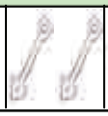
5.1 Raised beds



Season: Any




Why?

With climate change making water shortages a significant possibility in the future, raised beds make it possible to encourage plants that will thrive in drought conditions, and to reduce the amount of water needed for irrigation of plants.

Helpful tips

Your raised bed can be as large or small as you want, but the larger it is, the more soil it will need. This in turn will add extra pressure to the side, so you should consider buying thicker timber for the larger designs.

Tools

Stapler
Carpentry saw
Wheelbarrow
Tape measure
Shovel
Pencil
Trowel
Hammer

Materials

Plants
Bark chip
Timber for the frame
Timber posts for the corners
Liner
Soil
Nails

Health and safety considerations

- Take care and supervise when necessary with tools such as staplers, saws, and hammers.

Instructions

- Raised beds are built in layers, so the height of your bed will be determined by the number of layers you would like. For a 15cm board, 3 high is about right, but if the area is for smaller children you may decide to only have two.
- Cut the boards to the desired length. For example, if you are building a raised bed 1m x 1.5m and 3 high, you will need 6 x 1m boards and 6 x 1.5m boards.
- Begin by attaching one board to one post, making sure the edge is flush. Don't worry about the length of the posts at the moment, as long as they are at least high enough for all the layers.
- Attach the other three sides around the structure, using the other three posts for the corner supports. This will form your main frame (see top right).
- Attach the other boards to the structure. The main timber elements of the raised bed are now complete.

- Cut off the rest of the posts that are sticking up, making sure they are flush with the timber sides. You may also want to sand them down to avoid splinters.

- Now place the raised bed in the position you want it in. Make sure that you are absolutely sure about this, because once the soil has been put in it will become too heavy to move.

- Once in position, staple the liner to the inside. This will prevent unwanted weeds from growing through and will help the bed to retain some of its moisture.

- Now you need to fill the raised bed with soil using the wheelbarrow and the shovel. Fill the raised bed to half way up the top layer of boards.

- You are now ready to plant. Try and select native, drought-tolerant plants for your raised beds, both for the wildlife benefit and so that you will not need to water them as often, if at all.

- Make a small hole large enough for the plant roots and soil to fit and then gently put the plant into the hole.

- Gently push the soil back around the plant and water it. Once this is done you can spread some bark chip or gravel around all of the plants, covering all of the soil. This will help to reduce evaporation and protect the soil and roots from the elements.

- Your raised bed is now complete. However, the *real* value of a raised bed is in what you choose to plant in it. Don't forget that raised beds are perfect for growing vegetables, either alongside or as well as other plants.

- There many different designs you can do, including attaching planks horizontally to the top to create benches, or fixing several raised beds together. You can also play around with the plants, choosing blue flowered plants for one raised bed and red for another.

For details and advice on which species of plants to use, and where to source local materials and contractors, contact your local Countryside Management Partnership.

For further reading and information please see *Section 7.4 Structures Links*.

5.2 Pond dipping platform



Season: Any


Why?

A dipping platform is an excellent way of allowing controlled access to your pond and the wildlife within, without trampling down the slippery sides of the pond.

Helpful tips

The platform can be any size you deem appropriate and will naturally be determined by the size of your pond. Take into account how many people will be using it at any one time.

Tools

Hammer
Carpentry Saw
Shuv holers
Tape Measure
Spade
Tamper

Materials

Timber posts
Coach bolts
Decking boards
Coach screws
Hand Rails
Nails
Support sleepers

Health and safety considerations

- Please consult with an expert if you plan to alter the design in any way.
- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.
- Take care and supervise when necessary with tools such as staplers, saws, and hammers. Wear protective boots (with steel toe cap) when digging holes.

Instructions

- Dig the posts into the ground. These need to be carefully measured out so that they are all in line, forming a grid pattern. The front line should be as close to the pond as possible without damaging the liner (an additional front line will be added to overhang the pond).
- The posts on the outside need to be considerably longer than the posts on the inside as they will have the hand rails attached to them.
- Once this is done, you need to attach the sleeper supports. These are the pieces of timber that will have the decking boards screwed into them. Make sure they are in line with each other and in line with the sleeper supports you install to the other posts.
- The next step is to attach some sleeper supports going in the opposite direction, attaching the sections you have already made and extending over the pond. These need to be solidly attached with coach screws and coach bolts. The final overhang section can then be made in the same way as the other sections, attaching it to the sleeper supports that are overhanging the pond.

- Now you can attach the decking boards to the sleeper supports. First make sure that all of the posts in the middle of the platform are cut down to the level of the supports, otherwise the decking boards will not fit flush to the sleepers. Make sure you screw them all down firmly and leave a slight gap in between each board to allow water to seep through and air to circulate underneath the platform.

For details and advice where to source local materials and contractors, contact your local Countryside Management Partnership.

Creating Areas for Nature — *5. Structures*

5.3 Bird hide

Season: Any

Why?

A bird hide will mean that you can watch the wildlife that you have attracted, with minimal disturbance and in comfort.

Helpful tips

You could plant a species of climbing plant such as clematis or honeysuckle on the other side of the bird hide to further disguise it from wildlife and encourage butterflies and invertebrates. Install some benches to sit on whilst watching for birds.

