



## **Pond and Wetland Creation and Management**

Ponds and wetlands are valuable, and often rich, habitats supporting a wide range of wildlife including invertebrates, amphibians, plants and many birds and animals. Throughout the UK ponds have declined due to pollution, drainage, infilling of farm ponds, and development and industrialisation of areas that were once open countryside.

Where ponds are bodies of permanent water, a wetland is a land area that is saturated with water, either permanently or seasonally, with characteristic vegetation of aquatic plants, adapted to the unique hydric soil. Wetlands play a number of roles in the environment, principally water purification, flood control, carbon sink and shoreline stability. Wetlands are also considered the most biologically diverse of all ecosystems, serving as home to a wide range of plant and animal life.

Golf clubs can play a vital role in conserving ponds, wetlands and their wildlife, through good management and where possible and appropriate by creating ponds and associated wetland habitat.

### **Pond and Wetland Creation**

#### **Pond and Wetland Design**

Ponds and wetlands on golf courses can have many purposes. They can provide drainage solutions, challenging golfing hazards and valuable ecological habitat features. Designed and managed well they can be practical yet aesthetically positive aspects to the golf course.

Ponds, designed for wildlife do not need to be deep. A maximum depth of 1.5m is adequate and combined with varied edges will provide ideal wildlife habitat. Wetland areas on the edge of ponds or on their own have varying water levels. If possible create several satellite ponds and wetlands rather than one large pond. Ponds should have shallow, irregularly shaped edges, with a variety of depths to create a diversity of conditions to increase the amount of wetland fringe to benefit a wide range of flora and fauna. Habitat rock piles and pebble or gravel edges on part of the margin would further enhance the habitat value. Such a pond would create an ideal breeding area for frogs, toads,

newts, dragon and damselfly larvae and other invertebrates. It will provide drinking water for deer, foxes and other mammals.

Guidance on the design of ponds and wetlands can be found in SEPA's publication '[Ponds, Pools and Lochans](#)'.

### **Pond Planting**

It is important to ensure the species mix chosen for planting up the pond or wetland is appropriate. Plant native, wetland, marginal, submerged and free floating species around the pond. Native species such as branched bur-reed (*Sparganium erectum*) and bottle sedge (*Carex rostrata*), along with attractive flowering marginals such as Purple Loosestrife (*Lythrum salicaria*), Meadowsweet (*Filipendula ulmaria*), Marsh Marigold (*Caltha palustris*), Yellow Flag Iris (*Iris pseudacora*), Ragged Robin (*Lychnis flor-cuculi*) and Water Lilies (*Nymphaea alba*) will all improve the pond for wildlife and create an attractive feature that will enhance the course.

Care should be taken not to plant inappropriate species. Many ponds have become accidentally infested with vigorous aliens such as Canadian pondweed (*Elodea Canadensis*), Floating Pennywort (*Hydrocotyle ranunculoides*) and New Zealand Swamp-stonecrop (*Crassula helmsii*) that choke out the native species. These usually arrive accidentally when plants are introduced from garden centres. It is always best to acquire plants from natural sources or reliable native plant suppliers specialising in aquatics. Greater reedmace (Bulrush) and Reed should be avoided, as they will quickly spread and choke out the pond. It is equally important not to introduce any fish to the pond, such as carp – which can destroy all other life forms in the pond.

It is recommended that fairly extensive marginal planting is undertaken to enhance the feature aesthetically and ecologically. The whole margin need not be planted, but simply sections of it, which will then spread and fill the gaps. Once established marginal and floating vegetation will maintain a good balance within the pond, and aeration will be unnecessary. Again, native species work best. The SEPA, Ponds, Pools and Lochans book gives plant lists:

[http://www.sepa.org.uk/media/151336/ponds\\_pools\\_lochans.pdf](http://www.sepa.org.uk/media/151336/ponds_pools_lochans.pdf)

Create rough grassland buffer strips and no spray zones of at least 3 metres around ponds and ditches. This increases the naturalness of the feature and protects it from disturbance, nitrate

leeching, spray drift etc. Many species such as frogs, toads and newts spend much of the year on land and rough vegetation around the water will provide foraging and hibernating areas.

Under Local Environmental Risk Assessment for Pesticides (LEREP) six metre buffer zones have been set for some pesticides. However, this can be reduced to one metre when using LERAP-tested and approved spray jets. Avoid tipping grass cuttings and corings in and around open water and ditches as this will cause pollution through enrichment of the water, potentially leading to algal blooms and deoxygenation.

