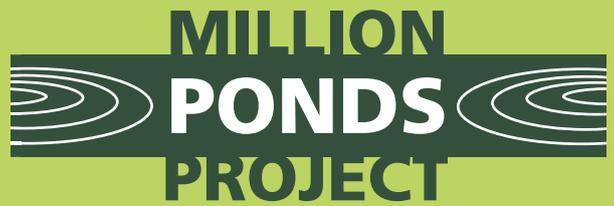


Clean water ponds for wildlife



A 50-YEAR PROJECT TO CREATE A NETWORK OF CLEAN WATER PONDS FOR FRESHWATER WILDLIFE

1. Why create clean water ponds?

The aim of the Million Ponds Project is simple: to create new wildlife-friendly ponds, the type of ponds once common in natural landscapes.

Animals and plants have evolved to live in ponds over many millions of years. The best way to protect pond wildlife today is to create waterbodies that mimic the clean wild ponds common in the past. This isn't hard because natural ponds come in all shapes, sizes and depths, and many are tiny and seasonal! The main requirement is clean, unpolluted water.

2. Why not just manage existing ponds?

It's a very common question: 'why bother to dig new ponds – why not just manage existing ones?' There are some unique advantages which make pond creation an especially effective way to help freshwater wildlife:

- New ponds let you start with a clean slate. Critically, you can dig them in places where it's easy and convenient to keep the pond's water clean throughout its lifetime. Evidence shows that 80% of countryside ponds are now degraded, and it's often hard to clean these ponds and keep them unpolluted.
- Pond creation is usually 'safer' than pond management. With management there is always a risk that the work will do harm. Finding out if this is likely can require expensive professional surveys of the existing wildlife. Creation is cheaper and simpler.

3. How do you make a new clean water pond?

To create a pond for the Million Ponds Project there is a simple recipe (see 'Recipe for a clean water pond' in box). It's surprising

What is a pond?

Ponds are permanent or seasonal waterbodies between 1 m² and 2 hectares in surface area (about 2.5 football pitches).

This definition includes temporary ponds that dry up during the year, as well as tiny pools and very shallow ponds like 'wader scrapes'.

Clean ponds have many advantages

- **High biodiversity value:** these ponds are exceptionally rich in wildlife and often have uncommon species.
- **A long lifespan:** most clean water ponds will survive for hundreds and sometimes thousands of years.
- **Minimal management:** there will be little requirement for sediment dredging or other management.
- **Few long-term problems:** e.g. cloudy water, excessive algae or duckweed growth.



how few countryside ponds today meet these criteria – only a few percent in lowland England and Wales. The damage caused by pollution, in particular, is getting worse. Clean new ponds are now vital to help maintain freshwater biodiversity in the countryside.

4. What if I can't meet all the criteria?

Not all new pond creation projects will be able to meet the Million Ponds Project criteria. Ponds that don't, unfortunately, can't contribute to the clean water pond 2012 target (see *Factsheet 1*). Ponds with poor water quality, in particular, won't enjoy the benefits of a clean water pond (see box) or usually support their exceptional wildlife communities in the long term.

However almost all new ponds can still be valuable for wildlife, and they add to the freshwater network as a whole, which is welcomed.

If it is not possible to follow the Million Ponds Project recipe, still read the advice in the *Pond Creation Toolkit*. Do the best you can to keep the water as clean as possible. Where water quality is very poor, focus on creating very shallow water and good edge habitats to maximise the pond's wildlife value.

Recipe for a clean water pond

1. Find a place with a clean water source (Figure 1). To do this:
 - make sure the pond has natural surrounds.
 - avoid linking the pond to stream or ditch inflows.
 - don't add topsoil in or around the pond.
2. Leave the pond to colonise naturally – don't stock it with plants, fish or other animals.
3. Make sure the pond will have few impacts during its lifetime: no frequent disturbance from dogs or duck feeding.

5. More about making good ponds

a) Find a good place

- (i) Make sure the landuse around the pond is non-intensive. The critical area is the pond's 'catchment' – i.e. any area 'up hill' of the pond, from which water and silt will drain off towards the pond. So within this catchment area:
 - Look for a site which will provide the pond with an unpolluted water source. Choose areas like rough grassland, wood or heath.
 - Ensure that there is no arable or other land where the ground is regularly disturbed or is likely to be high in nutrients. Avoid intensive grassland where fertilisers or pesticides are applied and could run off.
 - Avoid places likely to receive run off from roads, tracks, houses, yards or spoil heaps. Roof run-off is often pretty clean, but other urban surfaces are usually not.
- (ii) Generally avoid stream, ditch or drain inflows into ponds. Across most of Britain inflows bring polluted water and silt into ponds. The silt they carry also rapidly fills ponds up reducing their lifespan by decades and sometimes centuries. The best sources of water for ponds are usually (a) groundwater or (b) rain and surface water draining from non-intensive areas.
- (iii) Don't add topsoil or leave it near the pond. Topsoil is very high in nutrients. So, having made sure the pond water source is clean, don't then add pollutants from topsoil. The ideal substrates for the base and banks of a clean water pond are those that are naturally nutrient-poor, like bare clay or sand.