Tools

Spades
Tampers
Hammers
Spirit level
Saw
Tape Measure
Shuv holers

Materials

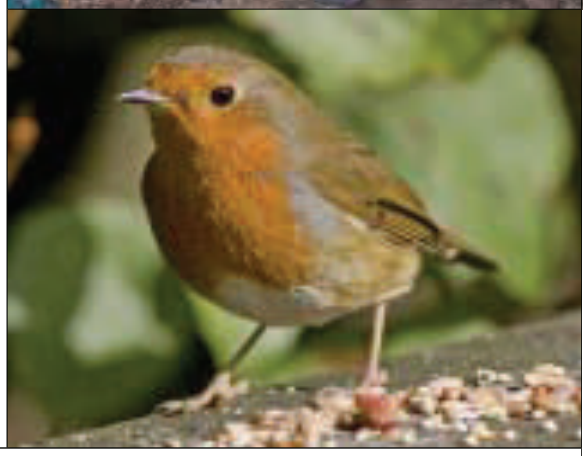
Timber posts (desired height of bird hide (+0.5m) x 75mm x 75mm)
Timber planks (Various lengths x 150mm x 25mm)
Nails (3")
String

Health and safety considerations

- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.
- Wear protective boots with steel toe caps when digging holes, and take care with sharp tools.

Instructions

- Decide where the bird hide is going to be placed, how long it will be and how high. This will then give you the amount of timber that you will need. Make sure that you have enough posts for every 1m of the length of the bird hide plus one on either end for support.
- Measure where each of your posts will be located (1m apart) and dig the first and last hole to a depth of 0.5m. Place the posts in the holes and fill them with soil, tamping the soil in to firm it up as you go. Make sure that someone is holding a spirit level on the post to keep it straight at all times.
- Run a length of sting from one post to the other and pull it tight. This is your line for the other posts to go in at. Dig each of the other holes also to a depth of 0.5m and repeat as before.
- Once you have all of your posts firmed in and in a line, you can start to nail the boards onto the posts. Remember that you need to keep gaps in the screen to see through, so stagger the lengths of board. Keep checking the row of boards with a spirit level to make sure it is straight. You will need to cut some of the boards to make sure they fit to the posts.



For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.4 Benches

Season: Any

Why?

Benches allow classes or meetings to be held outside and thus complement areas that have been created to encourage wildlife. They are also very easy to build.

Helpful tips

Recycled plastic can be used as an alternative to timber. Although it is usually more expensive than wood, it is resistant to vandalism, fire and rot, and does not chip or splinter.

Tools

Drill
Spades
Tamper
Spirit Level
Hammer
Saw

Materials

Timber seat (1.5m x 200mm x 50mm)
Timber posts (height of bench + 0.5m x 50mm x 50mm)
Nails
Screws

Health and safety considerations

- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.
- Wear protective boots with steel toe caps when digging holes, and take care with sharp tools.

Instructions

- Decide on the location of your bench and then dig two holes for the legs. The distance between the legs depends on the size of the seat, but for a 1.5m seat you can dig the holes approximately 1.2m apart. Dig the holes to at least 0.5m and place the legs into the holes. Before you go any further, place the seat loosely on top of the legs and check the height. Think about the age of the people using the bench and decide if it is the right height. If it is too high then dig the holes deeper, too low then put a small amount of earth back in the holes.
- Once you have your holes to the desired depth, place one leg in one of the holes, fill with soil and tamp it in as you go to make sure it is firm. Remember to keep checking the level of the leg with your spirit level repeatedly as you go.
- Once one leg is in place, position the second leg in the hole with the seat over both of them and check the level with the spirit level. If you're happy that everything is straight, repeat the process with the second leg, making sure it is in line with the first.
- Now that you have both of your legs in the ground, position your seat over the top, mark where the centre of the legs will be and drill the hole through the seat and leg.

- Then simply put in the coach screw, repeat with the second leg and you have your bench, ready to use!
- It is also advisable to shave off the edges of the seat to remove splinters and sharp corners/edges.
- Now you know how to build a bench, consider the different arrangements and designs that you could do. Perhaps make one long bench or several really short ones. Remember to add in more legs if you are doing a particularly long bench.

As an alternative to benches, mushroom stools (see right) can be carved out of wood stumps and painted to great effect. Local tree surgeons and wood suppliers should be able to help; if in doubt, contact your Countryside Management Partnership.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.5 Pergolas


Season: Any

Why?

A pergola will cast shade in sunny areas. It does its bit for combating climate change and water shortages by reducing the need for watering and encouraging climbing plants. It also makes a very pleasant, shady seating area!

Helpful tips

Pergolas can be quite tricky to construct, but can be bought in kit form, usually with instructions on their assembly. Make sure that instructions are included before purchasing.
Throughout the assembly of the pergola, make sure that you are continually checking the levels are straight by using a spirit level.

Tools

Hammer
Ladder
Saw
Spade
Tamper
Spirit level
Drill

Materials

Screws
Nails (3” and 4”)
Pergola Kit

Health and safety considerations

- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.
- Wear protective boots with steel toe caps when digging holes, and take care with sharp tools.
- When climbing the ladder ensure that it is either tied to something firm or that someone is holding it.

