



Norfolk Ponds Project

Restoring Norfolk's ponds

Norfolk ponds and their origins

Norfolk has more ponds than any other English county with over 23,000 ponds present. These include farm ponds, village ponds, moats, medieval fish ponds and ancient pingo ponds.

Over the last 50 years, many Norfolk ponds have suffered neglect or even been filled in, often as a result of changes in farming practices. Today our ponds are threatened by the widespread encroachment of trees and bushes, pollution and invasive species.



RESTORED POND



Saving **Norfolk's Wildlife** for the Future



The Norfolk Ponds Project aims to:

Reverse the decline of Norfolk's ponds so that agricultural landscapes contain a mosaic of clean water ponds with fewer ponds overgrown by trees and bushes.

What is a pond?

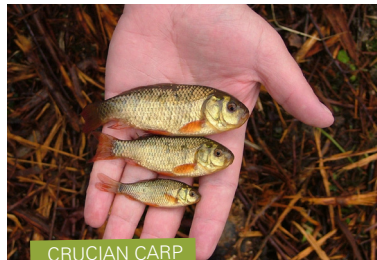
The Norfolk Ponds Project defines a pond as: a body of shallow, permanent or temporary still freshwater less than 100 metres across.

Why are ponds important?

- Ponds can provide vital clean freshwater in the farmed landscape
- Ponds can be wonderful habitats for aquatic wildlife including plants, invertebrates, amphibians, fishes, birds and mammals
- Ponds provide refuge for over two thirds of Britain's rarest freshwater wetland invertebrates
- Good ponds act as stepping stones that allow species to move through the landscape



RESTORED MATURE POND



CRUCIAN CARP

Farmland ponds in Norfolk

This guide focuses on Norfolk's plentiful farmland ponds. In North Norfolk many ponds have their origins as 17th-19th century marl pits used to provide a lime-rich clay to improve soils for crops, whilst the pits of South Norfolk provided unfired 'clay lump' for traditional buildings. As the pits filled with water, they were used for a range of other purposes on farms and in villages: livestock watering, fishing and the cooling of early agricultural machinery.

Since the 1970s, with the loss of traditional reasons for managing ponds, many ponds have become overgrown by trees and bushes. Heavy tree-shading eliminates aquatic plants and animals and where overgrown ponds dominate the landscape aquatic diversity is typically low.

Pond restoration and management benefits many farmland pond species, including stoneworts, pondweeds, dragonflies, great crested newt and crucian carp. Even farmland birds benefit from having open ponds in the landscape.

Principles of pond restoration

Clean and clear is good

Water free from effluents, fertilisers and farm chemicals is vital to a healthy clear water pond. Ponds need to be buffered from run-off and fertiliser inputs from surrounding agricultural land.

Mosaic of sunny and shady ponds

A healthy pond landscape will contain a mosaic of ponds with different shade levels including many open sunny ponds which contain abundant water plants. Sunlight is essential for aquatic plants. Currently most Norfolk ponds are heavily overgrown by trees, so more sunny ponds are urgently needed.

Not all ponds need restoration

Ponds in woodland, ponds surrounded by old and valuable trees and ponds with important associated bog and fen habitats are worthy of conservation in their own right and should not be disturbed. Naturally formed pingo ponds and ponds of archaeological interest also require expert advice before restoration. Not all pond restorations need to include mud removal and sometimes light works to reduce encroachment of trees and bushes around the pond edge are sufficient.

Seasonal ponds

Seasonal ponds are good for wildlife too. Some ponds don't hold water all year round, but remain a vital part of the pond landscape mosaic and often support many rare plants and invertebrates. So don't worry if your pond dries up for part of the year.

Leave ponds to natural colonisation

Ponds should be left to natural colonisation by plants and animals. University College London (UCL) research shows water plants to return quickly following restoration from dormant seed banks. It is important to avoid stocking plants from garden centres which can lead to major problems with invasive species.

All shapes and sizes are great

There is no perfect pond shape or size so when undertaking a restoration the contours of the original pond should always be preserved and celebrated. By not working to a pre-described 'ideal pond' formula, differences between ponds are maintained which should lead to increased biodiversity in the pond landscape. Care needs to be taken to avoid breaking the natural clay seal of a pond's bed.





What does your pond look like?

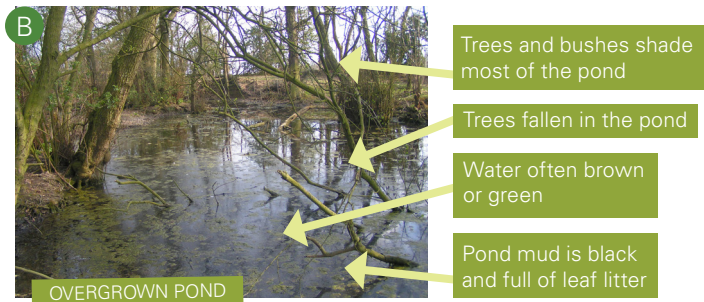


Does your pond look like picture A?

Open ponds like pond A are rare in the Norfolk countryside and are very valuable for wildlife. They do not require restoration.

Does your pond look like picture B?

If **overgrown ponds** like picture B are common on your land, then restoring some of them by tree and mud removal will greatly benefit wildlife.



Choosing ponds for restoration

Before restoring a pond it is important to consider the following:

Does the pond have any archaeological interest?