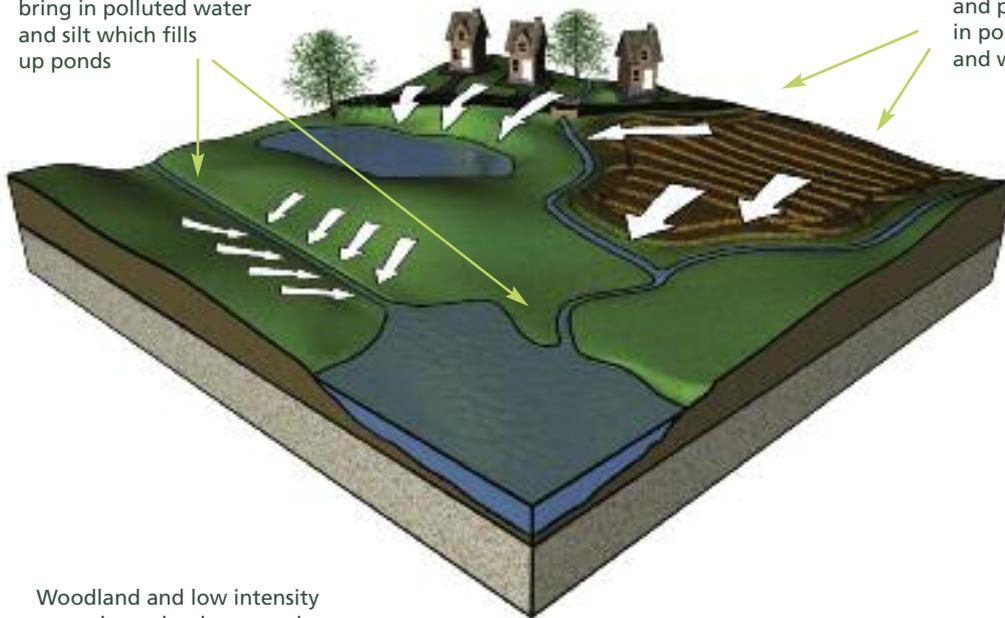
What is clean water?

For ponds (and other waterbodies), 'clean' means that the water it receives hasn't been degraded by pollution. This generally means water with low levels of nutrients (like nitrates and phosphates) and heavy metals, and no pesticides or other manmade chemicals.

Factsheet 10 of the *Pond Creation Toolkit* lists the levels of these elements expected in clean water and shows how pollutants get into ponds.

Ditch or stream inflows bring in polluted water and silt which fills up ponds

Run-off from urban areas and ploughed fields brings in polluted water to ponds and watercourses



Woodland and low intensity grazed grassland are good places to locate ponds so that they have clean water



Ponds can be created near streams and other watercourses but avoid linking them directly to them

Figure 1. Locate ponds where they will have a clean water source.

b) Let the pond colonise naturally

A guiding principle for new ponds is don't add anything – not plants, fish, amphibians, or a bucket of sludge from another pond to act as a 'starter' (see *Factsheet 8*).

It can be enormously tempting to add plants to a new pond – it certainly makes the pond look better to our eyes. But there are good ecological reasons for not stocking ponds. The most important is that new ponds are not empty habitats. The bare sand or clay and plant-free conditions that new ponds provide create a very special wildlife habitat.

A clean water pond can have a lifetime of 100 years or more and the early bare stage is fleeting enough. Don't shorten it – enjoy what makes a new pond so special.

c) Avoid disturbance from people and pets

People in themselves are fine, and they should be encouraged to enjoy wildlife ponds. However people and their pets can also severely impact clean water ponds. The main problems are addition of fish (particularly carp) and regular swimming by dogs, both of which can stir up the water and make it permanently cloudy. Alien plants and duck feeding will also cause problems.

Any pond located near to a path or in clear view and with easy public access is likely to be impacted by people in one or more of these ways. There are many possible solutions: don't locate the pond near a public path, dig pond complexes with 'sacrificial' ponds, restrict access, make natural barriers etc. See other factsheets in the *Pond Creation Toolkit* for more detailed information on pond creation, planning and aftercare.

6. Tips for making great ponds**What kind of ponds?**

As long as ponds have clean water they can be any size, shape or depth and still be great for wildlife. Single ponds are valuable in their own right, especially if they are part of an already pond-rich landscape. Pond complexes are even more valuable: particularly if they have pools of different depths and permanence, including temporary ponds which dry up every year. This variety increases the range of wildlife that can colonise a site, and will ensure useful habitats remain whatever the future climate has in store.



