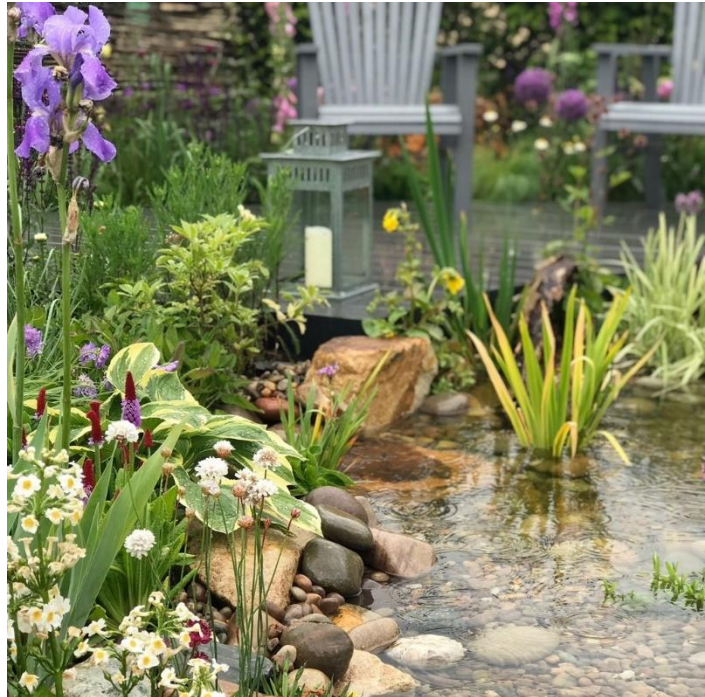


How to: Create and maintain ponds for wildlife



Photos: Helen Bostock

There is nothing better you can do for your garden wildlife (except adding fully mature trees which isn't possible!) than adding a pond. Ponds introduce a whole new ecosystem with its own fascinating species, as well as being a great asset for much of your other garden wildlife. If you haven't space for a proper pond, consider other ways to bring water into your garden such as a pond in a pot.

Target species:

Frogs, toads and newts, dragonflies and damselflies plus literally hundreds of less spectacular invertebrates. Ponds will also be used by birds for drinking and bathing, and even in the case of herons for hunting prey.

How to do it

Creating a pond can be a significant undertaking, so be clear at the outset how much time and energy you can devote to this task. We have several webpages on garden ponds, starting with this [introduction](#). There is a very [detailed practical guide](#) available which provides lots more information than we give in outline below.

Types of pond

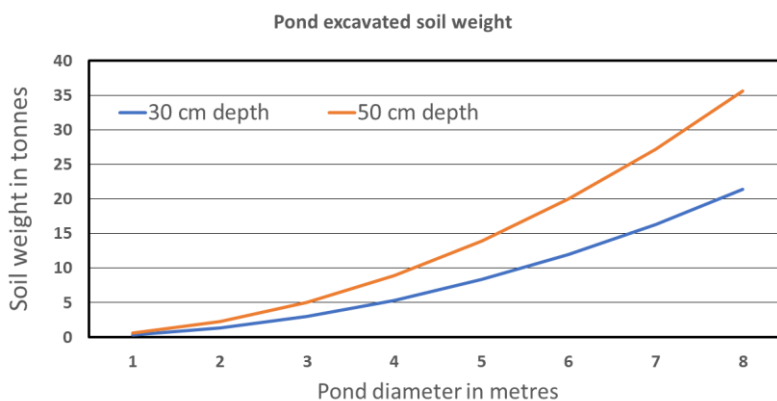
- Formal decorative ponds are poor for wildlife. They are often too deep with vertical sides that limit plant growth and don't let animals in and out. They are usually rectangular, and although shape doesn't matter, wildlife ponds look much better rounded or irregular in outline.
- Ponds for fish enthusiasts aren't good for wildlife which the fish eat, and fish ponds need filters which remove all the plankton essential to a healthy ecology. We are limiting this guide to wildlife ponds.
- You can make raised ponds supported by wood or stone structures. While these don't involve digging they are not easily accessible by wildlife, however they are a safe choice for dipping ponds for children

Where to put the pond

- Bear in mind where you will get the water to fill the pond, so close to a roof down pipe for rainwater would be ideal
- You must make sure that when you dig you won't hit gas, water or sewage pipes or even buried electric cables. Usually they come through front not back gardens but check to see where the services enter your house.
- Don't put a pond too close to boundaries, and you will need to walk around it to manage and enjoy) the habitat. Ideally the pond should be partly in full sun and partly in semi-shade to suit all residents
- Don't put a pond right under a tree because you will damage roots and always be fishing out dead leaves.
- If on a slope, make sure run-off from fertilised beds or veg plots will not flow into the pond since excess nutrients are very damaging.