## **Pond and Wetland Management**

It is always recommended that any existing pond or wet area is surveyed prior to any works to create areas of open water or other wetland features. Unfortunately many well-meaning pond creation projects have resulted in damage to already valuable wildlife habitat. A survey will inform you what is already present and will help in deciding the most appropriate way forward. SNH and your local Biodiversity Officer should be able to provide information as to who could carry out this kind of work for you.

Great crested newts would be one species worth surveying for as they are protected under the Wildlife and Countryside (Scotland) Act 2004. If newts are found some management recommendations will have to be followed, however, this is unlikely to be anything above and beyond the recommendation made within this report.

### **Siltation and natural vegetation succession**

All ponds silt up over time and this can reduce the amount of open water available and allow the pond to dry up. By having lots of overhanging vegetation at the pond, leaf fall can add to the rate of siltation as would the deposition of grass cuttings within a 6m distance from the water. If the pond area is not managed it will, over time, naturally dry up due to vegetation build up and silting. To maintain as great a diversity of habitats as possible it is recommended this area be managed to prevent succession to a dry woodland area.

Before any vegetation removal or pond clearance work can begin (best undertaken between Nov-Feb) it is important the area is surveyed first for plants, and such species as newts. Often your local biodiversity records centre will have details of any surveys conducted previously.

## Pond Restoration

If the pond is overgrown, management could include:

- Clear some trees and create wood piles nearby, clear encroaching scrub and trees (autumn/winter)
- Ensure the pond has a diverse profile – various depths (autumn/winter)
- Extend the pond if possible (autumn/winter) to create an uneven, contoured edge to maximise the amount of pond margin – do not use hard engineering.
- Design shallow sloping ledges around the pond
- Build a hibernacula in nearby woodland (any time of year)
- Remove excess floating (water lilies spread very fast in a small pond) and submerged vegetation in autumn
- Cut back/pollard remaining trees to reduce shade on the pond
- De-silt pond (autumn/winter)
- Install silt trap to reduce siltation of the pond in the future
- Encourage a rough grassland buffer zone (wildflowers that thrive in damp areas are: marsh marigold, ragged robin and cuckoo flower to develop around the edge of the pond – to prevent pollution and eutrophication as well as a habitat for bees, butterflies, small mammals and birds. These rough grassland buffer strips and no spray zones should be at least 3 metres wide. This increases the naturalness of the feature and protects it from disturbance, nitrate leeching, spray drift etc. Many species such as frogs, toads and newts spend much of the year on land and rough vegetation around the water will provide foraging and hibernating areas. Golfers will also find their ball less likely to roll into the pond.
- Avoid tipping grass cuttings and corings in and around open water and ditches as this may cause pollution through enrichment of the water, potentially leading to algal blooms and deoxygenation.
- If possible create several satellite ponds rather than one large pond.
- For legislation see <http://www.sepa.org.uk/regulations/water/diffuse-pollution/>

## Checklist for planning the pond restoration:

Aspect	Notes
Owner interest and permissions	Best if owner is involved at all stages
Statutory requirements for planning permission	Check with Local Planning Authority

Nature conservation interest	Survey the pond, check with local SNH and Biodiversity Officer for designations/recorded interest and any licensing requirements
Archaeological interest	Check with local authority archaeologist
Plant survey	Checks between May and September
Invertebrate survey	Check one year prior to management works
Management plan and timings of works	Draw up detailed plans to describe work and their timings – most works autumn/early winter.
Silt deposition site	Avoid removal to landfill - unless silt is polluted. Best put on arable land after harvest - consult local SEPA office
Machine/labour needs	Seek advice on methods from experienced plant operators. Get a range of quotes. Ask SNH for a list of recommended contractors
Funding sources	See Scottish Golf Funding page: SRDP, LBAP
Remove/relocate plants in areas of the pond to be disturbed	Replant when machine works are completed, if appropriate
Tree surgery/felling	Discuss tree/shade reduction with local tree officer and land owner. Follow guidelines from SGEG
Water level monitoring	Monitor winter rain/water level control/outlet piping/ditching

Seasonally wet areas support a different set of invertebrates to that of a permanent pond. Such a variety of wetland habitats throughout the course is valuable and contributes to the overall ecological value of the site.

### Further Reading

SEPA – Ponds, Pools and Lochans [http://www.sepa.org.uk/media/151336/ponds\\_pools\\_lochans.pdf](http://www.sepa.org.uk/media/151336/ponds_pools_lochans.pdf)

SNH – Pond Guidance - <http://www.snh.gov.uk/about-scotlands-nature/habitats-and-ecosystems/lochs-rivers-and-wetlands/ponds/>

SNH – Wetland Guidance - <http://www.snh.gov.uk/about-scotlands-nature/habitats-and-ecosystems/lochs-rivers-and-wetlands/lowland-wetlands/>