▲ Even very small pools are good for wildlife

Good design

Good design can be used to make great ponds even better, and the *Pond Creation Toolkit* has extensive guidance and a Design Bank to provide ideas.

Important principles are:

- Think about the site's afteruse – there is a divide between designs for ponds that will be grazed, and those that will not.
- Keep most bank angles very shallow with a broad, almost flat zone near the pond edge (less than 5°). The most diverse area of a pond is its shallows.



- Don't forget that pond water levels rise and fall during the year – the average is a 30 – 80 cm drop between spring and autumn. Consider this in design, so that there are always areas of shallow water.

↑
2cm
↓

The richest parts of a pond for wildlife are the water areas only a couple of centimetres deep! Really!

A good pond design has lots of areas with water that is this shallow. Water levels will go up and down during the year – so creating long low-angled banks makes sure there are always shallows available.

- Design the underwater topography too. Many of our native submerged plants, including stoneworts and pondweeds, grow best in areas free of the organic sediments that build up in ponds though time. These plants prefer bare clay or sand. So create underwater bars and shoals. The fine organic silts slip off the top of the bars and accumulate in the troughs below, leaving the top bare for plant growth.

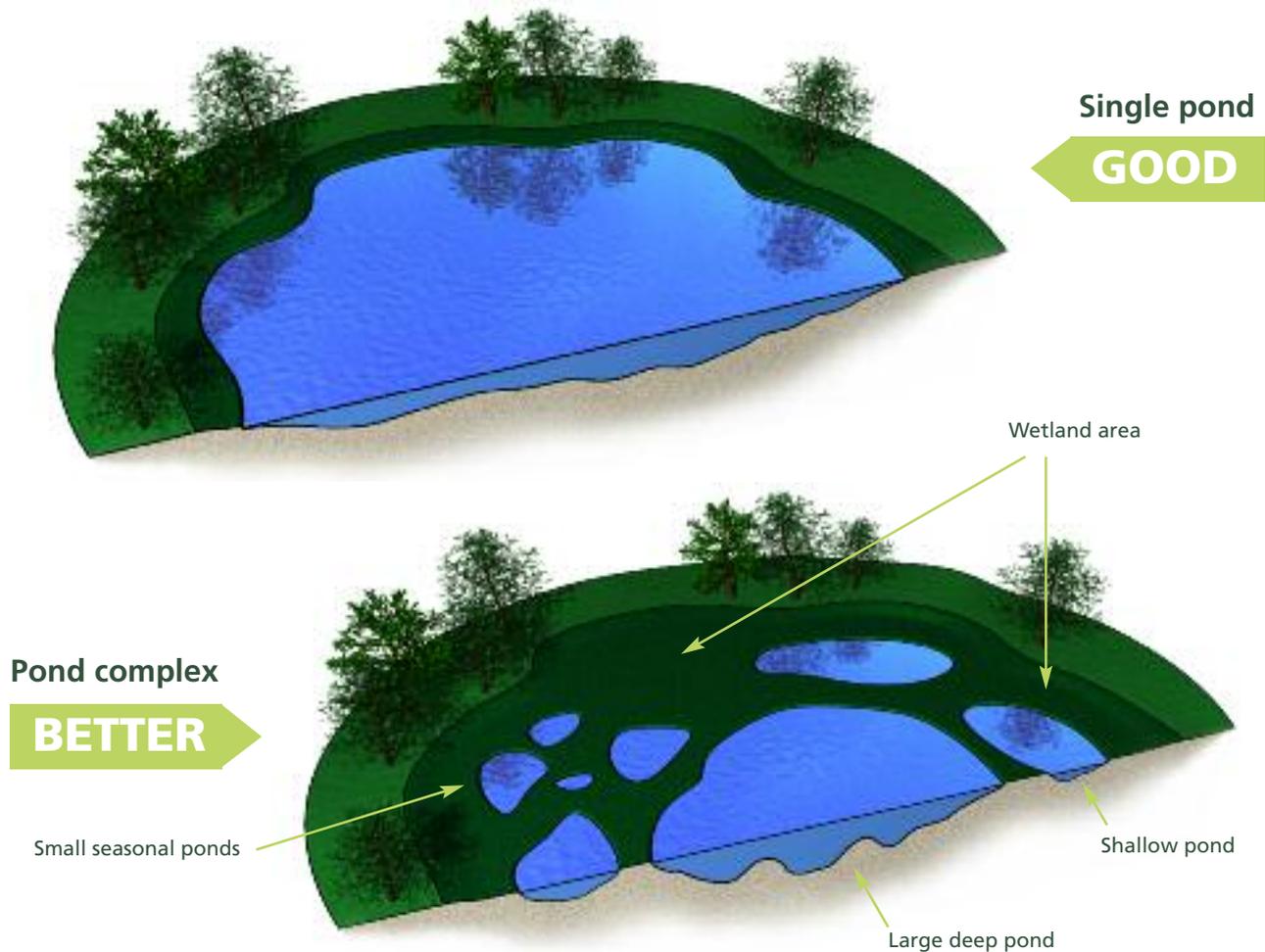


Figure 2. Create complexes of ponds with different depths and surface area – this will increase the range of wildlife attracted to the site, and provide habitats in all climate conditions.