Designing the pond

- Mark out the pond outline before you start and check for levels - you can build up one side if necessary using extracted soil.



Don't dig a deep pond or make it too big! 30cm is deep enough, 50cm may be better for amphibians. The weight of soil goes up as the square of diameter, so for a pond of 30cm depth, a one metre pond generates roughly 300kg of soil, but one 4m across produces over 5 tons to remove and find a home for.

- You could use some excavated soil to make raised beds or a mound for soil nesting bees.
- Most invertebrate life is in the top 3cm of water among the plant stem and roots, so have plenty of shallow planting space (10cm depth or less) at the edges.
- Make sure animals can get in and out with a shallow "beach" area made from pebbles or gravel
- If you would like a bog garden, it is sensible to build this into your pond design now rather than adding one later.

Lining the pond

- Don't make false economies, having dug that big hole you should put in a liner that will last!
- Small ponds can use a sunken washing-up bowl, or you can buy pre-formed plastic or fibreglass liners, which come in sizes between about 80cm to 2m long. The bigger ones are pricey and more difficult to use. Choose liners with gently sloping sides and planting shelves. See the manufacturers' recommendations for installation
- For all but the smallest ponds its best to use a flexible liner. See our [leaflet](#) for details, but in summary, butyl or similar rubber liners are best and have long guarantees.
- The liner size must be (pond length + 2x depth) long and (pond width + 2x depth) wide
- Make sure there are no sharp stones to puncture the liner, and in addition put in a protective underlay. You can buy special pond underlay cheaply, but it's a great way to get rid of old carpets which work really well.
- Lay the liner over the underlay, and start to fill the pond, smoothing out wrinkles as best you can.
- Trim the liner once the pond is full, and bury the edges under turf or stones at the edges



Outline and shelf depth dug



Digging completed



Liner and beach in, pond filling



Liner edge being covered



Job done



A year later – Wow!

All photos Adele James

Filling the pond

- Make sure the water quality is good. Filling with rainwater is the best option; tap water can bring in [phosphate and nitrate](#) nutrients which encourage blanket weed
- It's best to create a pond in the late autumn, in anticipation of plenty of rain to fill it as winter comes in
- If you can, arrange a supply of rainwater from the house, shed or greenhouse roof. You can easily install rainwater diverter kits designed for filling water butts into plastic drainpipes. You can even fit an overflow to the butt so excess water goes straight to the pond using a hard-walled water pipe to bring the water to the pond, and you can bury it so it isn't visible
- If you have no alternative fill it with tap water, but after that try to rely on rainfall, tolerating some drops in level in dry periods

Planting the pond

Some plants can find their way into your pond without help, but most owners can't wait! Buy plants from a reliable supplier, or beg some from a neighbour who is doing an annual clear-out, but check you don't bring in invasive species or material from a pond with [diseased amphibians](#)

- For advice on good pond plants look at our [webpage](#) and the leaflet [Garden Ponds and boggy places](#).
- Put plants in aquatic planting baskets using fine gravel or aquatic compost. Line the baskets with hessian and top off with gravel to prevent the compost seeping out into the water. Only use fine gravel or aquatic compost for plants in containers to avoid adding unwanted nutrients.
- Have plenty of plants, ideally covering a third of the pond area, and they will take in free nutrients and help keep the water clear.
- Unless your pond is huge, don't plant Norfolk reed (*Phragmites australis*) or greater reedmace (*Typha latifolia*) because they will cover the whole pond in a few of years and are hard to cut out.
- A number of invasive alien plant species should never be planted in ponds lest they break out into the wild and damage water habitats. See our booklet [Garden Ponds and boggy places](#)



Improving an existing pond

If you have an old-fashioned steep sided formal pond you will need to help animals get in and out, so at least put in a shallow ramp for them to climb up.

