

Should ponds be planted?

It is natural to think that new ponds need a helping hand to stop them from remaining “empty habitats” in their first few months or years. But, in fact, there are many reasons why it is often better not to plant up new ponds, but to leave them to colonise naturally.

The first reason is that new ponds are a very distinctive habitat, used by plants and animals that are not found in more mature ponds. Usually these are species that either (a) prefer bare sediments or (b) do not compete well with others.

This includes many annual water plants like celery-leaved buttercup as well as dragonflies such as the four-spotted chaser and common darter. Artificially maturing sites by adding plants hastens the end of the “new pond” stage and stops the pond from providing an important refuge for these species.



After three years of natural colonisation this pond at Pinkhill Meadow in Oxfordshire had a rich and abundant flora

A second reason for not planting ponds is that it is usually unnecessary. As Darwin first noted, many pond plants and animals are particularly well adapted to finding new sites – and almost everyone who makes a new pond will have been struck by the remarkable speed at which creatures arrive at their pond. Bugs and beetles fly in within hours, especially in the warmer months. Most other insect families (e.g. mayflies, caddis flies, dragonflies) and some annual water plants become established within the first summer. In fact evidence from recent pond surveys show that this natural colonisation occurs so rapidly that, without any help, three or four year old new ponds are often as rich as sites over 50 years old!

Finally plant and animal species that colonise under their own steam will usually be more appropriate to the waterbody than those we choose ourselves and, very importantly, letting plants and animals arrive naturally prevents one of the major problems of planting-up: the accidental transfer of invasive alien Plant species (see below).



*Water plantain
Alisma plantago-aquatica*



*Four spotted chaser
Libellula quadrimaculata*

Planting ponds

There are exceptions, of course, to the “on’t-plant” rule. Most often, these exceptions are ‘non-conservation reasons’, and apply particularly to urban locations where it is important that a pond looks finished or cared-for quickly.

If plants are going to be introduced to a pond, the main aim should be to ensure that only *native plants of local provenance* are used (see last page). “Local” means present in a wetland area (e.g. ditch, pond, stream) within 20 km or so of the pond. Using local plants is important because it helps to maintain the natural distinctiveness, biodiversity and gene pool of wetland species in your local area. It also helps to prevent the very worrying spread of invasive alien plant species around the countryside. Ideally try to avoid purchasing native plants from garden centres or other suppliers. Some so-called ‘natives’ come from stock imported from the continent. Even more worrying, invasive alien plants, such as New Zealand Pigmyweed (*Crassula helmsii*), have spread widely in garden centres and nurseries and are often present as seeds or small plants in the pots of other bought plant stock. These aliens are now spreading into the countryside at an alarming rate where they are threatening many of our rarest native plants, and using up scarce financial resources in an often unsuccessful attempt to eradicate them.

Examples of plants that it is usually safe to add to a pond if they are derived from local stock are shown over the page. Note however, that these are species that are particularly characteristic of lowland England. More acid areas, including large parts of Wales and Scotland, are likely to have a different range of pond species. If in doubt, the best approach is to be guided by what is present in local waterbodies in your area.

Choosing plants that are good for wildlife

The key to understanding which plants will be particularly useful for pond wildlife is to think about the plant’s structure from an aquatic animal’s eye-view. Almost all pond animals live in the safety of dense vegetation, most in very shallow water, often only a few centimetres deep! So the plants that provide the best habitats are those that create a diverse and complex underwater structure at the water’s edge. Low-growing grasses and wetland herbs are particularly good at creating this underwater architecture. In other parts of the pond, include different types of plant with a range of submerged and floating stems and leaves. Where possible encourage plants to grow in different densities and range of water depths.

Plants that encourage pond wildlife

Tall emergents

Choose tall emergent sedges and grasses that grow well with their feet under water, but take care: some species are also highly invasive and will quickly take over a shallow pond unless the site will be regularly managed by hand or grazed by animals. Particularly useful species are:

- Branched Bur-reed (*Sparganium erectum*)
- Reed Sweet-grass (*Glyceria maxima*)
- Greater Pond-sedge (*Carex riparia*)

Bulrush (*Typha latifolia*) will also provide a good underwater habitat but is particularly invasive and perhaps best avoided - it will probably colonise anyway as Bulrush is one of the most effective dispersers to new ponds.

Yellow Flag (*Iris pseudacorus*) is attractive, but has very tight, rigid leaves, and likes its feet to be above water in summer. It does not, therefore, provide an ideal aquatic habitat although its aerial leaves and flowers are used by a range of terrestrial insects.



PCT: P&R Ltd

Branched Bur-reed
(*Sparganium erectum*)

Floating-leaved plants

Amphibious Bistort (*Persicaria amphibia*) and Broad-leaved Pondweed (*Potamogeton natans*) are good choices for floating-leaved plants. Both are easy to establish and are extensively used by invertebrates. China-mark Moth caterpillars, for example, feeds on Broad-leaved Pondweed and make a case out of its leaves.

