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Factsheet Number 7

Wildlife Ponds

Introduction

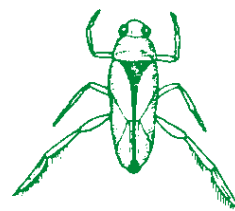
Wetland habitats are disappearing at an alarming rate through land drainage and reclamation, pollution, afforestation and intensification of agriculture. Thousands of acres of wetland ranging from farm and village ponds to vast tracks of fenland and peat bogs have disappeared in the past two decades.

A well planted natural pond and marshy area will attract a great variety of animals, from bathing and drinking birds to minute single-celled floating organisms. It is bound to be the part of the garden where most time is spent. Pond watching can become very addictive.

Garden ponds now provide vital breeding sites for newts, frogs, toads and also many insects - particularly the damsel and dragonflies. All these species are suffering greatly from the loss of natural freshwater wetlands. By creating a pond, no matter how small, you will be helping wildlife in a big way.

Digging!

There's no getting away from it unless you hire a mini-digger. You are going to have to pick up a spade sooner rather than later.



*Water
boatman*

Whatever type of lining you use and whatever size it is, your pond should be dug to have a saucer-shaped profile with gently shelving sides creating a large area of shallow water and a deep area of minimum depth 900mm. This allows pond creatures to survive at the bottom even if the pond surface freezes during severe weather.

The gently shelving sides serve three main purposes. Firstly a large area of shallow water and marsh is created to allow important marginal and marshland wildflowers to be planted. Secondly, animals can easily crawl in and out of the water. Thirdly, if the pond freezes the expanding ice will slide up the sides and not force the sides apart. This is particularly relevant to ponds of a concrete construction.

Remember when you are digging that the top soil should be kept separate for use in the pond, while the sub-soil can be used elsewhere in the garden, perhaps to make a bank.

Liners - What to use

There are various alternatives available, ranging from concrete to puddled clay. The construction of a concrete pond is difficult, it may not look very 'natural' when finished and the pond will be susceptible to cracks from frost. Fibreglass ponds tend to be little better and often have steep sides which make it difficult for animals wishing to crawl in and out.

Puddled clay is the traditional form of lining a pond and the clay forms an excellent base for creating a natural pond and for establishing plants. However, the construction is hard work, normally expensive, and a skilled operation. We would not recommend this type of lining to all but the keenest of gardeners.

Without doubt the best compromise is a flexible liner - PVC, polythene or, best of all, Butyl rubber. If you pay careful attention to the pond edge, hiding excess liner, a natural-looking pond can be created. PVC and polythene are relatively cheap but will only last a few years when exposed to sunlight. We would recommend the use of Butyl rubber which should last a minimum of 20 years.

Step by step construction

1. Prepare the site. Dig a hole approximately 200mm deeper than the contours you wish for your pond. This will allow for sand, matting/newspaper and soil. Remember to retain the top soil.
2. Trim the hole to a plane surface, removing large stones, backfilling and tamping holes and sharp hollows.
3. Firmly compact the base and sides. All the banks must slope gently, no more than at a ratio of 3:1 or the soil will slip. To take up the slack in the liner produced by the sloping pond margins dig a trench at each corner of the pond running from the bottom to above the water line. The trench should have sloping sides and rounded bottom and corners. Increase the depth uniformly from zero at the bottom to sufficient at the top to take surplus liner.
4. Dig a trench one spade width and one spade deep along the bank just above the intended top water level. Lay the edge of the sheeting in this so that it can be held securely by back-filled earth.
5. Spread 50mm of sand over the surface of the hole and overlay polypropylene matting or thick newspaper to protect the sheeting from puncture.
6. Lay the liner. Handle it with care and walk on it only with soft rubber soled shoes. Do not pull the sheeting taut and do not crease.
7. Spread a layer of soil at least 150mm thick over the surface.
8. Bank excess excavated soil around the edge of the sheeting for extra protection. It is important to keep as much light as possible from the liner to reduce deterioration.
9. Where grass adjoins the pool margin lay turfs right up to the water's edge.
10. Fill the pond. Rest your hose pipe on top of a square of polythene on the pond bottom and let water trickle onto it to prevent the soil being washed away, exposing the butyl liner.