7. Great places to make ponds

As long as the principles of 'clean water' and 'low disturbance' are followed, ponds can be dug more or less anywhere. The countryside is full of places to put them. Low intensity grassland, woodland, scrub, heath, moorland, coastal marshes and dune slacks are all ideal habitats. With a bit of care it's also possible to make clean water ponds on farmland, commons, golf courses and even in urban gardens.



Andy Harmer

Grassland: Animal-grazed grassland pools are often rich and can be very varied. Livestock often keeps the vegetation short so that even tiny shallow pools last for many years. The poaching and churning up of the wet ground by animal hooves usefully creates an extra level of habitat complexity at the pond edge.



Rod d'Ayala



Froglife

Woodland and scrub: Ponds in woodland are often especially good for amphibians and dragonflies. Shelter from trees protects many delicate-winged wetland insects that would otherwise get buffeted about by strong winds. Ponds with a large area are often useful to ensure that all ponds are not totally overhung by trees.



Wetlands: Digging ponds in bogs, fens, and marshes can help to add to habitat diversity in these wetland areas. However care needs to be taken, both so that existing wetlands are not damaged and because, in these climate-aware times, digging out peat needs to be considered carefully.

Coastal areas: The UK's coastal zone is narrow and under many pressures. If planned with care, pools in these areas can help to support many vulnerable species found in seasonal dune-slack pools and brackish and saline lagoons.



Andy Harmer

Heathland and moorland: Heathland pools are biodiversity hotspots, and a lot of rare species are associated with these wet areas. A special suite of plants and animals are found in heathland temporary pools in the wheel-ruts on trackways and around trampled gateways.



Andy Harmer

Farmland: Many farms have places where clean water ponds can flourish – woods and copses, areas of poorly drained land, corners which are awkward or unprofitable to cultivate. Evidence shows that new pond creation is already common on farmland but is not usually providing high quality habitats. Ensuring these new ponds have clean catchments will do much to benefit freshwater biodiversity in the countryside.



Garden Ponds: It is possible, but not always easy, to create clean water garden ponds. The main problem is temptation – it's very hard to resist adding tap water or plants to a garden pond, especially in the first few years when the pool looks bare and the water is often cloudy. If the clean water pond principles are followed however, you can create these very special habitats in your garden. For information on creating clean water garden ponds, visit www.pondconservation.org.uk/gardens

8. Places to take care!

One of the very important things about digging new ponds is that this should not destroy something that is already valuable.

Existing habitat: checks need to be made to ensure that the habitat being dug up is not valuable in its own right. If in doubt, err on the side of caution. Given a uniform field with a single wet area, dig the pond next to the wet area rather than replacing it.

Species at risk: on rare occasions digging a new pond may encourage a flood of unwanted colonising species to an area. The ancient temporary pingo ponds of Norfolk, for example, are over 10,000 years old, and have a very special wildlife which could be damaged by an influx of new pond species and/or invasive species to the area.

Archaeology: archaeology is part of our national heritage, and digging ponds can easily destroy it. Always check with the county archaeologist.

See *Factsheet 5* about locating ponds and *Factsheet 6* for a review of issues to be considered when planning a pond creation scheme.

9. Rare species ponds



HCT

Ponds are home to hundreds of rare species. Around 80 of these *species* are under such threat that they have Priority Status under the UK's Biodiversity Action Plan – animals like the pondweed leafhopper, which survives in just a few ponds, and is incredibly vulnerable to extinction in Britain.

One of the aims of the Million Ponds Project is to create at least 1,000 ponds that will help to support many of these species. To do this the project will produce *Species Dossiers* in 2009-2010, which will provide information about the design and location of ponds specifically for these BAP species. Project Officer support and funding will be available to help ensure these ponds can be created where they can do the most good.



HCT

Grass snake (above) and pool frog (below). The grass snake is a good swimmer often associated with ponds where it feeds on amphibians and fish. The pool frog is the rarest native amphibian species in the UK.

For further information about the Million Ponds Project please visit www.freshwaterhabitats.org.uk/projects/million-ponds or email enquiries to info@freshwaterhabitats.org.uk