Two other native species, White Water-lily (*Nymphaea alba*) and Yellow Water-lily (*Nuphar lutea*), are also often planted in ponds. These species would, however, usually be associated with ponds in floodplains or extensive wetlands, so could be considered inappropriate for ponds in other locations.



PCT: P&R Ltd

Amphibious bistort
(*Polygonum amphibium*)

Richard Snow

Low-growing wetland grasses

Creeping wetland grasses may look rather boring but they provide an excellent, much loved habitat used by newts, water beetles and others. Encourage them to grow out over the water for a metre or so. Look out for:

- The small sweet-grasses (*Glyceria fluitans*, *G. notata*, *G. declinata*).
- Creeping Bent (*Agrostis stolonifera*) – which is often present as a lawn grass, but also likes its feet in water.
- Marsh Foxtail (*Alopecurus geniculatus*).



PCT: P&R Ltd

Small sweet-grass
(*Glyceria fluitans*)



PCT: P&R Ltd

Floating grasses provide a valuable habitat for many species of aquatic invertebrate

Plants next to the pond

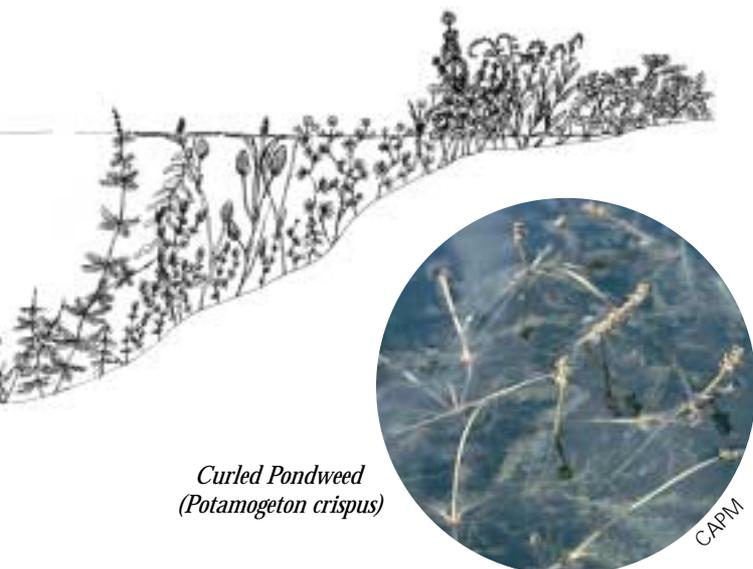
Use marginal plants to create valuable habitats next to the pond. Areas of tall sedges and grasses, for example, can help to create wind breaks that allow newly emerging insects, such as dragonflies, to dry their wings without damage.

Some pond insects feed on nectar as adults – so encouraging flowering plants to grow on the upper pond banks can be useful. Broad flat-topped flowers such as Hogweed (*Heracleum sphondylium*) and Cow Parsley (*Anthriscus sylvestris*) are particularly valuable.

Marginal herbs and rushes

Where possible include species of marginal plants that can extend out into the water and provide a submerged habitat for animals. Good choices are:

- Water Mint (*Mentha aquatica*)
- Water Forget-me-not (*Myosotis scorpioides*)
- Lesser Spearwort (*Ranunculus flammula*)
- Articulated Rush (*Juncus articulatus*)
- Common Spike-rush (*Eleocharis palustris*)
- Watercress (*Rorippa nasturtium-aquaticum*)
- Fool's Watercress (*Apium nodiflorum*)
- Marsh Pennywort (*Hydrocotyle vulgaris*)



Curled Pondweed
(*Potamogeton crispus*)

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Submerged plants

Submerged plants can be fussy and many introductions fail – particularly if pond water quality is poor. Try to use plants from near-by sites with a similar water type. The following plants can be amongst the most tolerant and robust:

- Curled Pondweed (*Potamogeton crispus*)
- The water-starworts (*Callitriche species*)
- Rigid Hornwort (*Ceratophyllum demersum*)
- Some water-crowfoots (*Ranunculus species*)
- The water-milfoils (*Myriophyllum species*) - but avoid the alien plant Parrot's-feather (*Myriophyllum aquaticum*)

Other useful plants

Plants for waterfowl

Maximise food production for dabbling ducks by encouraging a variety of rushes, tall grasses and other plants to grow in the pond and overhanging the bank. Deeper water (1 metre or more) with submerged aquatic plants will provide food for diving ducks.

To help nesting ducks rear their broods successfully, encourage the development of areas of tall rushes and reeds growing in very shallow water where the young will be safe from predators like fox on the bank and pike underwater.



PCT: P&R Ltd

Moorhen nest

Plants for water voles

Water Voles use plants in two main ways: they eat the leaves and shoots of tall emergent plants like common reed and they also need a platform on which to sit, eat and leave small piles of droppings to mark their territory. The tops of vegetation tussocks provide ideal places for this – so any plant with a tussocky structure such as Greater Tussock Sedge (*Carex paniculata*) will be useful.



