

Wildlife Ponds

Introduction and Management Advice



Introduction

Open fresh water is a very attractive habitat to wildlife, from the wide range of plants and invertebrates that inhabit the water, to the birds and animals that come to drink, breed or hunt there.

Many of these wet areas of land, where water bodies were once established, have since been drained or reclaimed so the land can be used for development or agricultural purposes. Other areas, where ponds still exist, have become enriched with agricultural run off, causing a change in the vegetation and making the conditions unfavourable for many important species. Another major threat to local water

bodies is through lack of management, causing these valuable habitats to become over grown with invasive species, or be filled with silt causing the pond to dry up.

These water bodies come in countless different forms, shapes and sizes, including stream fed ponds, seasonal ponds, reservoirs and agricultural ponds. All types of aquatic habitats, with the correct management and construction, can be extremely beneficial to wildlife.

Agricultural reservoirs can make excellent water habitats as well as fulfilling their purpose of water storage and irrigation, and most of the information contained within this booklet, in addition to the specific section on agricultural reservoirs, can also be applied to these types of water body.

Making a wildlife pond

There are many things to consider when constructing a pond, and you should seek professional advice before construction commences. A well established habitat should not be destroyed in order to make a new, different habitat.

As already mentioned, all types of established water bodies can be managed in a way to make them beneficial for wildlife. However, if constructing a new pond, then the following types of pond and construction techniques are recommended, as they have the least negative impact on the environment and the greatest benefit to wildlife.



- In general, large ponds are better than small ones, since stability and diversity of wildlife usually increase with size.
- The pond edges should be irregular, with plenty of projecting spits and bays. These increase the length of the pond edge where plants can grow, which in turn provide a habitat for many other species.



- The natural amount of water that collects in the pond, the composition of the ground rock, and the height of the water table will determine whether the new pond will be permanent or seasonal. Both permanent and seasonal ponds are valuable to wildlife, but generally, a pond which retains even just a very small amount of water throughout the year is of greatest wildlife benefit, although it can have associated problems, as will be discussed shortly.

- Areas of enclosed water warm up in the summer and cool down in the winter. However, if the pond is deep enough then the water becomes stratified, i.e. the lower levels of the pond will remain at a constant temperature throughout the year. This provides an important habitat for many invertebrates and amphibians, as it is a constant, unvarying environment. For this reason, ponds should ideally be deeper than 2 metres at the deepest point, but at least 1.5 metres deep.
- In some wet, boggy or marshy areas, this can be achieved by digging the pond deeper until it reaches a level where the water table will sustain water levels throughout the year.
- Proposed ponds that are in a dry area above the water table can be lined, and although they are not 'natural', can be extremely rich in wildlife if managed correctly. The different types of lining (butyl, concrete or clay) that can be used all have their pros and cons, and careful thought is needed to ensure that the right one is used. For example, the construction stage of a concrete pond can be potentially very damaging to wildlife, and the pond will need quite some time for the pH levels to settle before wildlife can flourish there. However, once constructed, a concrete pond can be very long lasting... until a hairline crack appears!



- Ponds should be made / dug in the late autumn, (November) as this will allow the pond to settle ready for spring.
- Be aware that there are various laws concerning water courses, and no pond or stream should be made or diverted before consulting the Water Pollution (Jersey) Law 2000.
- Silt pollution is another aspect to be aware of when constructing a new pond. Deposits of silt can be very damaging to wildlife, and can reduce the growth of aquatic plants, and clog the gills of aquatic organisms. Water containing silt and other suspended material must undergo a settlement (silt trap) or filtration process before being discharged.



Construction of stream fed ponds

Maintaining water flow: When constructing a pond, reservoir or any water retaining feature which is situated in or fed by a water body such as a stream, it is essential to ensure that flow rates are maintained. This is so the flora and fauna that depend on the water for their survival further down stream, are not affected by the construction of the new pond upstream. There are several different ways of doing this;

- If space allows, construct the pond away from the stream, and have an adjustable method of diverting the water into the pond, such as stage boards. This is also of benefit if there is a pollution incident in the stream, as the water can be diverted away from the pond so the area can be protected.
- If there is no room to construct the pond to one side, then ensure that there is an overflow pipe or adjustable spill gate to maintain flow rates down the stream.