If your pond is too deep to have marginal plants, you can build in shelving with sand bags, slabs and stones, as in the photo, where an old fish pond has been much improved for wildlife

Photo: Helen Bostock

Managing the pond

Pond plants grow very fast, so you will have to do a clear-out once or twice every year.

- It's best to remove most excess vegetation in autumn to cause least disruption to breeding species.
- Rinsing off material that you pull out of the pond, including blanketweed, and leaving it on the edge of the pond overnight may allow some creatures to escape back into the water but there are always casualties and you will have reduced the amount of habitat for them
- All ponds can develop algae or blanketweed at certain times. Where this is a regular problem it means nutrient levels are too high. Discourage weeds by removing rotting vegetation and increasing plant cover. Putting in barley straw pads which leach natural anti-algal chemicals can give temporary relief but remove them before they rot and add to the problem.
- Small numbers of leaves blowing into a pond are not a cause for concern, but large quantities should be removed in your autumn clear-out.
- If wildlife ponds freeze over it is not usually a problem for the inhabitants unless there is a lot of rotting vegetation in the bottom. Melting a hole at the edge of a pond allows access for birds and mammals to drink.

How easy is it to do?

Easy to very hard. How long is a piece of string? The smallest and simplest ponds can be very easy – a sunken washing-up bowl for example, but larger ones will mean shifting a great deal of soil unless you go for a raised design.

How much will it cost?

Depends on the size. Butyl rubber pond liners (recommended) are about £10 per m², and pond liner underlay about £2 per m². For a 2m diameter pond these would cost a little under £100 – allowing for depth and overlap. Pre-formed ponds can be bought from as little as £30, and an old washing bowl is free! Pond plants can be cheaper than ordinary garden plants, and you can often get them for free from an existing pond owner.

How effective is it for the target species?

Very effective indeed – provided ponds are set up, planted and maintained well.

Golden rules – what the science tells us

- Good (clean water) ponds can have very high diversity, with nearly [400 species](#) of larger invertebrates alone recorded in Britain and Ireland.

- Water quality is more important for pond diversity than pond size, but many garden ponds have rather poor water quality from nutrients in tap water.
- Pond animals need lots of complex structure as habitat, so the more vegetation variety the better, providing lurking shelter between leaves, stems and roots.
- Newts are voracious predators of frogspawn, so if you have lots of newts you may not get a lot of baby frogs.

What to look for?



Ponds are endlessly fascinating, and a great educational resource for children. Invest in a dipping net and help them discover the amazing hidden world under the surface.

Photo: Steve Head

- A 'plop' and disturbance of water when you walk past the pond are a sign a frog or toad has just jumped in. You can hear them croaking may in spring and see mating pairs of adult frogs.
- Look out for clumps of frogspawn in shallow water from February onwards.
- Newts can be seen below the surface in late spring – try searching for them after dark with a torch.
- In summer shiny whirligig beetles whizz around on the water surface and pond skaters skim over the surface of the pond.
- Lower down in the pond you may spy slow-moving water snails, leeches or the larvae of diving beetles, damselflies or dragonflies
- Adult damselflies and dragonflies dart and perch around the pond on warm days in summer. Look out for the empty larval cases on the stems of emergent plants where the larvae transformed into adult damsel- or dragonflies.
- Look out for birds drinking or bathing in shallow water. If you are lucky you may see a heron stalking the edge looking for dinner.

Things to be aware of

- Most pond life will survive short periods of low water so don't be too worried as the water levels naturally fluctuate at different times of the year.
- Take great care not to let fertiliser or garden chemicals enter the pond

Safety

- Ponds can be dangerous for young children, and about five children under six drown in them every year, which is about the same number as drown in a bath <https://www.rospea.com/leisure-safety/water/advice/pond-garden-water/>
- One and two-year-olds are most at risk, but children up to 5 should always be supervised around ponds – and of course in the garden generally.
- You can buy stout gratings to prevent children falling into ponds, but they must be properly fitted. Fencing-off ponds is unattractive, children can climb over fences, and locked gates delay rescuing adults.
- If you have very young children, consider waiting until they are old enough to treat the pond sensibly with your guidance – 6 years and up. After that age, ponds can help them learn water safety