Instructions

- Pergolas come in different sizes and shapes, but for the purposes of this guide it will be assumed that it is a double pergola.
- Decide on the location of your pergola. Pergolas are usually created to cast shade in areas without any.
- Measure the total length of one side of the pergola on the ground and mark where each of the posts will be situated, then dig the holes for the two end posts. The depth of the holes depends on the height you would like the pergola to be, but 0.5m is the minimum.
- Place the posts in the holes and fill the earth back in, tamping it down as you go to make sure it is firm. Continually check that the posts are straight whilst tamping them into the ground.
- Once the first two posts are securely in place, continue with the next two in the same way as the first. Double check the distance between the posts you have just done and the holes you are about to dig.

- Continue with this method until all of the posts are securely in the ground, leaving you with two straight rows of posts at the same height.
- You can now attach the boards that run either side of the posts, sandwiching the tops. Measure the width of the top of the posts, mark the half way point and draw a vertical line. This is the point where two separate boards should meet. These need to be nailed or screwed into place, with at least two nails/screws at each join. Use the spirit level throughout this part to make sure everything is straight.
- Once this is complete, you can put the cross-beams in place. These fit over the top of the side boards you have just done and will cross the pergola in line with each post and half way between (varies with the design).
- There are several smaller pieces of timber that support the structure. These go in next and are simply nailed or screwed in place. The thicker pieces fit between the side boards that have sandwiched the top of the posts. Make sure they are flush with the top of the pergola before fixing.
- The smaller supports attach from the cross-beams to the posts.
- The pergola is now almost complete. If you would like to have climbing plants growing up the side of your pergola then it would be a good idea to fix at least two trellis panels in between some of the posts. Make sure you buy the right size for the gap you have available and then simply screw or nail them into place. Make sure you leave some gap at the bottom to prevent the trellis becoming damp.
- Once these are in place and secure, you can plant some climbing plants such as clematis (see picture right), honeysuckle (see previous page) or hops on the outside. These will grow to cover the trellis and block out some of the sunlight, so plan carefully where you would like them.

For details and advice on which species of plants to use, and where to source local materials and contractors, contact your local Countryside Management Partnership.

5.6 Living structures


Season: Oct.– March


Why?

By growing willow from un-rooted cuttings or whips into guided shapes and designs, a living structure can be created to provide shadow as well as an attractive food source for insects and birds. The willow can be trained into any shape you like, such as a tunnel, dome or arch and can then support other climbing plants.

Helpful tips

Choose a sunny, un-shaded spot for your structure, away from other plant roots and any kind of water pipes (as the willow will be attracted by the water and could grow into the pipes).
Be aware that living structures take a few years to become properly established and thus are a slower alternative to wooden pergolas.
Salix viminalis is most suitable type of willow.

Tools

Crow bar
Gardening twine or rope
Tape Measure
Step ladders
Mulch mat or equivalent (cardboard etc.)
Rubber ties

Materials

Willow rods

Health and safety considerations

- Use a step ladder for hard-to-reach, high-up sections. Make sure that the ladder is stable; ideally, get someone to hold it for you.

Instructions

- Use pictures of other willow structures to plan your design and decide how many rods you will need. Your local supplier will be able to help you with quantities for specific projects (contact your CMP for suppliers). The simplest design is a tepee, for which you plant a circle and tie the tops together. Domes or archways are a bit more complicated.
- Decide where to site the structure (see helpful tips) and mow the area.
- Mark out the shape of the arch using a piece of gardening twine or rope and use a metal spike (crowbar) to make holes about 30cm deep for the main rods (unless the ground is soft, in which case you will be able to push them straight in). If you are making a structure with a curved roof, the holes will need to be angled to allow for this. Keep the holes about 20cm apart.
- Choose the sturdiest rods and place one in each hole. Use the natural bend in the rod to curve your structure in the direction you want. Tread in the earth around each rod (or hammer it in) to get rid of air pockets and ensure that the rod is securely in. You can use the gardening twine to tie the tops together for extra security.

- Now interweave the other rods, creating a lattice effect. Twine or rubber ties can be used for extra firmness of hold and should, eventually, result in the willow stems grafting together through the pressure.
- Cover the area with a mulch mat of weed-suppressant fabric (even cardboard will do) to prevent grass from out-competing the willow in the summer.
- For any structure remember that vertical whips tend to sprout fresh growth only from the top, whereas diagonally planted whips should sprout along the full length, giving a denser growth to the structure.
- Willow will start to sprout new growth in March/April. The new stems can be trimmed back or woven into the structure as you wish. You can use trimmings for other willow projects, as plant supports, or simply stack them up in a habitat pile.

For details and advice on which species of plants to use, and where to source local materials and contractors, contact your local Countryside Management Partnership.

For further reading and information please see *Section 7.4 Structures Links*.

5.7 Paths

Season: Any

Why?

Paths not only link a site but also provide an all-weather surface and avoid trampling of surroundings that are valuable for wildlife.

Helpful tips

Bark chip will need to be topped up every year to replace the quantity that rots down or dries out.

Tools

Spade/turf cutter
Staple gun
Wheel barrow
Shovel
Rake
Mell
Hammer
Tape measure
Mattock

Materials

Gravel/bark chip/stepping stones
Staples
Nails
Wooden stakes
Edging boards
Weed-suppressing liner

Health and safety considerations

- Wear steel toe-capped boots when digging and using tools such as a mell and mattock.
- Take care not to use swinging tools with any close bystanders.
- Careful handling of heavy loads is essential to prevent back injury.