- If in doubt, contact the Environment Division. Sometimes it is better to construct a smaller, rain fed seasonal pond away from the stream.

On-stream ponds are liable to gradually silt up due to the water slowing down as it enters the pond and depositing its burden of silt. A silt trap should be constructed if a pond is fed by a stream, as this helps to control the rate at which the pond itself will become full of silt. A silt trap should be a smaller pond just upstream of the wildlife pond, which is wide, deep and easily accessible. As water enters the silt trap and slows down, it releases it's burden of silt in a site that can easily be emptied, without affecting the main wildlife pond itself.

Advice to maximise wildlife potential

The following are some recommendations that will make a water body more attractive to wildlife. No area will be able to fulfill all of these recommendations, as there are many different types, shapes and sizes of water bodies, all of which are important to wildlife in different ways.

- Ponds should be created where they are at least risk from pollution, and should be surrounded with as much non-intensively managed habitat as possible. Buffer zones of vegetation should be established between agricultural / housing land and the pond itself. This vegetation will help protect the pond from pollution i.e. pesticides, road run off etc.
- The agricultural Code of Practice should be followed in regard to the use of pesticides and fertilisers, and the storage, application rates, techniques and timings of these. Spray drift, run-off, incorrect storage, spillages and over-use of pesticides and fertilisers can be devastating to a wildlife pond.
- Mosaics of ponds will generally be far more valuable for wildlife than single, isolated ponds, particularly where the wetland complex includes variations of waterbody permanence and size. Creating ponds near to other existing water bodies helps to increase landscape connectivity.



Advice to maximize wildlife

- Try to vary the pond bank and underwater profile, depth, light and shade.
- It is extremely important to ensure that the sides of the pond slope gently to dry land. Sheer or steep drops are difficult to climb for any animals (or children) that might fall in the pond. Even animals that can swim quite well will still drown if they are unable to climb out of the water...even toads can drown! Plants growing around the edge which overhang the pond also serve as a 'lifeline' for small creatures needing access and escape.
- Create areas of shallow water / watery margins around the edge of the pond. Emergent plants which grow in these areas are an important food source and link between water and land for the emergence of dragonflies and other larval insects. They also act as important breeding and basking sites, look out posts and over-wintering sites.
- Submerged plants help to regulate the oxygen balance of water bodies and provide food and shelter for many of the organisms living in the more open and deeper parts of the pond. These include many microscopic species, segmented worms, snails, spiders, mites, water-fleas, shrimps, insects and larvae, which in turn support many other species higher up the food chain.
- Ponds with fluctuating water levels are often perceived as problem ponds that are neither attractive nor good for wildlife. In fact, a littoral zone, or 'bare beach' of an exposed pond margin created by fluctuating water levels, natural erosion or livestock trampling, is an asset to a water body and is important for the survival of many endangered species. Swallows and house martins collect mud from these areas for nesting, and many insects bask, hunt, burrow or nest in the littoral zone. Two of Jersey's rarest plant species, the Jersey forget-me-not and brown galingale depend on these open, muddy pond margins.