The Edge

The detailing of the pond edge will determine whether it looks natural. Listed below are a number alternative edges. Try and include more than one as this will increase both the variety of habitats and the pond's usefulness to animals for drinking, bathing, feeding and shelter.

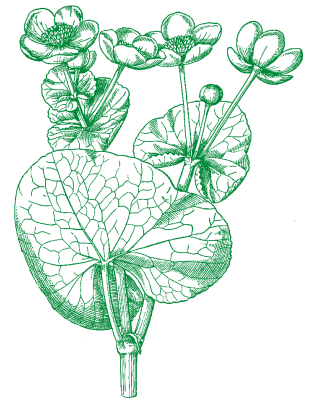
Marsh If you use a flexible liner, try extending it just under the soil on one side of the pond to create a shallow marshy area. Site this at the lowest point where the pond will overspill in very wet weather. Top it up with a hose pipe in hot, dry conditions. In an ideal world it is a good idea to site the pond in full sun and the marshy area in dappled shade progressing to full shade.

Beach Lay a shingle or sand/gravel beach along a gently sloping section of the pond edge - partly below and partly above the water line. This will enable birds to drink and bathe and will provide easy access for visiting amphibians or small mammals.

Rocks Rocks, or even a rock garden, sited along the pond edge will help camouflage the pond liner and will provide the nooks and crannies particularly liked by frogs. Try and site a flat topped rock slightly above the water level and in full sun, for we are not the only ones that enjoy a good sunbathe.

Paving A hard paved area will provide a firm footing for pond-watching and for carrying out essential pond maintenance. Lay bricks, stone or concrete slabs, remembering to leave gaps that can be filled with soil and sand to encourage wildflowers to establish themselves.

Grass Where your pond adjoins lawn or meadow, try and make the two types of planting merge into one another. It is better not to have a close mown lawn adjacent to lush pond planting.



*Marsh
marigold*

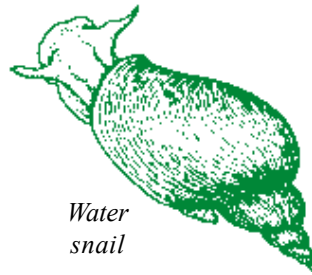
Stocking

Animals It is a good idea to collect a few bucketfuls of sludge and water from a well established pond. In this way you will quickly introduce hundreds of pond creatures into your own pond. Introducing pond plants will be another source of animals. In spring you will find other pond owners invariably have a little spare frog spawn and it is worth introducing some to your new pond. However, if you want a wildlife pond do not stock with goldfish, for they will eat your larvae, frog spawn and tadpoles.

Plants The real success of your pond lies in the planting. Many plants will gradually establish themselves, but it is best to work out a planting scheme, introducing a selection of plants which grow at various depths. The list on the back page will give you some ideas.

If the pond is small it is important to avoid rampant species and to grow tall plants on the north side of the pond to avoid them casting shade over the rest of the water. In a small or medium sized pond consider growing plants in some form of container filled with soil to prevent them spreading too much. It is easy then to take up the baskets and split the plants when they grow too large. Even in a large pond it may be worth confining rapidly spreading varieties in this way.

Many wetland flowers can be grown from seed but some, particularly those which set seed under water, can be difficult. When buying in pond plants from nurseries make sure they are true native wildflowers and not ornamental varieties. Your best bet is probably to find friends with ponds and get clumps from them when they clean them out. **Never raid wild ponds.**



*Water
snail*

Maintenance

Vegetation control A healthy pond needs regular maintenance to ensure it does not gradually silt up with plant debris and get taken over by rampant marginal plants. Some water plants are extremely invasive and need to be thinned out each autumn. Most can be pulled up quite easily and donated to friends establishing their own ponds. Where wildflowers have been planted in baskets they will still need to be taken up and split to renew their vigour.