Instructions

There are various types of path to choose from: bark chip, gravel, stepping stone and mown.

- Mown paths are the simplest to create, by just cutting a path through the site and making sure it is regularly cut through the spring/summer to keep the grass from taking over. You can also vary the route of the path from year to year, allowing grass and wildflowers to recover from the previous season's cut. Always make sure that the grass cuttings are raked up and put into a compost pile. This will stop their nutrients from entering the soil, which would negatively affect the diversity of plants growing there. The downsides to this type of path are that it can only be used in dry weather and will damage the soil if heavily used.
- Bark Chip paths and gravel paths are very similar in construction. The first step is to cut out the turf from the desired route, piling up the turf to one side for later use. You can do this with a spade, but if you have enough funds to hire a turf cutter then this will save you a lot of time and hard work. Remove the turf to the desired width of the path (at least 1m is recommended).

- Once the whole path has been cleared of turf, use the mattock to dig the path down to the desired depth (at least 10cm). Most of this depth will have already been cleared when the turf was taken off. Some of the soil can be used again later, but most of it will not be reused on the path, but it could be used in a planting area or raised bed.
- Put the edging boards all the way along the length on both sides. Knock the stakes into the ground with the mell through the edge of the turf and nail the boards to the inside. This will mean that the stakes are on the outside and not a trip hazard in the path, but also ensure that the board is flush against the turf edge. Use excess soil to fill in any gaps between the boards and the turf.
- Saw off the ends of the stakes that are sticking up above the boards. Try and cut them at an angle to allow rainwater to run off.
- Now you need to staple a liner into the path, attaching it to the boards on either side. This will prevent weeds from growing through and stop the gravel/bark chip from sinking into the soil.
- Fill the path with either gravel or bark chip. Finally, use the turf from the path to put along the edges of the edging boards that are sticking out. This will help to cover the edges and remove any trip hazard.

The fourth type of path is a stepping stone path. This is quite easy to create and shouldn't take very long to do.

- Mark out where you want the path to go and lay the stepping stones down where you want them. Dig around the slabs, lift them clear and then remove the turf. Make sure the depth of the hole is more than the depth of the slab, then put a couple of spades of sand into the hole. This will help to bed the slab in and prevent it from rocking. Put the slab back into place and manoeuvre it until there is no movement when you put weight on it.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.8 Boardwalks

Season: Any

Why?

Boardwalks are great for providing mud-free access to your nature area, and will protect it from trampling at the same time. They also allow wheelchair access to sites that might otherwise be inaccessible.

Helpful tips

You may prefer to hire a contractor to install the boardwalk, but building your own will allow a high level of involvement and satisfaction with the finished result.

Tools

Carpentry saw
Tape measure
Spade
Tamper
Hammer
Spirit level

Materials

Timber stobs (stakes) (e.g. 100mm x 100mm x 1.4m (200mm point on one end))
Timber decking planks (e.g. 50mm x 38mm x 1.4m)
Timber stringers (supporting planks)
(e.g. 200mm x 100mm x 2.4m)
Nails

Health and safety considerations

- Please consult with an expert if you plan to alter the design in any way.
- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.
- Take care and supervise when necessary with tools such as staplers, saws, and hammers. Wear protective boots (with steel toe cap) when digging holes.

Instructions

- Determine the desired length and width of your boardwalk by considering the area that you wish to cover, how many people use the boardwalk at any one time, and whether you require wheelchair and pushchair access. Boardwalk width should be at least 1200 mm to allow easy access for wheelchairs and pushchairs; a width of 1700mm will accommodate two-way traffic.
- Attach a plank of wood (slightly wider than the eventual width of the boardwalk) to either side of two stobs. The stobs should be sandwiched between the two planks of wood and will form an H-shaped section (see Fig. 1).
- You will need to repeat this until you have enough “H-sections” that they can be placed a metre apart. The “H-sections” will from the base support of the boardwalk, and keep it level.
- Place the “H-sections” in the ground by digging holes deep enough that the horizontal planks will be level with the ground. Use the spirit level to make sure that the horizontal planks are lying completely level and tamp the soil down around the stobs when you are satisfied. Once all of your “H-sections” are in the ground, you will be able to clearly see the shape your boardwalk is going to take.

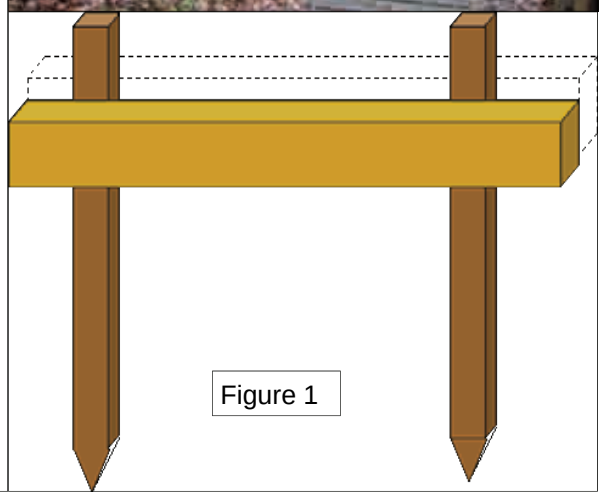


Figure 1

- Attach the stringers so that they rest on the top of the “H-sections”. Lay them against the inside of the stobs and secure with nails or coach bolts.
- The decking planks can now be laid across the top of the stringers and attached. Spacing between boards should be large enough to permit drainage of surface water and a wider gap between each plank, such as 30-35mm, gives greater grip for shoes.
- With the main body of the boardwalk complete, it is time to think about how slippy the surface is. Although the gaps in between each plank should provide a certain level of drainage, if you are in any doubt about the safety of the boardwalk, it would be wise take some sort of measures to prevent people slipping. Chicken wire can be stapled to the surface of the boardwalk, as can plastic-covered wire netting known as “Netlon”. Alternatively, tar can be painted on to the wood and then spread with grit as necessary.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.9 Fencing