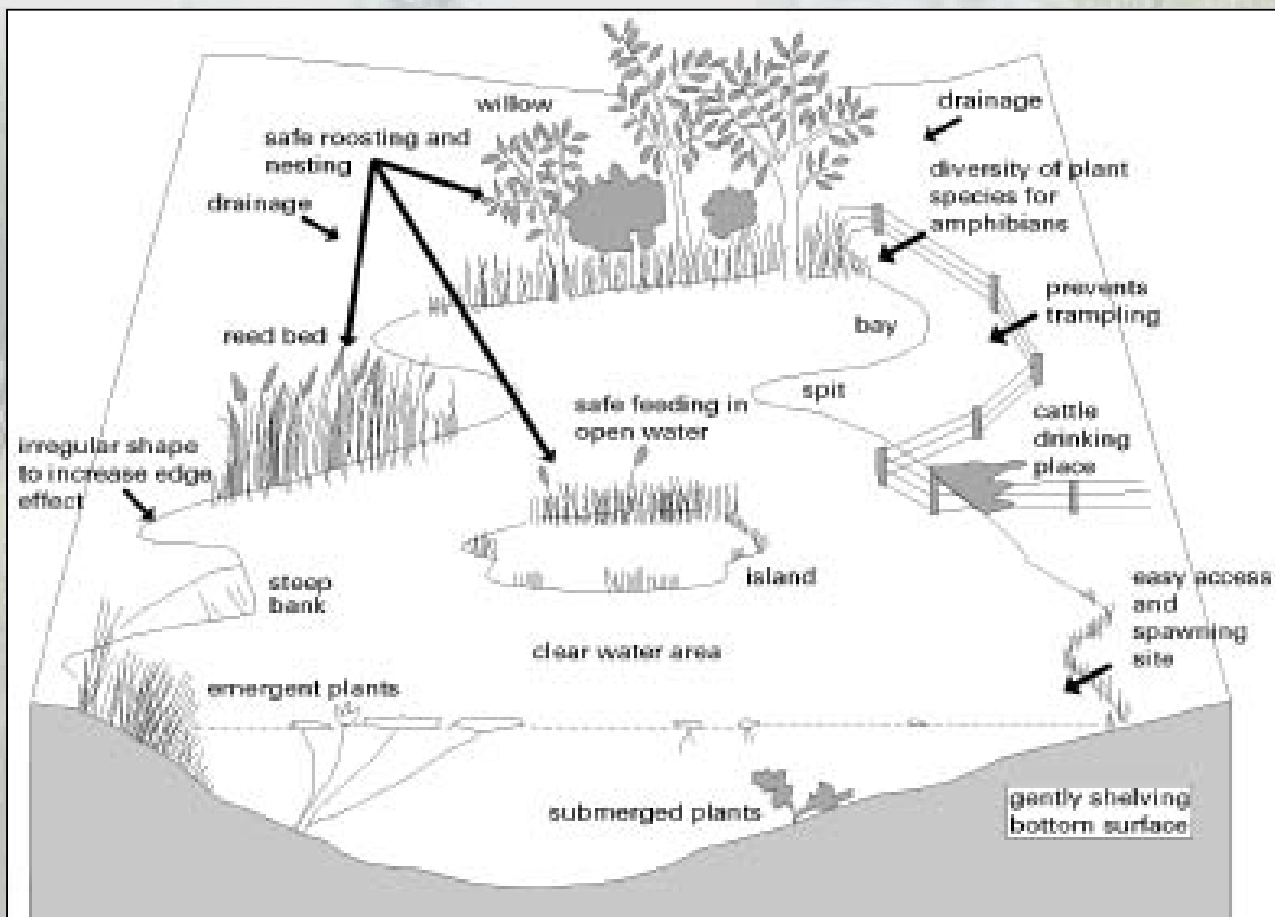


- Water bodies that completely dry out in the summer months are also important for wildlife, as these areas are typically devoid of predators such as fish. Fish feed on a huge variety of insects and insect larvae, as well as the spawn and tadpoles of toads and frogs. Ponds that occasionally dry out actually benefit many species, by reducing predators and thus increasing the survival rate of eggs, spawn, larvae, tadpoles etc.
- Areas of open water are important for species such as swallows and bats, which drink on the wing.
- Areas of reed or a willow copse can act as a shelter for many species, including waterfowl, small mammals and nesting birds.
- If possible, introduce a floating island to the pond. A pallet covered in hessian and turf can work well, and if set low enough in the water, will soon be colonised by vegetation such as water mint and iris. Many other designs and variations can be used.