Linder Hill

Water vole

Attractive plants

Plants with particularly attractive flowers

For urban locations, where plants need to be visually attractive, the following native species are good for planting on damp banks and in marsh areas:

- Marsh-marigold (*Caltha palustris*)
- Ragged-robin (*Lychnis flos-cuculi*)
- Yellow Iris (*Iris pseudacorus*)
- Marsh Woundwort (*Stachys palustris*)
- Purple Loosestrife (*Lythrum salicaria*)

Architecturally impressive plants include:

- Water Dock (*Rumex hydrolapathum*)
- Pendulous Sedge (*Carex pendula*)



PCT: P&R Ltd

Pendulous sedge (*Carex pendula*)

When and how to plant

The best way to ensure that you only introduce native plants of local provenance into your pond is to collect seeds or small quantities of common species from nearby ditches, river margins and ponds. Check with the landowner first however, since it is illegal to uproot wild plants without a landowners permission. Alternatively, contact the county Wildlife Trust or other local environmental organisations to find out if they plan to remove plants as part of waterbody management in your area. Use a plant field guide to help identify the species taken so as not to inadvertently remove alien species or plants that are uncommon.

Pond and garden guides often give the impression that planting-up ponds is an art that requires critical timing, precise depth of planting and lots of hessian sacks and weighted baskets. In practice, most of our native marginal and floating-leaved wetland plants are very robust. They can be introduced to ponds at any time of the year and are usually best added as small rooted plants or cuttings, pushed by hand into the sediment or into a 'V' trench (made using a single spade cut). Turves can be simply dug-in a little.

The important point when adding plants is to ensure that at least part of any emergent or floating plant is above water level and that the plants do not dry out completely in the transfer process. With emergent plants, the best place to introduce them is usually at the water's edge, so they can grow into the pond or up the bank as they choose. Wetland plants spread rapidly, so planting densities of 2-5 plants per square metre will usually give good cover within a year. Where plants do not survive transplantation the usual reason is either because the pond was unsuitable for them or because the plant was one of the many wetland annuals!

The most difficult pond plants to establish are usually the submerged species - and because these can be fussy, many introductions fail. The best way of encouraging them is to make sure that the pond has good water quality and to only add plants from near-by sites likely to have a similar water type. The good news is that, without planting, aquatic plants will usually arrive naturally at a pond within 1 - 2 years. If not, do not worry: it is a myth that submerged plants are vital in ponds to provide oxygen. Unlike streams and rivers, ponds have naturally low or variable oxygen levels, to which pond animals are perfectly well adapted. Submerged plants can, undoubtedly, provide a useful habitat for animals in the otherwise dangerous deep open water areas of a pond. But the pond edges are a much more important area for most animal species and most conservation gains can be made by ensuring that these edge areas are rich in marginal plants that have a good underwater structure.



Planting emergent plants

PCT: P+R Ltd

Garden ponds and use of topsoil

Topsoil is sometimes added to the underwater and marginal areas of ponds to promote growth of vegetation. In most cases, however, this should be avoided. Most native plant species grow perfectly well when planted directly into subsoil, clay or sand. Topsoil is rich in nutrients, and although this will often allow more rapid growth in the first few years, the end result is usually less successful. Unwanted growth of invasive plants, such as Bulrush, is often encouraged and nutrients in the topsoil will leach into the water, adding to long term problems with nuisance plants such as blooms of algae and duckweed. This can be a particular problem in garden ponds, so where ponds have a liner and no natural substrate, aim to restrict any added bottom substrates to clean sand or clay with few nutrients. If topsoil is used at a site, it is best restricted to small pockets on the margins and not spread around the whole pond. Where possible, also avoid putting topsoil on sloping banks above the pond where nutrients can be washed down into the water.

Plants to avoid

Avoid, at all costs, introducing non-native plants into ponds in the wider countryside. It is particularly important not to introduce some of the very vigorous alien plants that can invade ponds and endanger native species. These include:

- New Zealand Pigmyweed (*Crassula helmsii*)
- Parrot's-feather (*Myriophyllum aquaticum*)
- Water Fern (*Azolla filiculoides*)
- Curly Waterweed (*Lagarosiphon major*)
- Nuttall's Pondweed (*Elodea nuttallii*)
- Canadian Pondweed (*Elodea canadensis*)



Parrots feather (Myriophyllum aquaticum) invading a pond

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Aftercare

Whether you let the pond colonise naturally, or plant it up, it is well worth putting time aside in the first few years when the pond is still developing to do a little selective gardening. In particular, plants such as bulrush often get into a pond in the first few years. If allowed to grow unchecked they will eventually dominate the pond – so a little early work thinning plants or cutting off the seed heads before they ripen will allow time and space for other species to grow and prevent much management effort at a later stage.