Season: Any

Why?

Fencing is essential for controlling access to potentially dangerous areas, such as ponds, and can also be an attractive addition to any site. Many types of fencing are a traditional part of the landscape and have been constructed the same way for hundreds of years.

Helpful tips

There are numerous different types of fencing available, using all sorts of materials including wood, high-tensile wire and netting. The style of fencing you decide on will depend on your budget and what the fence is to be used for. Also, take into account the landscape you will be building on and avoid styles of fencing that are unsympathetic to the view. Details on each type of fencing can be found on the BTCV website (see links).

Tools

Spades
Tampers
Crowbar
Shuv-holers
Hammers

Materials

Nails
Post mix (optional)
Timber posts (mortised)
Timber rails (tapered)

Health and safety considerations

- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.
- Take care and supervise when necessary with tools such as saws, and hammers.
- Heavy posts must be handled with care to avoid back injuries.
- Wear steel toe-capped boots when digging holes and using crow bars.

Instructions

The fencing detailed here is a traditional form known as "post and rail" and is notable for its durability and attractive appearance, as well as the fact that is does not necessitate potentially sharp materials such as wire.

- The wood can be purchased pre-prepared for post and rail fencing. It will generally have been "seasoned" or treated with preservative, and come with ready-cut mortises (the holes that the rails will fit into).
- When calculating how many posts and rails you will need, bear in mind that the posts should be placed 6 feet apart from each other and that 3 rails will be needed between each section.
- To begin, put in your first post. Dig the hole wide enough to fit in the post plus the tamper, and deep enough so that roughly one third of the post will be buried. The shuv-holers can be used once you get too deep to be able to use the spade to remove soil.

- Once the post has been put in the hole and you are satisfied that it is vertical and will be the right height, back-fill the hole with the soil you removed, tamping it down bit by bit as you go.
- You could use post mix to fill the post holes, or you could choose merely to use the soil you removed. Post mix is a fast-setting concrete and can be bought from most building suppliers and DIY stores. Allow roughly half a bag of mix per post hole.
- The first set of rails can now be placed into the mortises (see fig. 1). For extra stability, secure the first set of rails with nails; you can also saw off any bits that stick out the other side of the holes for neatness.
- Now comes the tricky bit! Using the rails as a guide, dig the next hole and fit the second post so that the rails fit into the mortises and that post is vertical and at the correct height. Make sure that the hole is at least 3 inches wider than the post to allow room for manoeuvre when fitting it to the rails.
- Continue the process, section by section, until the fence is complete. It is important not to put all the posts in first and then add the rails, so that each post will be correctly positioned.
- If you need the fence to keep small animals such as lambs or rabbits in (or out), netting can be stapled to the bottom rung or two of the fence as required.

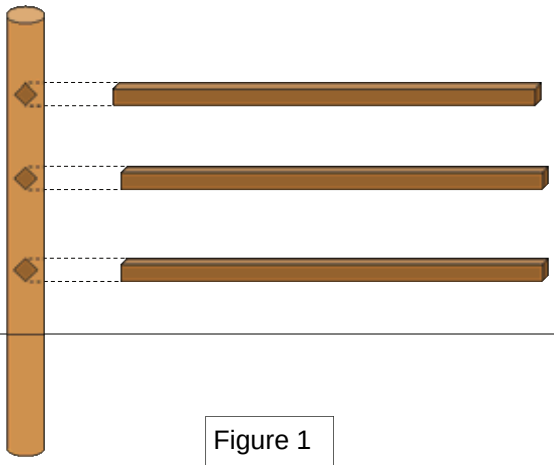


Figure 1

Alternatives to fencing

- Hedge laying is a traditional way of managing hedges to create an impenetrable boundary (see right) . A hedge left to grow unchecked will eventually become a line of trees and of no use for retaining livestock, thus the following method was used before the invention of barbed wire! Living hedge trees are partially cut through the stem, close to ground, and bent over to continue growth. The result is a thicker hedge that is often held in place by stakes and woven hazel fencing (until they rot down and the hedge takes over). More detail is available on the BTCV website—see *Section 7.4 Structures Links.*
- Dead hedging involves weaving cut wood through timber stakes, traditionally to keep deer out of areas where they would eat young tree shoots. See *Section 7.4 Structures Links* for more information.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.10 Gates

Season: Any

Why?

Gates go hand-in-hand with fencing to allow controlled access in and out of a potentially dangerous area and can be bought in kit form for fitting yourself.