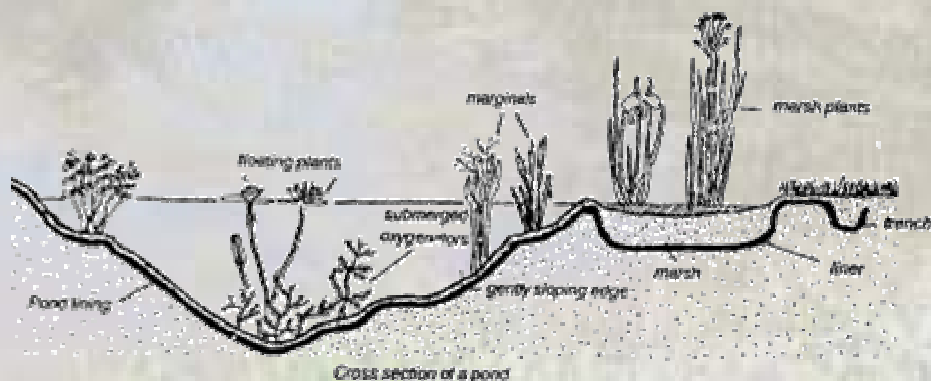
- Large flat stones, bits of wood, branches placed half in and half out of the water, all create important habitats and breeding sites for many small creatures.
- Shading is beneficial to several pond species. Woodland ponds have developed their own specialist aquatic species, specially adapted to live in these conditions. Some shade on ponds in a more open landscape can help to provide weed free areas of open water where oxygen can circulate, can cool shallow water in hot weather, and provide perching sites for dragonflies and birds.
- In non-woodland ponds, however, more than 40% shade cover can significantly reduce aquatic and marginal vegetation, and therefore reduce the amount of other wildlife which depend on these plants.



It is very important to recognise how complex pond communities are, how they change over time with natural succession, and how very damaging inappropriate management can be. Many perceived pond problems are not in fact problems for wildlife, but are in fact a problem of aesthetics for the pond owner e.g. the cutting back of tall 'overgrown' vegetation.



The diagrams above and to the right shows a well made, wildlife friendly pond (taken from JNCC)



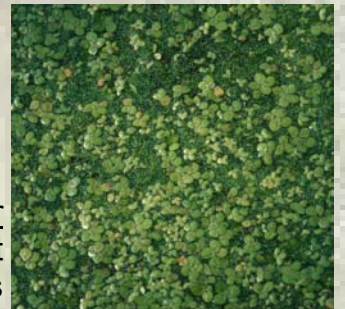
Further recommendations for agricultural reservoirs / ponds

With the correct management it is possible to create a dual purpose agricultural pond; one that supports the irrigation needs of the land, and also one that supports an abundance of wildlife.

- ◇ Obviously size and capacity of an agricultural reservoir are important and is usually why the banks of such water bodies are steep. If you are constructing a new reservoir for irrigation, then ensure that at least one of the slopes is gentle if the others have to be steep.
- ◇ Introduce water plants to the reservoir which will not obstruct pumping equipment during irrigation. Only a few plants are necessary to enable species such as dragonflies and damselflies to lay eggs. A suitable plant, which will cope with the fluctuating water levels, is water lily.
- ◇ Remember that water passing over and through the surrounding land / farms will reach the reservoir eventually, so be careful with spillages, using pesticides or herbicides. Follow the 'good practice' guidelines of agricultural techniques.
- ◇ Large amounts of algae in agricultural reservoirs are common due to high levels of nutrients in the run off from surrounding farmland. The establishment of a buffer zone of vegetation e.g. a reed bed, around the reservoir will greatly reduce the amount of nutrients reaching the water, as well as providing a fantastic habitat for birds and other animals
- ◇ Laying a piece of mesh, matting or old carpet from the lowest water level to the top edge (not over the edge or water will siphon out) of a steep sided reservoir will enable small creatures climb out.

Problem Species

- Be careful not to introduce invasive weeds to the pond / reservoir e.g. Canadian pondweed, parrot's- feather, water fern (Azolla), duckweed (right) etc. If introducing new plants to the water, then isolate them in a tank before hand for a few weeks to check that no unwanted plants have come in with them.
- New Zealand pigmy-weed *Crassula helmsii* (pictured below) causes major environmental problems in freshwater aquatic habitats, and is a plant which has recently been found in Jersey. It forms dense vegetation mats that out competes native species, and chokes ponds and drainage ditches. It readily reproduces vegetatively and does not die back during winter. **Control is extremely difficult.**



- Avoid introducing non-native species of ornamental plants to the pond. One exception to this is water-lily (below).