The shapes, slopes and bases of ponds are important and some very old ponds may contain sediments of archaeological and environmental interest; these include moats and medieval fish ponds. Sensitive restoration can enhance historic ponds, as well as protect important remains. The Norfolk Monuments Management Project can provide advice to ensure that restoration works are sympathetic.

Is the pond connected to other waterways?

Inflow pipes and ditches that connect ponds to agricultural fields and other waterways typically result in polluted ponds, whilst increasing the potential for colonisation by invasive non-native species (e.g. American signal crayfish). The best ponds for restoration are isolated ponds with no inflows. Restoration should aim to buffer ponds from the farmland by use of grassland buffers. Ponds subject to highway run off can be difficult to restore so expert advice should be sought.

Ponds known as 'pingos' were formed thousands of years ago on the edge of the glaciers and careful consideration is needed before work commences. Most pingos are in the Brecks, just north of Norwich or near Fakenham. If you think your pond might be a pingo contact Norfolk Wildlife Trust (NWT).

Are protected species present?

If the pond you plan to restore supports a protected species (e.g. great crested newt) you must first refer to Natural England guidance before commencing any work. In most instances, with careful planning, works can go ahead. In some cases you may simply chose to leave the pond alone and work on a different pond. A pre-restoration wildlife survey is very useful in this respect. Contact NWT for help and advice.

Is it safe to carry out a pond restoration?

The activities associated with pond restoration carry potential risks. Personal health and safety should never be compromised. It is your responsibility to check that you are covered by appropriate insurance prior to a pond restoration.

Where should I put the sediment removed from my pond?

Sediment removed from ponds on farmland can be thinly spread on agricultural land near the pond, away from any grassland buffers. It is really important not to spread the sediment on species-rich grassland. Before spreading please refer to 'Waste exemption: U10 spreading waste to benefit agricultural land' on the www.gov.uk website.

A patchwork of ponds in a landscape, including open and overgrown ponds will likely support the highest diversity of aquatic plants and animals in the farmed environment. In Norfolk we desperately need more open, sunny ponds for declining species such as dragonflies, great crested newt and crucian carp.

FOUR-SPOTTED CHASER

GREAT CRESTED NEWT

CRUCIAN CARP





How to restore a pond

Restoration is best undertaken over September-January, especially in autumn when the ground is dry and pond levels are low. This period also avoids breeding seasons for amphibians and birds.

TREE AND SCRUB REMOVAL



Trees and scrub should be cleared from the south and west sides of a pond with some tree cover left to the north and east. This allows a newly restored pond to receive the morning sun, thus stimulating growth of aquatic plants. A small team of volunteers working with a licensed chainsaw operator can do the job well. Mature oaks and other valuable trees should not be removed.

MUD REMOVAL



Removal of mud from a pond is necessary if it is black and full of poorly decomposed leaves making it inhospitable to plants. Mud removal can be confidently undertaken with a tracked 360 digger. To have a major beneficial effect, aim to remove mud from at least one third to one half of the pond's area. It is not advisable and rarely necessary to clean out the whole pond in one go. Avoid removal of underlying clay and don't change the natural dimensions of the pond.

Brush and potential firewood should be kept in separate piles. Brush piles afford good over-wintering habitat for amphibians and will rot down in a few years.



PILE OF WOOD

MUD DISPOSAL



The ideal place to put the sediment is on a nearby arable field where it can be heaped up and subsequently spread out and ploughed in. The highly organic pond mud makes for a good fertiliser. It is important not to place any mud on grassland buffers or wildflower-rich areas. A tractor and trailer can be usefully employed to take mud to the heap.

If not already present a grassland buffer (ideally at least 10m wide) should be allowed to establish around the pond. This will protect the pond from sprays and agricultural fertilisers.

A few weeks after restoration it is not unusual to see algal blooms, but by spring the water should be clear and water plants and amphibians will quickly colonise.

WHAT TO EXPECT FOLLOWING RESTORATION

Water levels will drop during restoration if water-laden mud is removed, but ground water and winter rainfall will soon recharge the pond.

By mid-summer aquatic vegetation is usually flourishing and the pond will draw in many species from the wider landscape including dragonflies and many other invertebrates.



FIRST SUMMER



ALGAL BLOOM



BODHAM MYSTERY PIT THREE YEARS AFTER RESTORATION

Norfolk Ponds Project

The Norfolk Ponds Project aims to reverse the decline of Norfolk's ponds so that agricultural landscapes contain a mosaic of clean water ponds with fewer ponds overgrown by trees and bushes.

This project was inspired by the magnificent pond conservation work undertaken by Richard Waddingham at Manor Farm, Briston, North Norfolk. The Manor Farm ponds show us that pond conservation and intensive agriculture can happily coexist.



THE ROYAL NORFOLK SHOW

This pond leaflet is a guide for straight forward pond restoration, but we urge landowners to seek advice at any time, especially if complications and questions arise.

Where to go for further information

Keep an eye on NWT's website, blog and in *Tern*, for regular updates and more information as the project progresses.

Norfolk FWAG

www.norfolkfwag.co.uk/norfolk-ponds-project

UCL's pond restoration research

www.geog.ucl.ac.uk/ponds

Norfolk Monuments Management Project

www.heritage.norfolk.gov.uk/

01362 869291

Norfolk Non-Native Species Initiative

www.norfolkdiversity.org/nonnativespecies/

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Norfolk Wildlife Trust
Registered Charity No. 208734



 **Norfolk** County Council



Saving **Norfolk's Wildlife** for the Future