Helpful tips

As with fencing, there are several different types and style of gates available, with full details on the BTCV website (see links). The type and width of gate you choose will depend on whether it will be used exclusively by pedestrians, or whether vehicles will require access.

Tools

Spade
Crowbar
Shuv-holers
Drill
Club hammer

Materials

Gate kit
Screws

Health and safety considerations

- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.
- Take care and supervise when necessary with tools such as saws, and hammers.
- Heavy posts must be handled with care to avoid back injuries.
- Wear steel toe-capped boots when digging holes and using crow bars.

Instructions

This page deals with the fitting of a wooden, pedestrian gate with latch.

- Choose the right site for your gate, avoiding particularly muddy or sloping areas. The gate must always be hung on posts that are separate from your fence, to avoid any strain and damage to the fence.
- The gate kit will come in the form of two wooden posts, a wooden gate, and various metallic fixings (See Fig. 1)
- Decide how you are going to hang the gate—between the posts or behind them. Hanging a gate between the posts will allow the gate to swing both ways, but leaves the metal fixings more exposed to damage. Hanging the gate behind the posts will allow the gate to open 180 degrees in one direction, and leave the metal fixings more protected.
- Fit the top and bottom rides onto the gate so that they are at the same level as the top and bottom rails.

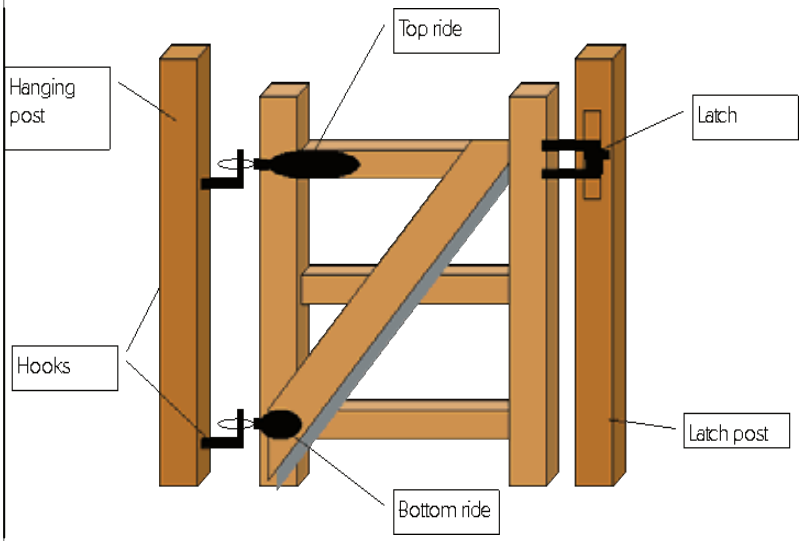


Figure 1.

- Now dig a hole for the hanging post, using your spade and shuv-holers. It should be at least 1030mm deep.
- Put the post in. Ensure it is completely vertical and now backfill the hole, tamping as you go.
- To fit the lower hook onto the post, measure the distance from the bottom of gate to the eye (that will fit onto the hook) and add 50mm for ground clearance (see below).
- Drill a hole at this point in the post that is slightly smaller and shorter than the size of the hook, then drive the hook in with a club hammer. Make sure there will be enough room between the hook and the gate for the eye to fit over it. Using the gate as a guide, measure, mark and drill the position of the top hook onto the post and hammer in as before.
- Now you can hang the gate onto the hanging post.
- Next, mark out the position for your shutting post, dig the hole and set the post in, again checking that it is standing completely vertical. Backfill the hole as before, tamping as you go.
- Finally, fit the latch to the gate and latch post.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.11 Sensory gardens

Capture people's imagination by creating a sensory garden that will appeal to their sight, smell, touch and hearing. The following ideas, adapted to suit your particular space, will ensure that your nature area is not only a haven for wildlife, but a stimulating experience for human visitors.

Sight

- Different coloured plants can be used to great effect—you could have separate sections for each colour you choose (for example, a yellow section, a red one and a blue one).
- Varying heights of plants will also be visually stimulating.
- Use a pergola or some raised beds to add more varied heights.
- Wooden sculptures, signs and benches are all visually interesting additions that can enhance a garden and people's enjoyment of it.

Touch

- Different textures of path will create varying sensations under foot; you could have one section made out of gravel and another of bark chip, for example, or some stepping stones.
- A rockery, using varying sizes and types of bolder and rock, will be pleasing to the touch.
- Choose plants for your sensory garden that have different types of bark, stem and leaf. Some will be smooth, others rough to the touch.
- A "feely box" can be installed, which contains various natural items inside for people to feel and guess what they are.

Sound

- Grasses and tall plants will make a lovely whispering sound when the wind blows through them.
- Wind chimes could be hung.
- A fountain would be a delightful addition, with its relaxing splashing noises.
- A "rattle box" can be installed, with various items, such as seeds, inside that rattle when it is

Smell

- Choose plants with a strong fragrance; a herb garden will provide many different smells.
- A compost bin (for recycling all of your natural waste) will not only make your nature area more sustainable, but provide some interesting smells of its own!

Additional hints

- The Natural History Museum website has a plant finder which locates plants native to your local area (see *Section 7.4 Structures Links*).
- Powdery plants will often irritate the skin.
- Give your plants space to grow; be careful not to plant too much.
- Too much can overpower people's senses.
- Further information can be found with The Sensory Trust (see *Section 7.4 Structures Links*).