- The introduction of fish to the pond should also be avoided. Stocking of fish will be detrimental to the establishment of vegetation and therefore the colonisation of insects and their larvae. Fish will eat many of the small insect and larvae, which in turn support an abundance of other important wildlife higher up the food chain.
- Ducks in any numbers can significantly reduce the wildlife value of a pond. Ponds supporting fed or reared duck are artificially supporting far more than they could naturally accommodate. Thus the pond water becomes over enriched with faeces and rotting food, which leads to algal blooms and turbid, murky water in which aquatic plants cannot grow. Also the rotting matter will attract rats which can present other problems to the pond and pond owner.
- Ducks graze the pond plants, frogspawn and invertebrates, and also disturb the pond floor. Without plants, there is little food or cover for invertebrates or amphibians.
- Some plant species can become over represented in or around a water body, and need to be controlled so they don't out compete and drive out other important species. These invasive species typically include hemlock water-dropwort, common reed, bulrush, yellow iris, hemp-agrimony etc. These species should not be excluded completely as they add to the biodiversity of the pond, but due to their invasive characteristics they should be controlled. See the next section on management.

- Algal blooms and mats can harm a pond because they shade other pond vegetation which is so important for the rest of the pond life. However, whilst algae can be unattractive and potentially harmful, they are very important members of a healthy, well balanced pond ecosystem, and are a major source of food for the species at the lower end of the food chain.
- Newly constructed ponds may have a thick layer of algae covering them for the first year or so, but as the pond becomes established, a natural balance will occur. Seasonal blooms also occur fairly frequently on many ponds, but these blooms are usually fairly short lived and should not be a cause for concern, unless the bloom is excessive. One way to remedy algal blooms is to apply barley straw to the water, but advice on application rates and techniques should be sought.



Management

Waterbodies, and the wet areas of land surrounding them, need management to create or maintain favourable conditions for wildlife. Without management, these areas may become overgrown, typically with invasive species such as hemlock water dropwort or iris. A build up of vegetation over the years can eventually cause a pond to dry out. It is important to implement a cutting regime to the vegetation around, and occasionally in, the waterbody.

The vegetation around the pond should be cut at least once a year. From an ecological point of view, this cut should not be done until the late autumn / winter (normally October / November) as this allows more time for invertebrates that use this long vegetation, to complete their life cycle.

There are many reasons for this cut;

- To prevent invasive species such as hemlock water-dropwort from 'taking over' the area
- To increase plant diversity and provide appropriate growing conditions for low to medium growing plants
- To create a mosaic of different vegetation height and age structure, to benefit many different species of insects, dragonflies, damselflies, small mammals etc. and their differing habitat requirements



Not all of the vegetation around the pond should be cut at any one time, and areas should be left uncut to act as refuges for wildlife. These patches should measure at least two metres, and up to ten metres in diameter, depending on the size of the area. They could be centred on areas of special plants or favoured habitats for small mammals or invertebrates. Many butterfly, moth, dragonfly and damselfly eggs or larvae over-winter on grass stems, and leaving areas uncut will allow some eggs/larvae to finish their life cycle the following spring. If an area is left uncut one year, then it must be cut the next, to prevent a weed build up.

If there is a build up of invasive species (typically hemlock water-dropwort) then these area may need to be selectively cut twice a year until this invasive species is controlled. If a second visit is required, then only the problem species should be selected out and cut, not all of the vegetation. **Herbicide should never be used near a water body.**

The best way to cut these wet areas is with a strimmer or sickle. The cut vegetation should be left lying alongside the stream for 2-5 days to allow it to dry out and let any aquatic organisms return to the water. All vegetation must be then raked up and removed.

Try to vary the height of the cut, therefore enabling a diverse height / age of vegetation to develop. Some areas should be cut right down to a few centimetres, while others should be cut to a height of up to 30 centimetres or so.