Pond cleaning It is best to carry out maintenance in the early autumn, as it is at this time of year that least disturbance will be caused to animal pondlife. No matter how open a pond's situation is, fallen leaves will tend to accumulate in the water. These must be removed before they start to decay and cause pond stagnation.

Using a plastic rake remove all the dead vegetation and pile it next to the pond. Leave it for a couple of days to allow any pond creatures to migrate back into the water. The pile of debris can be stacked in the hedge bottom or under trees and left to rot - creating a habitat in itself and providing nutrients.

Algal bloom An algal bloom, masses of green algae clouding the pond water, is caused by the presence of excess nutrients in the water. Use of tap water to top the pond up can be the culprit.

In dry weather evaporation can cause a significant drop in water level and it is essential to top up the pond. Ideally you should use water from a stream or water butt, which is feasible if the pond is small and such water is on hand, but usually it is necessary to use a hose connected to the mains water supply. If an algal bloom does form there is nothing much that can be done about it. Prevention is better than cure!

Ensure there are plenty of submerged oxygenating plants such as water milfoil, hornwort and free floating plants such as frogbit and water soldier, as these will help use up the nutrients in the water. The latter group, together with the floating leaves and flowers of the water lilies, bistort and crowfoot, will also help shade the pond - removing light essential for algal growth. The pond will eventually achieve a balance, keeping the water crystal clear and healthy for the aquatic life it supports.

Pond Plants

(Position - S=Sun, PS=Partial Shade, Sh=Shade)

	Flowering period	Flower colour	Position	Height (cm)
<i>Aquatic plants rooted in soil with floating leaves</i>				
White Water Lily	VII-VIII	White	S	
Yellow Water Lily	VI-VIII	Yellow	S	
Amphibious Bistort	VII-IX	Pink	S	
Water Crowfoot	III-V	White	S	

Free floating plants

Frogbit	VII-VIII	White	S	
Water Soldier	VII-VIII	White	S	

Submerged oxygenating plants - vital!

Water Starwort
Hornwort
Water Milfoil
Curly Pondweed

Emergent plants which grow in water 15-60cm deep

Flowering Rush	VII-IX	Pink	S	150
Bog Bean	V-VII	White	S	10-30
Greater Spearwort	VII-IX	Yellow	S	60-90
Bur Reed	VI-VIII	Green	S	150
Lesser Reedmace	VI-VIII	Brown	S	180-210

Marginal plants growing in less than 15cm of water

Water Plantain	VII-VIII	White	S/PS	30-90
Yellow Iris	V-VII	Yellow	S/PS	45-150
Water Mint	VII-X	Pink	S/PS	15-60
Water Forget-Me-Not	V-IX	Blue	PS	15-30
Marsh Marigold	III-V	Yellow	S/PS/Sh	30-40
Brooklime	V-IX	Blue	S/PS	20-30
Lesser Spearwort	V-IX	Yellow	S	150
Water Violet	V-VI	Mauve	S	30

Marsh plants growing in damp soil on edge of pond

Marsh Marigold	III-V	Yellow	S/PS/Sh	30-40
Fritillary	III-V	Pink	S	20-40
Bugle	IV-XI	Blue	PS/Sh	10-15
Water Avens	V-IX	Mauve	S/PS/Sh	45-60
Yellow Loosestrife	VII-VIII	Yellow	S/PS	60-150
Common Valerian	VI-VII	Pink	S/PS/Sh	30-120
Ragged Robin	V-VIII	Pink	S/PS	30-50
Creeping Jenny	V-VIII	Yellow	S	5
Devil's Bit Scabious	VII-IX	Lilac	PS	60-110
Marsh Woundwort	VII-IX	Lilac	S/PS	90
Lady's Smock	IV-VI	Pink	S/PS	30-60