For details and advice on which species of plants to use, and where to source local materials and contractors, contact your local Countryside Management Partnership.

5.12 Homes for animals, birds and invertebrates

i. Stag beetle habitats

Season: Any

Why?

Britain's largest insect is becoming increasingly rare due to a loss of suitable habitat for its larvae, and has already become extinct in several parts of Europe. The larvae spend 3-6 years living in and eating moist, rotting wood and roots before emerging in early summer as adults that measure about 5cm in length. You can help to preserve the beetle by creating a habitat for them with very little effort and expense.

Helpful tips

A log pile will provide a suitable habitat, but you can vastly improve on its suitability for stag beetles by burying the wood, as detailed below.

Tools

Spades
Shuv-holers

Materials

Untreated lengths of dead wood.

Health and safety considerations

- Wear steel toe-capped boots when digging holes
- Take care to avoid back strain when handling heavy pieces of timber
- Before digging any holes, please consult a map of services in the area to avoid the danger of hitting things such as electricity cables or pipes.

Instructions

- Decide where to site the habitat: somewhere where the ground isn't too hard or dry is ideal.
- Dig a hole for each piece of dead wood that you have, and bury the ends of wood in the holes so that they appear as dead wood rising vertically from the earth (see top picture, which features a giant stag beetle sculpture).
- That's it! A perfect habitat for the stag beetle.

Another, less visual option is to bury a bucket full of wood chips in the ground.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.12 Homes for animals, birds and invertebrates

ii. Bird boxes

Season: Autumn/ Winter

Why?

As well as providing additional habitat for birds around nesting time, bird boxes provide the perfect opportunity for watching and learning about birds as they raise their chicks.

Helpful tips

Any timber will do, as long is it is not pressure treated, as the chemicals can harm birds.
Try to clean out the box every year (not during nesting, of course!); boiling water will remove parasites.

Tools

Carpentry saw
Hammer
Drill with flat wood bits (to make entrance hole)

Materials

Timber, about 15mm thick
Galvanised nails or screws

Health and safety considerations

- Use drills and hammers with care, and supervise when necessary.
- When hanging your box make sure that the ladder is stable, preferably with someone holding it.

Instructions

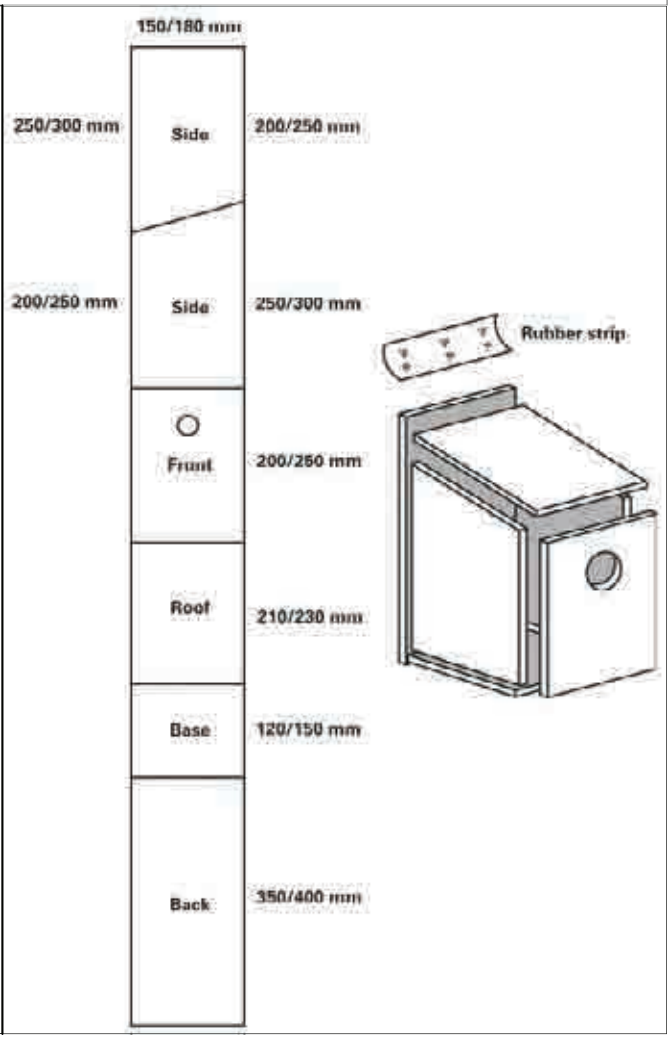
A bird box does not have to be built to a precise set of measurements; after all, the natural nooks and crannies that birds use come in all shapes and sizes. Different sizes of box will attract different types of bird. The box design detailed here comes from the RSPB and contains measurements for both a large (for starlings and great spotted woodpeckers) and small box (for all others). Use only the first or second figure throughout.

- Cut the timber to size, according to the diagram (see right).
- Make the entrance hole using a flat wood drill bit. Choose the size of hole according to which birds you would like to attract:

- 25mm: blue, coal and marsh tits
- 28mm: great tits, tree sparrows, pied flycatchers
- 32mm: house sparrows and nuthatches
- 45mm: starlings

Make sure the holes is at least 125mm from the floor of the box so that babies cannot fall out.

