England

potassium. Some gardeners maintain a patch of comfrey and use its leaves to make a liquid manure. To make your own, steep 1 kg of leaves in 15 litres of water, let the mixture stew under cover



Comfrey makes an excellent liquid manure.
Rosemary Mayer/FLPA

for four weeks, then use undiluted. The same can be done with nettles using 1 kg of leaves for every 10 litres of water. After two weeks the resulting fluid is diluted by adding 10 parts water to 1 part nettle liquid.

City Farms and Community Gardens

Allotments aren't the only places you'll find people growing things in towns and suburbs. Across the country there is a growing network of community gardens, wildlife gardens, city farms and school farms that has developed in response to a lack of access to gardens and green spaces. Many of these projects are members of the Federation of City Farms and Community Gardens, a charity that supports and promotes city farms and community gardens throughout the UK. Currently the Federation represents 59 city farms, nearly 1,000 community gardens, 75 school farms, and a number of community-managed allotments.

Many of these green spaces have been created by community groups on derelict land and, unlike traditional allotments, these sites have little legal protection. However, despite their often unconventional origins these projects usually have the strong support of their local council. If you're involved with a community green space or know of an area that could be developed as one, contact the Federation for their advice (see Contacts, page 37). The Federation is also supporting the work of the Allotments Regeneration Initiative (see History, page 2).



City farms can provide a unique learning experience in urban areas. Federation of City Farms



Heritage seeds

Many vegetable seeds sold today are hybrid varieties that have been bred to grow in a range of soils and climates and still produce high yields – that's the good news. The bad news is that hybrids can be less tolerant of diseases and usually require cossetting with lots of fertilisers and pesticides. By contrast, non-hybrid seeds – sometimes known as 'heritage' or 'heirloom' varieties – are often lighter croppers and bred to thrive only in specific soils and climates. However, they are more robust than hybrids, tend to crop over a longer period (so avoiding gluts) and often keep longer and taste better.

The popularity of high-yielding hybrid varieties has resulted in many seed companies abandoning traditional heritage vegetables as uneconomic, leading to the possibility that these varieties might disappear altogether. This must not happen! Heritage vegetables are an invaluable genetic resource that could be of tremendous importance to future growers and breeders. Steps are being taken to preserve our vanishing vegetables with many organisations establishing seed banks and libraries for heritage varieties. One such is Garden Organic's Heritage Seed Library, an organisation that distributes free seeds to its subscribers (see Contacts, page 37). Some commercial seed companies are also doing their bit and reintroducing

heritage varieties to their catalogues. Why not introduce a few heritage vegetables to your plot? Apart from the fun of trying something different, the interplanting of heritage and hybrid varieties of the same crop could have advantages (see Companion planting, page 22).



Know your onions! Organic wildlife-friendly gardening can produce great results.
Duncan Smith/FLPA

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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