Further information

On our website

How to: [Bring water into the garden](http://www.wlgf.org/ht_bring_water.pdf) www.wlgf.org/ht_bring_water.pdf

How to: Make a [pond in a pot](http://www.wlgf.org/ht_pond_pot.pdf) www.wlgf.org/ht_pond_pot.pdf

Our [introduction to ponds](http://www.wlgf.org/water_ecology.html) and their ecology www.wlgf.org/water_ecology.html

Our detailed [advice on pond creation](http://www.wlgf.org/Establishing_pond.html) www.wlgf.org/Establishing_pond.html

Our advice on [planting-up ponds](http://www.wlgf.org/Planting_pond.html) www.wlgf.org/Planting_pond.html

Our advice on [managing ponds](http://www.wlgf.org/Managing_ponds.html) www.wlgf.org/Managing_ponds.html

Details on [siting and making ponds](http://www.wlgf.org/placing_constructing_pond.pdf) www.wlgf.org/placing_constructing_pond.pdf

Leaflet: [Garden Ponds and boggy places](http://www.wlgf.org/ne27garden_ponds.pdf) www.wlgf.org/ne27garden_ponds.pdf

Leaflet: [Amphibians](http://www.wlgf.org/ne18amphibians.pdf) in your garden www.wlgf.org/ne18amphibians.pdf

Our web pages on animals

[Honey bees](http://www.wlgf.org/honeybee.html) www.wlgf.org/honeybee.html

[Dragonflies](http://www.wlgf.org/dragonflies.html) www.wlgf.org/dragonflies.html

[Pond beetles](http://www.wlgf.org/pond_beetles.html) www.wlgf.org/pond_beetles.html

[Caddisflies](http://www.wlgf.org/caddisflies.html) www.wlgf.org/caddisflies.html

[Water bugs](http://www.wlgf.org/pond_bugs.html) www.wlgf.org/pond_bugs.html

[Mayflies](http://www.wlgf.org/mayflies.html) www.wlgf.org/mayflies.html

[Pond snails](http://www.wlgf.org/pond_snails.html) www.wlgf.org/pond_snails.html

[Leeches](http://www.wlgf.org/leeches.html) www.wlgf.org/leeches.html

[Crustacea](http://www.wlgf.org/pond_crustacea.html) www.wlgf.org/pond_crustacea.html

[Amphibia](http://www.wlgf.org/amphibians.html) www.wlgf.org/amphibians.html

[Damselflies](http://www.wlgf.org/damselflies.html) www.wlgf.org/damselflies.html

[Reptiles](http://www.wlgf.org/reptiles.html) www.wlgf.org/reptiles.html

RHS advice

Garden [wildlife ponds](http://www.rhs.org.uk/advice/profile?PID=622) www.rhs.org.uk/advice/profile?PID=622

Pond [construction and repair](http://www.rhs.org.uk/advice/profile?pid=955) www.rhs.org.uk/advice/profile?pid=955

(we don't recommend clay or concrete ponds)

[Rain-fed](http://www.rhs.org.uk/advice/profile?PID=1047) wildlife-friendly pond step-by-step www.rhs.org.uk/advice/profile?PID=1047

Making [bog gardens](http://www.rhs.org.uk/advice/profile?PID=356) www.rhs.org.uk/advice/profile?PID=356

Freshwater Habitats Trust

This charity is dedicated to ponds and related habitats and has [several pages](http://www.freshwaterhabitats.org.uk/) on creating and managing ponds available from www.freshwaterhabitats.org.uk/

Importance of [clean water](http://www.freshwaterhabitats.org.uk/wp-content/uploads/2017/03/Clean-water_full-leaflet_2016_FINAL_web.pdf) www.freshwaterhabitats.org.uk/wp-content/uploads/2017/03/Clean-water_full-leaflet_2016_FINAL_web.pdf

[The Pond Book](http://www.freshwaterhabitats.org.uk/pond-clinic/pond-book/) www.freshwaterhabitats.org.uk/pond-clinic/pond-book/