- Nail or screw the pieces together, as shown.
- Drill some drainage holes into the base of the box.



- Use a flap of leather or rubber (an old piece of bicycle inner tube is perfect) to hinge the roof on. Any material that will not rust will do.
- Hang the box about 2m or 3m above ground level. Avoid any obvious obstructions in front of the box to allow the birds easy access.
- Install bird boxes in trees or on walls that are sheltered from prevailing winds and hot sun—this can be north-east, east or south-east facing.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.12 Homes for animals, birds and invertebrates

iii. Bat boxes

Season: Feb.— March

Why?

All bat species are considered nationally important and their numbers are declining. The number of roosting sites for bats is in decline due to changes in our house designs and habitat loss and bats are in need of places to roost during the summer months.

Helpful tips

Boxes are best sited as high as possible in a sheltered, wind-free position, exposed to the sun for part of the day. They can be fitted to walls, other flat surfaces or trees. Make sure that there are no major obstructions in front of the box so that the bats can easily fly in. For best results, site several boxes close to one another, facing in different directions.

Tools

Carpentry saw
Hammer
Pencil

Materials

A length of untreated, rough-sawn timber
Nails
Wire or bicycle inner tubes for hanging the box

Health and safety considerations

- Use hammers and saws with care, and supervise when necessary.
- When hanging your box make sure that the ladder is stable, preferably with someone holding it.

Instructions

The Bat Conservation Trust has put together the following design.

- Measure and cut the plank to the following lengths:

1 at 460mm x 200mm x 20mm
1 at 360mm x 200mm x 20mm
1 at 260mm x 200mm x 20mm
1 at 160mm x 250mm x 20mm (roof)

- Measure and cut the batons to the following sizes:

2 at 200mm x 20mm x 20mm
2 at 360mm x 20mm x 20mm
2 at 260mm x 20mm x 20mm

- Nail the pieces together according to the picture (see right). Remember to blunt the end of your nail with the hammer before hammering it in to prevent splitting the wood. (If splitting becomes a problem, consider pre-drilling the holes.)
- Hang the box as high as possible.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.12 Homes for animals, birds and invertebrates

v. Bee houses

Season: Any

Why?

It's a little-known fact that most bees are solitary, and live out their lives using tiny nest cells on their own. There are in fact around 250 species of solitary bee in Britain. Bees are vital for the pollination of plants, and indeed some have very specialised relationships with one particular plant species. Up to a quarter of native bees are now on the endangered list because modern farming methods have destroyed much of their natural habitat.

Helpful tips

Only the female solitary bee stings; it is a very feeble sting at that, and only comes if the bee is roughly handled.
Before hammering in nails, blunt them slightly by hammering the pointy end once or twice; this will prevent your wood from splitting.
If you notice birds pecking at the entrances looking for larvae, fix some chicken wire across the front of the bee house. It will not deter the bees.

Tools

Hammer
Drill
Carpentry saw
Secateurs

Materials

Nails
Timber plank approx 200mm x 400mm
Half of a small log (birch works well)
Bamboo canes

Health and safety considerations

- Supervise use of hand tools
- It's good idea to use gloves when using the secateurs, as the bamboo can be rather tough to cut

Instructions

- Using the saw, cut the plank of timber into two pieces.
- Use the drill to drill some holes (varying sizes works best) into either end of the log.
- Nail the two sections of timber onto the top of the log so that it forms a tent shape over the top (see picture).
- Now use the secateurs to snip the bamboo canes into enough lengths to fill the gap with. The canes should be roughly the same length as the bee house.
- Stuff the canes into the gap.
- Position the house in the full sunlight, facing south or south-east—the bees are cold blooded and rely on the sun's heat to warm them up in the morning. It should be least 1 metre above ground level and with no vegetation obscuring the entrances.

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.

5.12 Homes for animals, birds and invertebrates

iv. Other invertebrate homes

Season: Any

Why?

Invertebrates such as ladybirds and lacewings tend not to survive the coldest months of the year because of a lack of suitable nooks and crannies in which to over-winter. They are important species to encourage in a green space because they eat ahpids and therefore keep plants healthy, reducing the need for chemicals to control pests.

Helpful tips

Waste materials from many of the various structures and habitats mentioned in this pack need not be thrown away. Keep them to one side and use whatever is left over to build a minibeast habitat.

Tools

Drill

Materials

Whatever is lying in the shed! Materials such as wood, straw, bamboo canes, flower pots, pallets, carpet and bricks will all prove useful.

Health and safety considerations

- Wear protective gloves to avoid splinters and cuts when handling pallets and rough material

Instructions

There are various easy ways to create the ideal winter home for ladybirds and lacewings (see picture).

1. One technique is to simply drill a series of different sized holes into a piece of wood, and attach it to a fence or tree (if you leave it on the ground it might flood in the rain!) with a piece of string.

2. Alternatively, collect as many different-sized hollow stems of plants as you can. Plants such as bamboo cane, reeds or straws are perfect. Now stuff them into an old flowerpot, and you have a perfect bug home.

3. For the ultimate bug home, build a “minibeast hotel” (see bottom right picture). Stack some old pallets on top of one another and stuff them full of debris such as bricks, old carpet, straw, cardboard, bamboo canes—anything you can get your hands on!

For details and advice on where to source local materials and contractors, contact your local Countryside Management Partnership.